



Truecaller's True Colors

A Swedish adware & spyware app which feeds a public phonebook aimed at preventing spam...

PLEASE READ IMPORTANT DISCLAIMER – PAGE 5

September 28, 2022 – Truecaller (TRUEB:SS) is a Swedish adware & spyware app which feeds an inferior caller-identification service aimed at detecting spam. The EU's General Data Protection Regulation (**GDPR**), and similar legislation across the globe, threatens Truecaller's business, which we believe is on the brink of redundancy.

It now resorts to **skirting regulations and/or avoiding taxes** through uncreative **loopholes** which we believe will be inevitably cut-off.

Our report encompasses excellent reporting from various journalists across the world, interviews with former employees, and many cybersecurity experts who have shared breaches freely. Kudos.

Viceroy Research is short Truecaller.

How the app works

Fundamentally, Truecaller builds a “phonebook” and refines its spam database by:

- Gathering identities of users and their address books (where they are allowed to). This is by far the most valuable and invasive data users are providing to Truecaller.
- Processing user-submitted “spam” numbers.
- Identifying numbers which have exhibited spam-like behavior such as calling multiple unrelated Truecaller users.

The app then functions as a “phone book”:

- Users can search phone numbers in the app, which will return names and other personal contact details attached to the number (including non-users). This feature is, unsurprisingly, popular with scammer and frauds.
- Flagged “spam” callers will be sometimes be identified and sometimes blocked.
- All calls are accompanied by pervasive ads. Ironically it is not in Truecaller's interest to block spam calls.

“An Indian Company” – What we tell compliance.

GDPR threatened Truecaller's spyware features which feed the spam detection service. In response Truecaller moved all its data servers and substantially all of its operations to India where management appear to believe it is safe from legislation designed protect the privacy of its customers. This is not the case.

- In 2017 Truecaller received a letter from the Article 29 Working Party (since replaced by the European Data Protection Board). This letter highlighted concerns of Truecaller's processing of personal data immediately prior to the implementation date of GDPR:
 - Truecaller scrapes personal information from its users, including personal information about non-users. “[data protection law] applicability cannot be excluded by a unilateral declaration or signed away by a user accepting contractual terms of True Software.”
 - The personal data of non-users (collected without consent) is freely searchable by the public on Truecaller's website (with some geographical restrictions). Truecaller makes no attempt to inform these non-users that their personal data has been accessed, or by whom.
 - Truecaller associates phone numbers with contacts from users' phones and makes no attempt to verify the information is “not excessive, is accurate, and, where necessary, kept up to date”.



- In 2018, Truecaller moved its entire operations and data servers to India, believing this move will be sufficient at keeping EU regulators at bay. Viceroy consulted GDPR specialists on Territorial Scope (Article 3) of GDPR, and note the following:
 - **Art 3(1):** “GDPR applies to the processing of personal data in the context of activities of an establishment of a controller or a processor in the Union, regardless of whether the processing takes place in the Union or not.”
The bar for being regarded an establishment is low. **Truecaller’s head office is in Sweden, and most of Truecaller’s revenue is billed from Sweden¹.**
 - **Art 3(2):** “This Regulation applies to the processing of personal data of data subjects who are in the Union by a controller or processor not established in the Union”
Truecaller indiscriminately scrapes contacts from non-EU users, which undoubtedly will EU contact data. Despite some protections offered to EU subjects, the same app is made available to EU customers as a service.
- India’s own data protection bill is in draft and is expected to be published for consultation in the short term². We expect that regulations, if passed, would pose similar problems for Truecaller as GDPR.
- Truecaller has been subject to two Public Interest Litigation cases in India. One is ongoing in the High Court of Bombay³.
 - Lexters reports that the petitioner “contended that [Truecaller] collects the user’s information and without their consent or permission shares it with its partners, and then the liability is dumped on the users. The app does this by asking to access of various features to use the application. Further, the petitioner alleged that it is a manipulated set up as the users have no choice...”

Viceroy believe Truecaller will be made to comply with EU data privacy regulation, and be caught by incoming Indian regulation nonetheless in the near term.

“A Swedish Company” – What we tell the accountants.

When the taxman comes knocking, Truecaller is a loud and proud Swedish company. Truecaller bills almost exclusively from Sweden from advertising customers/agents despite substantially all operations being in India. We believe Truecaller has failed to adhere to transfer pricing principles and is avoiding larger tax rates in India.

- Truecaller’s Indian auditors include an EOM in their audit opinion of Truecaller International LLC (Indian Subsidiary).
 - “The management is in the process of seeking necessary approvals and taking appropriate steps thereof for the [transfer pricing transactions] under the Reserve Bank of India guidelines and GST tax laws”.
- Truecaller reported a loss in India for the local financial year ended March 2021, despite posting large consolidated profits for the same period. Truecaller paid no income tax in India in the most recent financial year.
- The Indian market comprises almost 80% of Truecaller revenues and over 70% of daily active users. 63% of Truecaller’s workforce is based in India. Truecaller’s user terms of service outside the EEA is specifically with “Truecaller International LLP”: which is Truecaller’s Indian subsidiary. Truecaller’s advertisement terms of service outside of the EU is similarly with “True Software Services India LLP”.
- Truecaller’s blog frequently brag that India is their “home market”, and that “Truecaller and India are made for each-other”.
- India’s effective corporate tax rates (~29%) are substantially higher than Sweden’s (20.6%). India also enacts a dividend withholding tax of 20% for foreign investors⁴.

¹ CJEU – C-131/12 Google Spain: Google argued that data processing activities were not conducted in the EU. CJEU held that activities of its EU establishment Google Spain, which sold advertising space, and Google’s non-EU search engine were “inextricably linked”, it must follow GDPR directives.

[https://gdprhub.eu/index.php?title=CJEU - C%E2%80%99131/12 - Google Spain](https://gdprhub.eu/index.php?title=CJEU_-_C%E2%80%99131/12_-_Google_Spain)

² <https://www.thehindu.com/opinion/interview/ashwini-vaishnaw-interview-new-draft-data-protection-bill-to-be-out-soon-for-consultation/article65822798.ece>

³ Shashank S/o Dinesh Posture & Ors V. The Union of India & Ors. PIL 9776 2021

⁴ There is a double-taxation treaty between India & Sweden.



The Catch-22

Truecaller is an Indian company when subject to GDPR and conducts almost all its operations in India. Its transfer pricing method is reserved almost exclusively for undifferentiated services which don't bear risk.

Truecaller is a Swedish company when it's time to lodge its tax filings. It pays taxes almost exclusively in Sweden. This is despite all processing risk and operations being carried out in India.

Financials

Truecaller operates a largely India-centric ad-based revenue model. It has evolved from various largely unsuccessful, outdated, or (now) illegal models and finally landed on something that appears to consistently generate cash and increase margins. Management no doubt want to cash-in while they can.

- Truecaller's huge top-line growth since IPO was a one-time boost resulting from, ironically, spamming their users with more ads.
 - The Truecaller app advertisements historically were only pushed when unknown numbers called their users. Now ads are pushed to users on every call, including their known contacts, this boosted ad impressions by 4x, completely void of fundamentals.
 - This created a huge one-time revenue bump spread across approximately 2 years. Impressions per-user per-day are now flat or decreasing on a quarterly basis. Truecaller has pushed so many ads **that it's impressions now vastly exceed its own market opportunity estimates from its 2021 prospectus**, barely a year old.
- Truecaller's premium user base, previously stagnant, now appears to be falling.
- Management and key stakeholders have taken every opportunity to sell their stock and move on.
- Truecaller's Indian auditor was also Wirecard's local auditor for a time. **They have more recently been banned from auditing financial institutions.**

Privacy concerns & third-party policy breaches

Viceroy believes that Truecaller is in violation of Google's Privacy Policy, which states: "We don't allow unauthorized publishing or disclosure of people's non-public contacts." This appears to be a blanket statement.

- Truecaller's app does not allow for an "enhanced search" if downloaded from the Play Store.
 - Truecaller thinks that by enticing users into signing-in on its website (via Google accounts), it can then "Enhance Search" contacts by circumventing the app store.
 - Many phones in India are sold with Truecaller pre-installed, and the app is available for download directly from the company website. These are not subject to Google Play rules, according to Truecaller.
 - The "enhanced search" feature scrapes all contact data from users phones into the Truecaller database.
- Accordingly: Truecaller's database absolutely allows for search of non-user numbers and names without their consent.
- Freely available bootleg copies of Truecaller's app are available with "premium enabled". These likely contain malware, do not push ads to free users, and can still directly communicate with Truecaller's data.

Fundamental Short – Redundancy

- Most developed countries/regions have network spam filters operated by telecommunications agencies. These network filters now threaten underdeveloped markets where Truecaller thrive and will rapidly limit Truecaller's TAM.
 - The Telecom Regulatory Authority of India (**TRAI**) announced intention to create an ID-based network filter which will make Truecaller's spam filter redundant. The consultation paper is due next month.
 - The Draft Indian Telecommunication Bill section on caller identification reads like a Truecaller design brief, except using the national ID system and without ads. It also lists spam as an arrestable offence.
 - Truecaller has claimed in various press pieces that Government regulation has not impacted their business in other geographies. This is because Truecaller has minute business in geographies with spam filters.



- Original equipment manufacturers such as Apple, Google, Xiami & Samsung all have in-house spam filtering software, and capacity to wipe out Truecaller.
- Over-the-top services such as WhatsApp, are posing a greater threat to Truecaller through offering an alternative spam-free communication channel.
 - Call blocking is set on by default unless a user has the caller registered as a contact.
 - Former employees expressed a view that it would be impossible for Truecaller to supplant Whatsapp in India, or for the government to restrict Whatsapp.
 - WhatsApp has integrated many business functions with tech players and is due to arrive in India in the short term. This will deteriorate Truecaller's aspirations to become a serious B2B player, spending only USD ~2m on R&D in 2021.

The Sideshow

Truecaller's constant breaches & data security failures are met with constant denial from management, and are a spectacle to behold. Regulators in Truecaller target growth regions have cracked down on Truecaller out for privacy breaches. In fact, Truecaller's system has been so effective for fraudsters to identify individuals that even international spy agencies have Truecaller slides in the training decks⁵.

- Indian Investigative Journal "The Caravan" published an in-depth report on Truecaller's invasive app and interviewed several concerned employees on exactly how much data the company was able to access .
 - Former employees claimed that Truecaller had access to user SMS messages and was able to build out a financial profile of each individual. In India most banking and transaction confirmations are done through SMS which Truecaller's algorithm can read
- Nigeria's National Information Technology Development Agency investigated Truecaller for "collect[ing] far more information than it needs to provide its primary service" among other things, and publicly urged Nigerians to delist themselves from the service. Truecaller stated that it planned to remedy the situation and fall in line with Nigeria's Data Protection Regulation (NDPR)⁶.
 - Truecaller's new Nigerian Privacy Policy prohibits accessing a user's address book if the app is downloaded from the Google or Apple app stores.
- Anonymous developer Angry Wizard detailed in 2019 how Truecaller's user-data is transferred to a third-party mobile marketing company based out California on sign-up. User data is uploaded to Truecaller servers over GET. Angry Wizard claims that at the time he could access the entire Truecaller database.
 - Techpoint Africa verified this claim by sending user and non-user numbers, which Angry Wizard identified.
 - Screenshots show that EU resident data is still being processed by Truecaller until at least 2019, despite implementation of GDPR.
- Privacy International broke a story of an investigative journalist who was identified by a cab driver using true caller on her way to meet a secret whistleblower in West Africa. Ironically (and with sprinkle of victim bashing) Truecaller responded that the Journalist should have set her phone settings to "Do Not Show Caller ID".
 - Truecaller then claimed to be "especially appreciated by women" in India, claiming they have no other way to protect themselves from abusive calls unless they subscribe to an app "like Truecaller".
 - Truecaller then claims responsibility for solving for two horrific child kidnapping cases because kidnapper numbers were able to be reverse searched and their names identified.
- Millions of Truecaller users' personal data were leaked and sold on the dark web in 2019⁷.
 - An investigation by the Economic Times suggested that European user data was sold for €25k, Indian user data for €2k⁸.

⁵ <https://privacyinternational.org/long-read/4289/revealed-eu-training-regime-teaching-neighbours-how-spy>

⁶ NDPR is nascent secondary law, and awaits passing of the bill in the National Assembly.

⁷ <https://www.indiatoday.in/technology/news/story/personal-data-of-millions-of-Truecaller-users-available-on-dark-web-1531969-2anger019-05-22>

⁸ <https://www.darknetstats.com/Truecaller-data-breach-personal-data-leaked-company-denies-breach/>



Attention: Whistleblowers

Viceroy encourage any parties with information pertaining to misconduct within Truecaller, its affiliates, or any other entity to file a report with the appropriate regulatory body.

We also understand first-hand the retaliation whistleblowers sometimes face for championing these issues. Where possible, Viceroy is happy act as intermediaries in providing information to regulators and reporting information in the public interest in order to protect the identities of whistleblowers.

You can contact the Viceroy team via email on viceroy@viceroyresearch.com.

About Viceroy

Viceroy Research are an investigative financial research group. As global markets become increasingly opaque and complex – and traditional gatekeepers and safeguards often compromised – investors and shareholders are at greater risk than ever of being misled or uninformed by public companies and their promoters and sponsors. Our mission is to sift fact from fiction and encourage greater management accountability through transparency in reporting and disclosure by public companies and overall improve the quality of global capital markets.

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1. How the App Works & Broad Privacy Concerns

To understand the risks Truecaller poses to users – and thus the risk privacy laws pose to Truecaller – we have to understand how the app works.

Building the Data

Fundamentally, Truecaller builds a “phonebook” and refines its spam database by:

- Gathering identities of users and their address books (where they are allowed to). This is by far the most valuable and invasive data users are providing to Truecaller.
- Processing user-submitted “spam” numbers.
- Identifying numbers which have exhibited spam-like behavior such as calling multiple unrelated Truecaller users.

Using the App

Viceroy has created various Truecaller IDs on various dummy phones to play around with privacy settings, trace data packets, check permissions and third-party trackers, and verify Truecaller’s privacy claims.

Meet Mike Rotch:

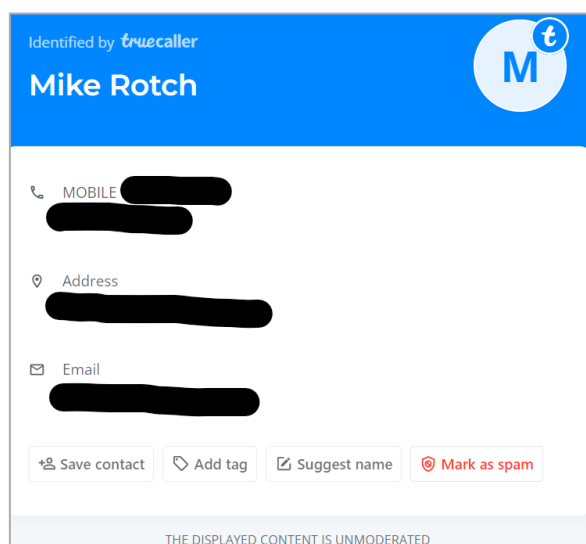


Figure 1 – Mike Rotch dummy Truecaller profile

Mike is a hypothetical French Truecaller user with full permissions granted. Mike allowed Truecaller access to his contacts (John, Paul, George & Ringo) but because he is French, Truecaller cannot use this data in their database (GDPR – Section 2).

Mike can search any number on the app, including random numbers in India, and find the person’s name if they or someone who has them as a contact uses Truecaller. Creepy. Truecaller states that the reverse search by name is not possible. This is untrue:

- Mike can search anyone’s name, for instance, an ex-girlfriend he wants to abuse. If she on the Truecaller app, she only has to click accept and all details will be shared. Mike also doesn’t have to use his real name: he can use any name he wants (maybe the name of a relative of this woman)⁹.
- This woman could retaliate and ask all her friends on the Truecaller app to flag Mike as “spam”, inaccurately attributing incorrect personal information to Mike’s number.

We also note that, in some instances, Viceroy name searches across Europe immediately showed the users’ phone numbers.

⁹ For the sake of clarity, no member of Viceroy is named Mike Rotch and no ID was required to create this profile.



2. “We are an Indian Company” - GDPR Analysis

GDPR violation

Viceroy Research have consulted with various GDPR experts on the intricacies of a business model resembling Truecaller. We believe Truecaller **is subject to GDPR**, and in violation of:

- **Article 7** – Conditions for consent.
 - Truecaller does not ask for consent from third party non-users when it processes their data. It instead asks users whether they have informed and obtained the consent of **every contact they upload to Truecaller**.
- **Article 14** – Information to be provided where personal data have not been obtained from the data subject
 - Truecaller does not provide any of the information required to the data subject where their data was not obtained from them directly. Exemptions to this rule (archival purposes, scientific or historical research, statistical research) are not applicable to Truecaller.
- **Article 34** – Communication of a data breach to a subject.
 - We are unable to find any time that Truecaller has discharged their obligations to notify data subject of a data breach. In fact, we are unable to find a single instance where Truecaller has been honest about data breaches even when they were confirmed by third parties through Truecaller’s search function.
 - We are unable to find any instances where Truecaller has notified non-user data subjects that their personal information has been incorrectly publicly displayed without their consent.

Further, by failing to discharge their obligations under Articles 7 and 14, Truecaller is effectively depriving data subjects of their following rights:

- Article 15 – Right of Access
- Article 16 – Right to Rectification
- Article 17 – Right to be Forgotten
- Article 18 – Right to Restriction of Processing

We tested this by adding several identities to Truecaller through a dummy account. None of these identities were informed or even contacted by Truecaller. You, our reader, may be part of the Truecaller database without knowing about it. You may even be marked as spam or under a different name.

These issues came to a head in 2017 when the Article 29 Data Protection Working Party sent a letter to Truecaller about the information of third-party non-users¹⁰.

These are not violations that can be fixed with a patch or privacy policy update. These violations were exactly the fundamental way Truecaller built its database.

Truecaller then moved their servers to India in 2018¹¹, we believe in part to take advantage of lax privacy and data protection laws. Despite moving data centers to India, Viceroy believe Truecaller is still subject to GDPR regulations, and that these regulations apply to *all* Truecaller users.

¹⁰ <https://ec.europa.eu/newsroom/article29/items/610173>

¹¹ <https://www.newindianexpress.com/business/2022/mar/29/bullish-about-indian-business-prospects-viewing-data-protection-law-positively-Truecaller-ceo-2435516.html>



Does GDPR apply?

Viceroy believe Truecaller is a data controller established in the EU under Article 3 of GDPR and bears the relevant responsibilities regardless of their data subjects' location or nationality.

The European Data Protection Board recommends a 3-step approach to determining applicability of GDPR¹²:

3(1) – Establishment within the union.

Truecaller's head office is in Sweden, where it employs staff and therefore qualifies as an establishment. Experts told us that a small office or a branch would suffice, and that in some cases a single employee or agent with enough stability would satisfy the test. The billing of clients in Sweden is inextricably linked to the operational activities of Truecaller (whether in India, or abroad).

3(2) – Processing of personal data carried out “in the context of the activities” of an establishment.

Truecaller collects EU citizens phone numbers and information associated with it and uses this information to provide a service to EU citizen users which constitutes both monitoring EU citizen behavior and offering a service to them.

True Software Scandinavia AB is the billing entity for all Truecaller revenues worldwide and the contracting entity and processor for users in the EEA.

3(3) – Application of the GDPR to the establishment of a controller or a processor in the Union, regardless of whether the processing takes place in the Union or not.

It should be noted that these criteria are not applied in aggregate but individually. By all measurements, Truecaller falls within the criteria for a company subject to GDPR.

Further a guidance document by the EDPB clarifies that Article 3(1) considers “any personal data processing in the context of the activities of an establishment in the Union would fall under the scope of GDPR, regardless of the location and nationality of the data subject whose personal data are being processed.

The text of Article 3(1) does not restrict the application of the GDPR to the processing of personal data of individuals who are in the Union. The EDPB therefore considers that any personal data processing in the context of the activities of an establishment of a controller or processor in the Union would fall under the scope of the GDPR, regardless of the location or the nationality of the data subject whose personal data are being processed. This approach is supported by Recital 14 of the GDPR which states that “[t]he protection afforded by this Regulation should apply to natural persons, whatever their nationality or place of residence, in relation to the processing of their personal data.”

Figure 2 – Guidelines 3/2018 on the territorial scope of the GDPR (Article 3)

We are seeking clarification but it appears that through being a Swedish company Truecaller are responsible for GDPR-compliant treatment of all their customers, not just those in the EEA.

As a Swedish company Truecaller is under the remit of the Swedish Authority for Privacy Protection (Integritetsskyddsmyndigheten). We have sent a copy of this report to the Integritetsskyddsmyndigheten.

¹² https://edpb.europa.eu/sites/default/files/files/file1/edpb_guidelines_3_2018_territorial_scope_en.pdf



3. “We are a Swedish Company” – A Hot Take on Taxes

Immediately after it received a list of concerns from the Article 29 Working Group (**Section 2**), Truecaller moved “100%” of its data centers and substantially all its operations to India to be GDPR “compliant”.

We fully expect Truecaller to respond to our report of GDPR breaches with something like this:

“European Data Protection Board guidelines 3/2018 on the territorial scope of the GDPR Article 3 state that the mere presence of having employees in India is not sufficient to trigger the application of GDPR. For processing in question to fall under GDPR, it must also be carried out in the context of the activities of the EU-based employees.”

The argument Truecaller will no doubt make is that it is first and foremost an Indian company with all respect to operations and R&D. It only maintains billing and other head office activities in Sweden¹³. This has clearly caught the attention of the Royal Bank of India and Truecaller’s auditors.

In 2021: 56% of “average number of employees” and 63% of “new hires” were in India.

Average number of employees	2021	Of whom women, %
Sweden	120	21%
India	155	26%
Total	275	24%
Of whom in the parent company (Sweden):	1	0%

Region	#	%
Sweden	41	37 %
India	70	63 %
Kenya	0	0 %
Total	111	100 %

Figures 3 & 4 – Truecaller Annual Report 2021

Even substantially all Truecaller’s global R&D appears to be done in India (an embarrassing SEK ~20m in 2021).

Income from software development services:

The LLP has an agreement with its controlling partner entity to provide software development services. The LLP bills its controlling partner entity on a cost plus mark-up model for these software development services.

Figure 5 – Truecaller International LLP Annual Report 2021

India is also Truecaller’s biggest market, representing over 70% of users and 78% of revenues as of Q2 2022.

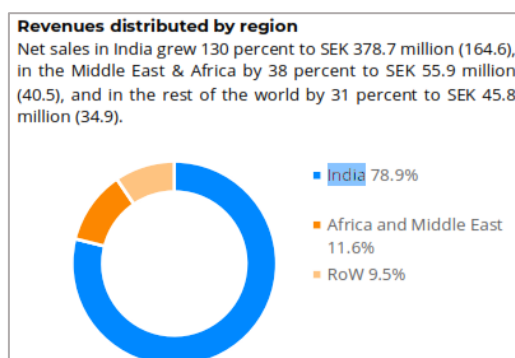


Figure 6 – Truecaller Annual Report 2021

How much tax does Truecaller pay in India? Zero.
This is incompatible with Truecaller’s GDPR stance.

¹³ ICEJ Google Spain case found that activities related to Google Spain’s billing (in Spain) and data processing (outside EU) were inextricably linked, thus subject to GDPR.



A dive into a loss-making Indian subsidiary

Truecaller's Indian Subsidiary, "Truecaller International LLP", has an emphasis of matter in its audit report for 2021, stating that management is "seeking approvals" and "taking steps thereof" under the Reserve Bank of India's guidelines for transfer pricing and GST (VAT). Reading between the lines, Viceroy believe Truecaller are under investigation for tax fraud in India.

21 Contingent liabilities and commitments	
a	As detailed in note 2.1 e, The user subscription fees and advertisement sales pertaining to the Non-EEA Region is collected from the mobile platform owners, net of platform charges, by True Software Scandinavia AB of behalf of the LLP and is redistributed to the LLP and the same is recognised as service income by the LLP.
(i)	The management is in the process of seeking necessary approvals and taking appropriate steps thereof under the Reserve Bank of India ('RBI') guidelines for the aforementioned transactions. The LLP will take necessary steps as required by RBI guidelines to regularise this transaction for the past periods.
(ii)	Further, the management is confident that the services provided by the LLP qualifies as export of services and is in the process of taking necessary steps towards levy of Goods and Service Tax (GST) on reverse charge mechanism on the aforementioned transactions. The LLP will take necessary steps as required by GST laws to regularise this transaction for the past periods.

Figure 7 – Truecaller International LLP Annual Report 2021

Truecaller bills almost all services and ads from Sweden. It does not appear to charge or pay GST, as it classifies ad sales to Indian consumers as an export service. This **includes** ad sales to Indian users by Indian companies. In these respects Truecaller now considers itself a "Swedish Company"¹⁴.

A dive into local Indian accounts show that Truecaller India bills substantially all its revenue from Sweden. However, these bills are not even sufficient to break-even.

b) Secondary business segment	
The LLP's secondary segments are based on geographic distribution of activities. Revenue and assets are specified by location of customers. The following table represents revenue and asset information regarding the LLP's geographical segments.	
Other assets used by the LLP's business or liabilities contracted have not been identified to any reportable geographical segments as the other assets and services are used interchangeably between segments. Refer note 2.1m.	
Secondary segment information	
Segment revenue	(Amount in Rs.)
Sweden	March 31, 2021 1,076,889,627
India	March 31, 2020 702,543,815
Others	163,378,368
Total	60,331,590
	1,300,599,585
	765,058,750

Truecaller International LLP			
LLP Identity Number (LLPIN) - AAK3926			
Statement of Income and Expenditure for the year ended March 31, 2021			
All amounts in Indian Rupees (Rs.), except stated otherwise			
	Notes	March 31, 2021	March 31, 2020
Income			
Revenue from operations	12	1,300,599,585	765,058,750
Other income	13	95,612	29,096
Total income (i)		1,300,695,197	765,087,846
Expenses			
Employee benefit expenses	14	416,356,015	350,200,172
Employee share based payments (including prior period expense of Rs. nil (March 31, 2020: Rs. 244,588,132))	4,20	124,396,948	442,710,921
Hosting charges		392,013,571	267,492,897
SMS and phone verification charges		153,205,700	99,018,079
Advertisement and business promotion expenses		117,841,190	82,321,430
Other expenses	15	211,656,405	143,242,006
Total expenses (ii)		1,415,469,829	1,384,985,505
(Deficit)/surplus before tax (iii) = (i) - (ii) 		(114,774,632)	(619,897,659)

Figures 8 & 9 – Truecaller International LLP Annual Report 2021

Truecaller International's reported loss was SEK 15m, despite itself recording SEK ~15m in profits in the same period.

¹⁴ We note that local advertisement agencies may indeed collect GST on behalf of end users. There is an argument to be made here on competitive nature of this from a basic pricing perspective.



Transfer Pricing Methodology

Currently, **Truecaller prescribes a “cost-plus” method for transfer pricing out of India.** This is a prescribed transfer pricing method but is more commonly used for undifferentiated manufacturing goods with various comparable market prices.

Income from software development services:

The LLP has an agreement with its controlling partner entity to provide software development services. The LLP bills its controlling partner entity on a cost plus mark-up model for these software development services.

Figure 10 – Truecaller International LLP

Viceroy do not believe this method will be accepted by the RBI for the development and operational running costs of Swedish software being sold primarily to the Indian market¹⁵. We highly suspect that this is the underlying reason for the auditor’s EOM in Truecaller International LLP’s financial accounts.

Case studies already exist where Transfer Pricing Officers have disputed cost-plus models from industries trying to abuse Indian cost-plus transfer pricing, and were forced to recognize profits on an appropriate ratio based on the “functional profiles” of international customers and local taxpayer “suppliers”¹⁶.

The effective tax rate in India is ~29%, and income is subject to a further dividend withholding tax of 20%^{17 18}.

Thus, the Catch-22:

- Truecaller is an Indian company when subject to GDPR and conducts almost all its operations in India. It’s transfer pricing method is reserved almost exclusively for undifferentiated services which don’t bear risk.
- Truecaller is a Swedish company when it’s time to lodge its tax filings. It pays taxes almost exclusively in Sweden. This is despite all processing risk and operations being carried out in India.

Viceroy will not place value on possible tax implications given the complexity of transfer pricing guidelines and the tax treaty between Sweden & India. We have high conviction that Truecaller will be subject to far higher tax obligations when properly accounted for.

¹⁵ Readers should research intricacies and various limitations to cost-plus transfer pricing, including how tax agencies view risk-taking activity, and how parties are inextricably linked.

¹⁶ <https://www.pwc.com/gx/en/international-transfer-pricing/assets/india.pdf>

¹⁷ <https://taxsummaries.pwc.com/india/corporate/taxes-on-corporate-income#:~:text=A%20beneficial%20CIT%20rate%20of,from%20tax%20year%202019%2F20.>

¹⁸ <https://taxsummaries.pwc.com/india/corporate/withholding-taxes>



4. Financial Analysis

Revenue Growth One-Off

Truecaller's ad revenues have increased massive since its IPO, completely uncorrelated from user growth. This is because **Truecaller ironically spammed customers with more ads**.

A transcript of a Tegus¹⁹ interview with a former Truecaller employee, sighted by Viceroy, stated the following stated the following:

*"One thing that Truecaller said recently, how they increase their ads per user, right? If you look at the history, in the last couple of years, it seems to have increased, right, the number of use of ads per user...maybe the one thing that's very important to understand...let us say I get a phone call... from a user who is **not** in my address book or my phone book, Truecaller will show a pop-up with some name or whatever...then there would be an advertisement attached to it*

*So, if my mom or dad or somebody else called, then **Truecaller would not have a pop-up** because there is no value to be added because I know who is calling... my phone itself will tell me that my dad is calling.*

***Just before their IPO, they decided to just open it up to everybody, just show [ads] for every call that comes...** that means if I get 10 calls per day, earlier, I might have seen the ad once. But suddenly, I see [ads] 10 times, right, because it's from known people, which means that growth is a onetime thing. It's not sustainable."*

- Tegus Interview (emphasis added)

The Truecaller app advertisements historically were only pushed when unknown numbers called their users. Now ads are pushed to users on every call, including their known contacts. If you block some spam calls, you can't monetize ads on those calls. It's all very ironic.

This created a huge one-time revenue bump driven by a 3-4x increase in user impressions spread across approximately 1 year, with no visible or consistent improvement to impressions monetized. Impressions per-user per-day are now flat/decreasing q/q.

Advertising Analysis - Truecaller		2020				2021				2022	
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Average Daily Active Users		174	178	190	201	211	218	229	239	248	255
qoq change			2%	7%	6%	5%	3%	5%	4%	4%	3%
Advertising revenue	SEKm		111	103	149	146	199	266	339	339	414
qoq change					44%	-2%	37%	34%	28%	0%	22%
Impressions/user/day	n		3	5	7	9	10	11	12	12	12
qoq change				61%	41%	30%	12%	13%	8%	4%	-1%
CPM	SEK	1.18		1.28	1.24	0.89	1.05	1.18	1.34	1.24	1.49

Figure 11 – Advertising Analysis – Viceroy Research

¹⁹ <https://www.tegus.com/>



Somehow exceeding “market opportunity”

To get a sense of how absurd Truecaller’s ad placement has become, it *already exceeded* its total “market opportunity” as identified in its prospectus issued in Q3 2021, by Q2 2021. As of Q2 2022, Truecaller’s annualized impressions have flatlined around 1,100 billion:

Advertising Analysis - Truecaller		2020		2021				2022	
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Advertising revenue	SEKm	103	149	146	199	266	339	339	414
CPM	SEK	1.28	1.24	0.89	1.05	1.18	1.34	1.24	1.49
Impressions annualized	billions	323	480	654	757	901	1,012	1,093	1,112

Truecaller has high-value inventory that serves over 10,000 advertisers on its app, including marquee advertisers like Spotify, Disney+ Hotstar, Vivo, ZEE5 and Flipkart, who leverage Truecaller’s platform to broaden their reach. In 2020, Truecaller had over 294 billion total annual impressions monetized (approximately 4.3 daily impressions per DAU) at a CPM of SEK 1.23. Truecaller believes the market opportunity is as many as 700-725 billion impressions annually.

Figures 12 & 1314 – Viceroy Analysis and Truecaller Prospectusm respectively

Readers can also observe that increases in CPM are negatively correlated with impression growth. Viceroy believe growth has or will plateau over the coming 12 months, data protection issues aside.

Premium userbase falling

Truecaller’s premium subscriber counts appear to be falling as raw user counts are increasing. We can determine premium user numbers through the following equation.

$$\frac{\text{Quarterly Premium User Revenue}}{\text{Monthly Premium User ARPU} \times 3} = \text{User Count}$$

Premium User Analysis - Truecaller		2020		2021				2022	
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
ARPU per premium subscriber	SEK/mth	8.1	8.1	7.4	7.6	8.8	8.4	8.1	8.7
India	SEK/mth	5.0	4.9	4.1	4.3	6.1	5.4	4.5	5.2
MEA	SEK/mth	10.7	10.8	10.0	9.9	10.0	9.9	10.1	10.6
Rest of world	SEK/mth	13.9	13.5	12.7	12.1	11.9	11.6	11.8	12.5
Premium user revenue		31.0	33.3	34.0	34.5	35.0	35.6	38.9	41.4
Premium subscribers		1,275,720	1,373,762	1,533,604	1,521,164	1,322,751	1,407,671	1,610,766	1,582,569
Est. premium user penetration		0.67%	0.68%	0.73%	0.70%	0.58%	0.59%	0.65%	0.62%

Figure 15 – Premium User Analysis – Viceroy Research

Truecaller claims premium growth has been stumped due to a Google dispute with the Royal Bank of India which has temporarily disallowed subscription auto-renewals. The reality remains that Truecaller’s revenue growth from premium customers can be largely attributed to pricing increases.

Interviews with former employees did not corroborate management’s views on premium subscriber growth. A Tegus interview with a former Truecaller employee, sighted by Viceroy, stated the following:

“So, the thing is subscriptions, again, approximately, again you can check it from their prospectus, but there were about 1m to 1.5m subscribers paying about, I don't know, \$2 a month or something like that, right? So probably even lesser because in India, it is about \$0.50 a month approximately. **But that is a stagnant business. It is not growing since the last couple of years.**”

- Tegus Interview (emphasis added)



No skin in the game

Don't be fooled: Truecaller management is laughing all the way to the bank. Management and early investors have taken every opportunity available to offload as much stock as possible. A non-exhaustive list of enormous placements follows:

The Truecaller IPO comprised of only 19m newly issued B-shares against 34m B-shares sold by existing shareholders, including the company's founders and venture capitalists.

- The price in the Offering has been set at SEK 52 per Class B share, corresponding to a market capitalization of approximately SEK 19,431 upon completion of the Offering.
- The Offering comprised 53,414,532 Class B shares, of which 19,230,770 are newly issued Class B shares and 34,183,762 Class B shares sold by certain existing shareholders, including among others the Company's founders Alan Mamedì and Nami Zarringhalam, Sequoia Capital India, Atomico, Kleiner Perkins and certain companies[1] structured to manage long-term incentive programs for the Company's employees.

Figure 16 – Truecaller IPO brief²⁰

Major early backers Sequoia, Kleiner Perkins & Atomico sold a further 21 million B-shares on 17 May 2022:

Stockholm, 17 May 2022

Sale of B-shares in Truecaller AB (publ)

Atomico¹, Kleiner Perkins² and Sequoia Capital India³ have sold 21 million existing B-shares in Truecaller AB (publ) ("Truecaller") through an accelerated book-building to Swedish and international institutional investors at a price of SEK 61.2 per share (the "Share Sale").

Figure 17 – Press Release Sale of B Shares by major backers²¹

Atomico sold the remainder of its position earlier this month: 5 September 2022

Stockholm, 5 Sep 2022

Sale of B-shares in Truecaller AB (publ)

Atomico¹ has sold its entire remaining stake of 8,226,738 B-shares in Truecaller AB (publ) ("Truecaller") to a limited number of long only Nordic and international institutional investors (the "Share Sale"). The Share Sale represents approximately 2.2% of the total number of shares outstanding in Truecaller.

Figure 18 – Press Release Sale of B Shares by Atomico²²

Sequoia remains Truecaller's largest shareholder and a part of the company's board, but the existence of directors' A-shares dilutes Sequoia's ~20% financial interest to little over 8% voting rights:

Name	Num. of shares	Change	Capital	Votes	Verified
Sequoia Capital	63,521,491	-712,788	16.76%	7.99%	2022-08-29
Nami Zarringhalam	27,185,487	0	7.17%	29.90%	2022-08-29
Alan Mamedì	27,185,487	0	7.17%	29.90%	2022-08-29

Figure 19 – Truecaller's top shareholders as of 27 Sep 2022²³

It largely appears as though major backers are losing interest. Buyer beware.

²⁰ <https://www.aktiespararna.se/analysguiden/nyheter/truecaller-ab-offering-price-truecallers-initial-public-offering-has-been-set-sek-52-class-b>

²¹ <https://news.cision.com/carnegie/r/sale-of-b-shares-in-truecaller-ab--publ-.c3569268>

²² <https://news.cision.com/se/carnegie/r/sale-of-b-shares-in-truecaller-ab--publ-.c3626238>

²³ <https://corporate.truecaller.com/investors/the-share>



Indian Auditors: SR Batliboi

Truecaller's local Indian auditor has received the largest fine handed to auditors in India's history for its audits of Axis Bank and Yes Bank.

RBI bars EY group's Batliboi from auditing bank books for one year

The central bank says it found lapses in the books of banks audited by the firm

Topics

Sr Batliboi | Reserve Bank Of India | Audit Firms

Figure 20 – RBI bars EY group Batliboi from auditing bank books for one year- Business Standard²⁴

SR Batliboi was also the local auditor for some of Wirecard's Indian subsidiaries.

We note that SR Batliboi cited 'inability to continue' for the Star Global audit on 12 July 2017. SR Batliboi also signed for Visa Processing Services (Wirecard India) on 26 September 2016.

The firm was also found prima facie guilty by the Institute of Chartered Accountants of India for its audit of Infrastructure Leasing and Financial Services²⁵.

Source: Company Filings (www.mca.gov.in)

Changes of auditors after takeovers are not unusual however, and Wirecard should naturally want to align audit in India to the E&Y affiliate; SR Batliboi. SR Batliboi is a JV (of Ernst & Young and S.R. Batliboi). E&Y lists 12 firms & affiliates in India at 05 January 2018. However, SR Batliboi only audited Visa Processing Services and another Wirecard business for one year (Star Global), in India.

We already noted that SR Batliboi cited 'inability to continue' for the Star Global audit on 12 July 2017. SR Batliboi was in place on Visa Processing Services (Wirecard India) for signing on 26 September 2016.

Figure 21 – Extract from The Analyst report on Wirecard²⁶

Enough said.

²⁴ https://www.business-standard.com/article/companies/rbi-bars-ey-group-s-batliboi-from-auditing-bank-books-for-one-year-119060301662_1.html

²⁵ <https://www.taxscan.in/ica-i-lfs-auditors-guilty-professional-misconduct/31368/>

²⁶ https://d1o32tunh0h64a.cloudfront.net/6465/Wirecard---Audits-and-Revenue-Recognition-Concern-14-02-2019_FINAL-VERSION.pdf



5. Privacy concerns & third-party policy breaches

Google Privacy Policy Violation

Viceroy believes that Truecaller is in violation of Google's Privacy Policy. Google's privacy policy states, "We don't allow unauthorized publishing or disclosure of people's non-public contacts." and has remained unchanged since at least 2016²⁷.

Your app handles non-public phonebook or contact information	We don't allow unauthorized publishing or disclosure of people's non-public contacts.
--	---

Figure 22 Google User Data Guidelines

Without re-exploring GDPR and limitations already placed on play-store downloads: Truecaller uploads entire contact books of Truecaller pre-installed phones & from APK website downloads. These contacts are searchable without the consent of non-users. We know: **Viceroy have conducted several successful searches of non-user Indian friends who actively appear on Truecaller's contact book.**

Former employees confirmed that the Truecaller app downloaded from the Google Play store does not scrape contact book data.

However: former employees also advised that Truecaller have ingeniously (sarcasm) bypassed Google Play's policy by enticing users to sign into their accounts via web browser through their Google accounts where "Enhanced Search" feature is auto-clicked "on". Truecaller allegedly believes this is not a breach of the Play Store's privacy policy.

Figure 23 – Sign-In Landing Page snippet – 27 Sep 2022²⁸

²⁷ <https://support.google.com/googleplay/android-developer/answer/10144311?hl=en>

The above site was indexed by google on June 15, 2016

²⁸ <https://www.truecaller.com/auth/sign-in>



Viceroy believe Truecaller has also intentionally misconstrued “publishing and disclosure” with “searchability” in its Google Play Store privacy notice:

Your data stays safe with us.

Truecaller does not upload phonebooks to make them **searchable** or public from Google Play or Apple App Store downloads. We strictly follow the Google Play & Apple App Store guidelines, which prohibit any app from doing so.

Figure 24 – How Truecaller’s Caller ID Works – Your Questions Answered²⁹

To be clear: Truecaller non-users are searchable on the Truecaller App downloaded from the Play Store, thus disclosing people’s non-public contacts from Truecaller’s historic data and direct-install users. This will only continue as the company pursues pre-installed versions as a bridgehead into newer markets³⁰.

Truecaller’s publicly searchable numbers have already been used to perpetrate the very scams it claims to stop with perpetrators using Truecaller’s number search to find targets to contact on WhatsApp and ask for funds.

“These impersonation attacks use open source intelligence like TrueCaller,” said Ajit Hatti, who works in cybersecurity. “The address book of TrueCaller’s users is public. Cyber criminals use it to find the owner of a phone number. Once that name is identified, they use a person’s social media accounts to learn more about their personal and professional lives, which helps them target that individual.”

Figure 25 – The world of WhatsApp impersonation scams - newslaundry³¹

Truecaller’s prospectus states that it had approximately 5.7b consumer and business identities and that the company, far exceeding the number of users.

Truecaller’s comprehensive reach built over the 12 years since its founding has enabled it to develop a unique data asset. With approximately 5.7 billion consumer and business phone numbers identified, Truecaller’s massive database of identified phone numbers (“**identities**”) built by the community and

Figure 26 – Truecaller prospectus

²⁹ <https://www.Truecaller.com/blog/features/how-Truecallers-caller-id-works-your-questions-answered>

³⁰ <https://timesofindia.indiatimes.com/gadgets-news/android-phones-may-soon-come-preloaded-with-Truecaller-app-in-these-countries/articleshow/89423906.cms>

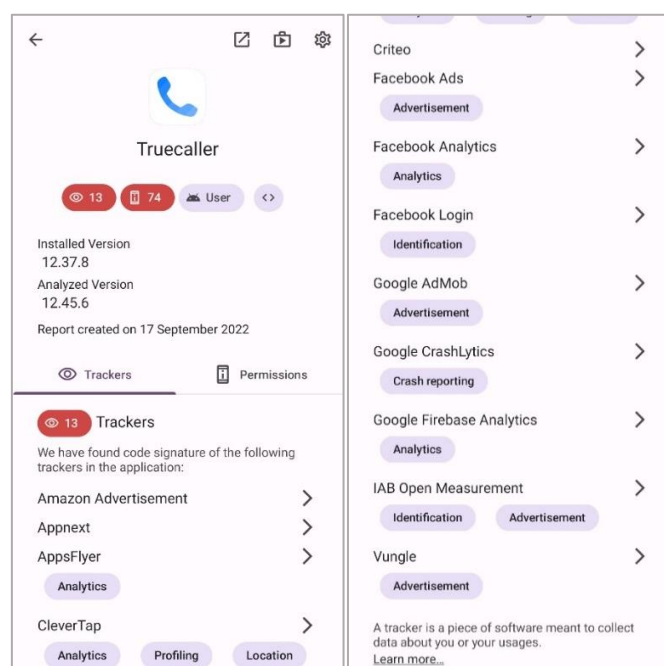
³¹ <https://www.newslaundry.com/2022/09/16/the-world-of-whatsapp-impersonation-scams-using-the-identities-of-the-rich-and-powerful>



Unnecessary levels of access

Truecaller's website features a page called "permissions required at the time of registering your number on Truecaller"³². This list is already extremely invasive; however, Viceroy's own checks show many more permissions are sought, and many trackers active in order to sell you advertisements.

Trackers



Figures 27 & 28 – Exodus Privacy Truecaller **Tracker** Report – Sample dated 17 Sep 2022

We make note that several of these third-party trackers do not appear on Truecaller's disclosed list of third-party data processors:

- Amazon is not a listed third-party data processor in any advertising or marketing category.
- Vungle, or its parent company Chartboost, is not a listed third-party data processor in any advertising or marketing category.

Another persistent concern notably raised in The Caravan investigation into Truecaller is the app's ability to read SMS messages to build a full financial profile of the user³³. A former employee confirmed that the company's algorithm can read SMS messages, which the company denies.

Advertising To provide advertising to the users (subject to user consent in the app and third-party platforms)	Google Asia Pacific Pte. Ltd.; Facebook Ireland Limited; Twitter International Company; Rubicon Project Inc.; InMobi Technology Services Pvt. Ltd.; Outbrain Inc.; OpenX Software Limited; Pubmatic Inc.; Smaato Inc.; Dan Ads International AB; Appnext; Times /Columbia; Criteo; Chocolate Platform; Adsolut; IndexExchange
Communications or marketing To provide users who have opted to provide their email address with information about Truecaller including changes to policies and features or selected offers from third parties (where users have consented to special offers and promotions in the Privacy Centre).	SendGrid Inc.; CleverTap; NetCore

Figures 29 & 30 – Extract from Truecaller "List of third-party data providers" – 21 Sep 2021³⁴

³² <https://support.Truecaller.com/support/solutions/articles/81000392522-permissions-required-at-the-time-of-registering-your-number-on-Truecaller>

³³ <https://caravanmagazine.in/technology/Truecaller-data-consent-india-privacy-laws>

³⁴ <https://www.Truecaller.com/third-party-data-processors>



Permissions

<p>74 Permissions</p> <p>We have found the following permissions in the application:</p> <p>ACCESS_COARSE_LOCATION Access approximate location only in the foreground</p> <p>ACCESS_FINE_LOCATION Access precise location only in the foreground</p> <p>ACCESS_NETWORK_STATE View network connections</p> <p>ACCESS_NOTIFICATION_POLICY Access Do Not Disturb</p> <p>ACCESS_WIFI_STATE View Wi-Fi connections</p> <p>ACTION_HANDLER Com.truecaller.permission.ACTION_HANDLER</p> <p>ANSWER_PHONE_CALLS Answer phone calls</p> <p>AUTHENTICATE_ACCOUNTS Android.permission.AUTHENTICATE_ACCOUNTS</p> <p>BADGE_COUNT_READ Me.everything.badger.permission.BADGE_COUNT_READ</p> <p>BADGE_COUNT_WRITE Me.everything.badger.permission.BADGE_COUNT_WRITE</p> <p>BIND_NOTIFICATION_LISTENER_SERVICE Android.permission.BIND_NOTIFICATION_LISTENER_SERVICE</p>	<p>BLUETOOTH Pair with Bluetooth devices</p> <p>BLUETOOTH_CONNECT Android.permission.BLUETOOTH_CONNECT</p> <p>BLUETOOTH_SCAN Android.permission.BLUETOOTH_SCAN</p> <p>BROADCAST_BADGE Com.sonymobile.home.permission.BROADCAST_BADGE</p> <p>CALL_PHONE Directly call phone numbers</p> <p>CAMERA Take pictures and videos</p> <p>CHANGE_BADGE Com.huawei.android.launcher.permission.CHANGE_BADGE</p> <p>CHANGE_NETWORK_STATE Change network connectivity</p> <p>CROP Com.miui.mediaeditor.permission.CROP</p> <p>DISABLE_KEYGUARD Disable your screen lock</p> <p>EDIT_PROFILE Com.truecaller.permission.EDIT_PROFILE</p> <p>ENHANCED_NOTIFICATION Com.truecaller.permission.ENHANCED_NOTIFICATION</p> <p>FOREGROUND_SERVICE Run foreground service</p>	<p>GET_ACCOUNTS Find accounts on the device</p> <p>INSTALL_SHORTCUT Install shortcuts</p> <p>INTERNET Have full network access</p> <p>MANAGE_ACCOUNTS Android.permission.MANAGE_ACCOUNTS</p> <p>MANAGE_OWN_CALLS Route calls through the system</p> <p>MMS_SEND_OUTBOX_MSG Android.permission.MMS_SEND_OUTBOX_MSG</p> <p>MODIFY_AUDIO_SETTINGS Change your audio settings</p> <p>PROCESS_OUTGOING_CALLS Reroute outgoing calls</p> <p>PROVIDER_INSERT_BADGE Com.sonymobile.home.permission.PROVIDER_INSERT_BADGE</p> <p>READ Com.sec.android.provider.badge.permission.READ</p> <p>read_account_state Com.truecaller.permission.sdk.internal.read_account_state</p> <p>READ_APP_BADGE Android.permission.READ_APP_BADGE</p> <p>READ_CALL_LOG Read call log</p>
<p>READ_CALL_LOG Read call log</p> <p>READ_CONTACTS Read your contacts</p> <p>READ_EXTERNAL_STORAGE Read the contents of your shared storage</p> <p>READ_PHONE_NUMBERS Read phone numbers</p> <p>READ_PHONE_STATE Read phone status and identity</p> <p>READ_PROFILE Android.permission.READ_PROFILE</p> <p>READ_SETTINGS Com.htc.launcher.permission.READ_SETTINGS</p> <p>READ_SETTINGS Com.huawei.android.launcher.permission.READ_SETTINGS</p> <p>READ_SETTINGS Com.oppo.launcher.permission.READ_SETTINGS</p> <p>READ_SMS Read your text messages (SMS or MMS)</p> <p>RECEIVE Receive data from Internet</p> <p>RECEIVE_BOOT_COMPLETED Run at startup</p> <p>RECEIVE_MMS Receive text messages (MMS)</p> <p>RECEIVE_SMS</p>	<p>USE_FULL_SCREEN_INTENT Android.permission.USE_FULL_SCREEN_INTENT</p> <p>USE_NUMBER_SERVICE Com.truecaller.permission.USE_NUMBER_SERVICE</p> <p>VIBRATE Control vibration</p> <p>WAKE_LOCK Prevent phone from sleeping</p> <p>WRITE Com.sec.android.provider.badge.permission.WRITE</p> <p>WRITE_CALL_LOG Write call log</p> <p>WRITE_CONTACTS Modify your contacts</p> <p>WRITE_EXTERNAL_STORAGE Modify or delete the contents of your shared storage</p> <p>WRITE_SETTINGS Modify system settings</p> <p>WRITE_SETTINGS Com.huawei.android.launcher.permission.WRITE_SETTINGS</p> <p>WRITE_SETTINGS Com.oppo.launcher.permission.WRITE_SETTINGS</p> <p>WRITE_SMS Android.permission.WRITE_SMS</p> <p>The icon 1 indicates a 'Dangerous' or 'Special' level according to Google's protection levels. Learn more</p>	

Figures 31, 32, 33, 34 & 35 – Exodus Privacy Truecaller **Tracker** Report – Sample dated 17 Sep 2022

- Location data is shared to Truecaller, who claim that it is to “share location via SMS/Chat or Flash” and to “regionalize the top spammer list”. This is laughable. Truecaller does not disclose that location is shared to third party marketing agencies to sell user advertisements.
- Truecaller accessed users’ network locations, wifi, and network states. This is not disclosed in their “permissions” page.

Truecaller claims it on its “permissions” page that Contact book access is needed to know if callers are in users’ contact books to show caller ID. It fails to mention that in many countries your data is used to fill their database.

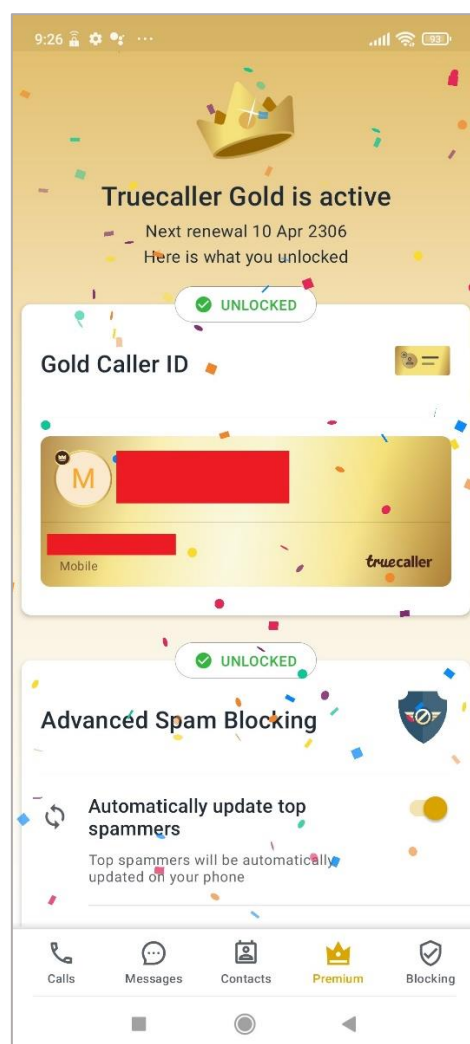
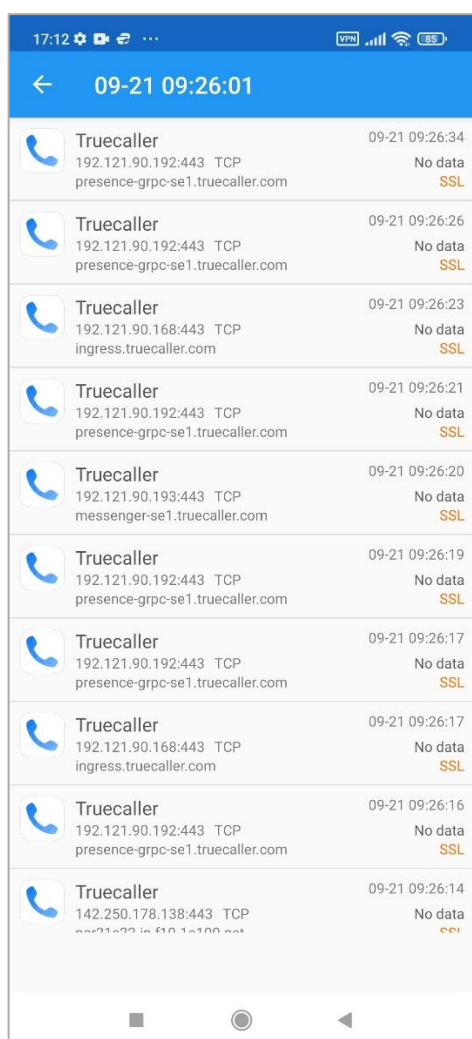


Bootleg copies

For an app that claims to be all about privacy and security the Truecaller app appears to be remarkably unsecure. Despite the high-tech impression of the Truecaller app, there are literally hundreds of listings for downloading the premium or gold bootleg or “cracked” versions of the app on most torrent or .apk download sites.

This is concerning as it shows that the Truecaller app has been compromised, and has been for some time, likely through exploiting its license verification code.

Viceroy confirmed these cracked versions can communicate with Truecaller servers and appear as legitimate Truecaller Gold service users. We used an account registered on the official Truecaller website (Mike Rotch, mentioned above) and were able to log in without issue and were able to call other Truecaller numbers.



Figures 36 & 37 – Truecaller Packet capture and Truecaller Premium page on cracked app

Experts contacted by Viceroy stated that it would be fairly easy to modify these cracked versions to extract Truecaller’s entire database. While the app seemed to restrict searches after a period of intense searching, a simple reinstallation seemed to reset our connection.

Further the number of versions that have been cracked and the timespan implies these vulnerabilities have existed since 2016: over 300 versions of the app were found on one site alone.



Security Breaches

Truecaller has been hacked several times in the past. This is a non-exhaustive list:

The SEA

In 2013 the Syrian Electronic Army, a group of Syrian hackers backing the Assad regime hacked into Truecaller's website and claimed to have downloaded more than seven Truecaller databases with data worth 450GB. The SEA claimed it was able to exploit the website as it was based on an outdated wordpress platform and later published the database host ID, username and password³⁵.

Cheetah Mobile Security Research Lab

In 2016 Cheetah Mobile Security Research Lab discovered that Truecaller only used a user's IMEI number to authenticate users. The IMEI code allowed them to retrieve user details as well as modify account settings, add other users to block lists and delete block lists. It was also possible to write scripts to query random IMEI codes to find user details³⁶.

The Economic Times Report

In May 2019 a researcher reported that the mobile numbers and other user information of 300m Indian Truecaller users was for sale on the dark web. A spokesperson for Truecaller suggested that the data was obtained from within the app, corroborating our view that cracked versions of the app are a serious danger.

A spokesperson for Truecaller, tells ISMG: "The categories of data presented to us by the Economic Times correspond to data fields that our users make available for search in our app. The majority of the data that we analyzed did not match our systems. We believe that it is possible that some malicious users have been abusing their Truecaller account in contravention of our terms of service to collect phone numbers."

Figure 38 – Data Leaked for 300 Million Truecaller Users³⁷

The data from the leak resurfaced in May 2020 when cyber risk firm Cyble identified a reputable seller selling the records of 47.5m Indian Truecaller records for only USD1,000³⁸.

POC Malicious Link

In November 2019 another researcher found a design flaw that allowed users to insert a malicious link in place of a profile picture to target attacks on other users viewing their profile³⁹.

³⁵ <https://timesofindia.indiatimes.com/tech-news/Truecaller-hacked-1-million-indians-data-at-risk/articleshow/21144470.cms>

³⁶ <https://news.softpedia.com/news/flaw-in-Truecaller-android-app-leaves-data-of-millions-of-users-exposed-502263.shtml>

³⁷ <https://www.bankinfosecurity.asia/researcher-data-leaked-for-300-million-Truecaller-users-a-12519>

³⁸ <https://blog.cyble.com/2020/05/26/47-5-million-indian-Truecaller-records-on-sale-for-only-1000/>

³⁹ <https://www.forbes.com/sites/zakdoffman/2019/11/24/critical-flaw-in-android-ios-phone-app-left-150-million-users-at-risk/?sh=6c54ef381ec0>



The Angry Wizard

A 2019 report by a developer by the name of AngryWizard claimed that Truecaller's data was transmitted to external servers without user consent and that this data was easily accessible due to the method with which it was uploaded.⁴⁰

The report went on to claim that they were able to pull 30,000 contacts and names of scammers. At the time public and requiring no authentication, AngryWizard claimed they had access to over 10m identities⁴¹. They were also able to pull information on Truecaller users and non-users with their phone numbers.

Angry Wizard also claimed the data was uploaded via GET, with screenshots to match:

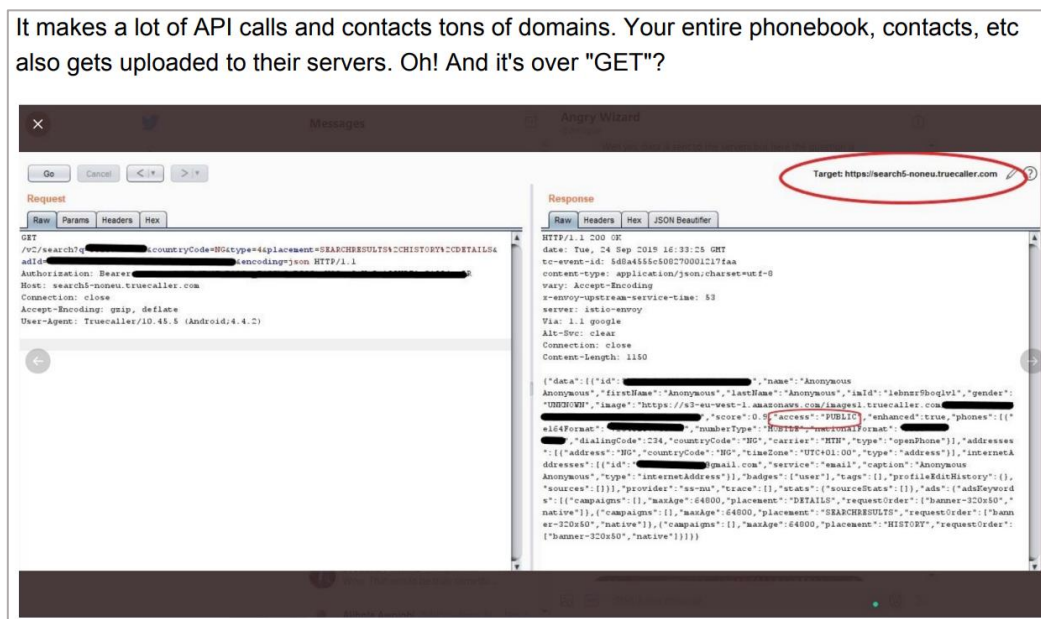


Figure 39 AngryWizard report on Truecaller

Basically, anyone could pull entire data of all user uploads. Techpoint Africa reached out to Angry Wizard to test this:

"The spam data is a community spam list, which is accessible to all our users and does not require the owner of the phone number to accept any terms," he adds.

To double-check these claims, on December 5, we sent two mobile numbers to the Wizard: one of a Truecaller user, and the other belonging to a non-Truecaller user and surprisingly, he sent back URLs containing information of both numbers.

A day or two after, the links stopped working, so we briefly thought Truecaller had fixed the issue. But last week Friday, we received another link containing the same information from both numbers.

Figure 40 – What exactly does Truecaller do with your data? – Techpoint Africa

It is important to note that contact data pulled by Angry Wizard included European numbers. This vulnerability was exposed in 2019: after the implementation of GDPR. Viceroy are unable to ascertain if this is still an active breach, but would very much like to hear from the Angry Wizard.

⁴⁰ <https://web.archive.org/web/20210204184354/https://techpoint.africa/wp-content/uploads/2019/12/Angry-Wizards-Truecaller-Explanation.pdf>

⁴¹ <https://techpoint.africa/2019/12/18/Truecaller-data-developer-dive>



The “Guardians”

In 2021 Truecaller launched Guardians, designed to share a user’s location and other information with contacts for their safety. The app launched with a vulnerability that allowed malicious actors to log in to any account with their phone number and take over the account⁴². The bug allowed malicious actors to view family member details including live locations.

In response the company said the issue was due to a development configuration being rolled out by mistake.

We don’t doubt that more vulnerabilities will be discovered and that Truecaller’s cavalier approach to security is one reason the Indian government is looking at building its own alternative.

The Caravan Article

On March 9, 2022, Indian Investigative Journal “The Caravan” published a fantastic in-depth report on Truecaller’s invasive app and interviewed several concerned employees on exactly how much data the company was able to access⁴³.

Former employees claimed that Truecaller had access to user SMS messages and was able to build out a financial profile of each individual. In India most banking and transaction confirmations are done through SMS which Truecaller’s algorithm can read.

Truecaller denies that any SMS data is processed on its servers and that all SMS filtering is done locally, nonetheless in 2019 a bug automatically created Unified Payments Interface accounts with ICICI bank for many Truecaller users.

Public Interest Litigation

A PIL case in the Bombay High Court against Truecaller appears to be going forward. The PIL alleged a breach of data privacy of the cell phone users related to Truecaller’s Unified Payment Interface failure⁴⁴.

Spy Agency Must-Haves

On November 10, 2020 Privacy International reported that leaked training slides from the European Union Agency for Law Enforcement Training showed that government spy agencies were being recommended Truecaller as a method for identifying phone numbers.

A session provided in Montenegro also seems to promote the use of TrueCaller – an app that ostensibly allows users to identify phone numbers so they can filter out calls, even if it is from a number they have never encountered before, but which can also be utilised to identify people who have been uploaded to the TrueCaller database.

Figure 41 – Revealed: The EU Training Regime Teaching Neighbours How to Spy – Privacy International

⁴² <https://thenextweb.com/news/Truecallers-guardian-app-fixes-bug-that-let-hackers-secretly-track-your-family>

⁴³ <https://caravanmagazine.in/technology/truecaller-data-consent-india-privacy-laws>

⁴⁴ <https://timesofindia.indiatimes.com/business/india-business/bombay-hc-issues-notice-to-govt-npci-in-a-pil-over-truecaller-app/articleshow/84213800.cms>



6. Competitive environments

Truecaller faces a deteriorating competitive environment as larger players encroach on its territory.

Government solutions

On September 17th it was reported that the Telecom Regulatory Authority of India's caller ID feature would "show KYC-based names on the user's phone"⁴⁵, meaning instead of a Truecaller profiles identity, it would be the callers real identity. TRAI's consultation paper, a TRAI official said, would be released within a month.

The new Draft Indian Telecommunication Bill 2022 also makes provisions for a government-owned alternative to Truecaller.

(2) The Central Government may prescribe the measures for protection of users from specified messages. Such measures may include measures relating to:

- (a) the prior consent of users for receiving certain messages or class of messages;
- (b) the preparation and maintenance of one or more registers, to be called as "Do Not Disturb" register, to ensure that users do not receive specified messages without prior consent; or
- (c) the mechanism to enable users to report specified messages received in contravention of this Section.

62. Every telecom user wishes to know who is calling. This will help in preventing cyber-frauds done using telecom services. Therefore, provisions related to identity have been included in the Bill at relevant places.

63. Users also need protection from calls that they want to avoid. The Bill enables a legal framework for preventing harassment of users from unsolicited calls and messages.

Figures 42 & 43 – Draft Indian Telecommunication Bill 2022 and Explanatory Notes

Further to snippets below, the bill makes now makes spamming an arrestable offence. Viceroy believe this will be a further significant deterrent to spammers. Less spam calls is bad for Truecaller business.

Despite what Truecaller claims, we believe that the Indian government has every intention of supplanting it in its key market with a state-owned solution. The draft bill reading like a Truecaller design brief only reinforces our view.

⁴⁵ <https://www.newindianexpress.com/business/2022/sep/17/traï-to-bring-out-consultation-paper-on-Truecaller-like-id-feature-within-month-2499023.html>



Original Equipment Manufacturers

Original Equipment Manufacturers (OEMs) have started rolling out their own spam and call filters.

Google's Android operating system now comes with caller ID and spam protection as standard on most compatible android devices. These are inbuilt to the Google dialer⁴⁶ which comes as the preset dialer application for most android devices. Xiaomi, vivo, realme and oppo phones all come with Google dialers pre-installed. Truecaller has attempted to work around this through preloading the app on phones (referred to as preloads) but only has a 50% activation rate.

Samsung's dialer which comes as the preset dialer for its phones also has the Smart Call caller ID and spam protection with the option to activate Hiya, a Truecaller competitor service, for further protection. Originally rolled out in North America and Europe, the feature is now available in India⁴⁷.

The iPhone Issue

Something widely acknowledged in Apple App store reviews of Truecaller is that the app just doesn't work. This is due to Apple OS effectively locking Truecaller and other third parties out of the access required. A recent iOS rebuild was meant to improve performance on iPhones through Apple's CallKit API but this seems to have failed with reviews since the update remaining overwhelmingly negative⁴⁸.

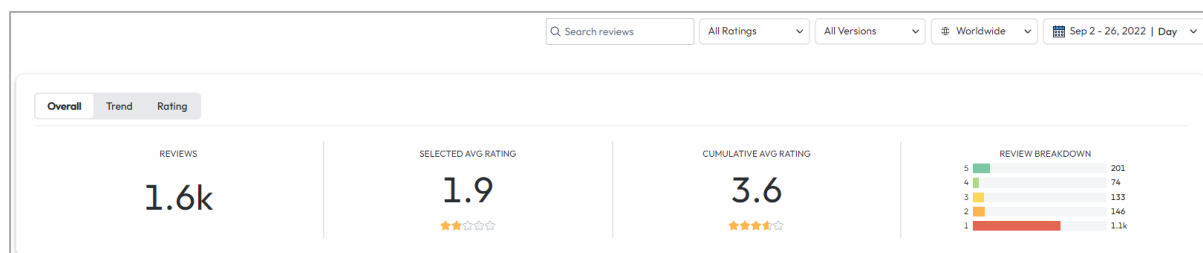


Figure 44 – data.ai Truecaller Apple App store ratings data from September 2, 2022 to September 26, 2022

Former Truecaller employees noted that many who can afford Truecaller premium are moving to iPhones, but iPhone live access to Truecaller is hampered by Apple's privacy protections:

"On iPhones, there's no way you are the third party to get [live spam number data]. So that means that blocking a call as soon as it comes in is really hard unless Truecaller goes and says, okay, here are the list of spam numbers. So what happens is that has to be stored on the phone and only those can be blocked real time.

All the others, the new spam numbers are such that will not get blocked automatically because that's not stored on your phone as a spam number, right? So when you get a call and then you realize that, okay, and then you search Truecaller, this happens to me all the time, I search Truecaller, then I find that, oh, this was a spam number."

- Tegus Interview (emphasis added)

As stated above, we believe Truecaller's user lookup functionality is in violation of Google's privacy guidelines, while Google has historically been slow to adjust, we believe they are already moving in this direction with their recent ban on call recording and the effect it had on Truecaller's functionality⁴⁹.

⁴⁶ <https://play.google.com/store/apps/details?id=com.google.android.dialer&hl=en&gl=US>

⁴⁷ <https://www.samsung.com/in/apps/smart-call/>

⁴⁸ <https://www.Truecaller.com/blog/features/Truecaller-for-iphone-revamped>

⁴⁹ <https://www.indiatoday.in/technology/news/story/Truecaller-no-longer-offers-call-recording-feature-here-is-how-to-auto-record-calls-1948224-2022-05-11>



Over-the-top services

Over-the-top services such as WhatsApp, are posing a greater threat to Truecaller through offering an alternative spam-free communication channel. Call blocking is set on by default unless a user has the caller registered as a contact. Former employees expressed a view that it would be impossible for Truecaller to supplant Whatsapp in India, or for the government to restrict Whatsapp.

A transcript of a Tegus⁵⁰ interview with a former Truecaller employee, sighted by Viceroy, stated the following stated the following:

“I mean, totally, the typical Indian user, right? They're not sophisticated, not technical, but they know to use an app or two, right? And they are moving from phone app to WhatsApp. I mean, it's just in the last two years that this happened, like two, three years when data became cheap to almost free in India, right? It's extremely cheap right now in India to get the gigabytes of data per day. So, everybody is going to WhatsApp because of the seamless way you can communicate with attachments and so on. And in WhatsApp, you cannot get spams, right, because WhatsApp is very strict about regulating their platform, right?”

So, people are moving like crazy to WhatsApp, and I agree with you. It's one of the biggest threats to Truecaller, just like you have all these legal challenges, but I also think the behavior of users to moving to WhatsApp. Earlier, there were other messengers like Hike and LINE, but those have gone away now.

It's only WhatsApp. It's like really ruling the Indian market, and it's getting stronger by the year. Like everybody who downloads a phone earlier might have downloaded Truecaller as one of the first few apps, but now it has completely shifted to WhatsApp, right?

- Tegus Interview (emphasis added)

India is the world's largest WhatsApp market by far, with 487m users.

In Brazil, WhatsApp has integrated many business functions with tech players and is a largely ubiquitous app. These services are due to arrive in India in the short term and will deteriorate Truecaller's aspirations to become a serious B2B player.

JioMart comes to WhatsApp; Zomato clarifies Eternal rebrand

Published on 29 Aug, 2022

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More than two years after Meta picked up a 9.99% stake in Reliance's Jio Platforms for Rs 43,574 crore, the two companies have announced that users in India will soon be able to browse and buy groceries from JioMart without leaving WhatsApp. It's the first end-to-end shopping experience on the popular messaging app anywhere in the world, Meta CEO Mark Zuckerberg said.

Figure 45 – JioMart comes to WhatsApp⁵¹

⁵⁰ <https://www.tegus.com/>

⁵¹ <https://economictimes.indiatimes.com/tech/newsletters/tech-top-5/jiomart-comes-to-whatsapp-byjus-receives-clean-fy21-audit/articleshow/93858982.cms?from=mdr>



Truecaller spent USD ~\$2m on R&D in 2021.

7. Conclusion

Viceroy believe Truecaller have evolved from many different failed shapes on something that finally makes money. Unfortunately, this shape appears to be non-compliant.

We do not assign a target price to Truecaller but believe there is significant short & medium term downside as the app becomes redundant and regulatory breaches are enforced.

Viceroy Research is short Truecaller.



8. Appendix

Europe

Effective May 25, 2018, General Data Protection Regulation (GDPR) went into effect in the European Economic Area (EEA)⁵². Truecaller's EU policy unequivocally states that:

"We do not: store or share any personal information of contacts from Your address book...provide reverse number look up of contacts from Your address book"

BRIEF SUMMARY:

In simple terms:

We process Your profile data (name, phone number etc.) and information about Your activity on the Truecaller application including device information, IP address and location to provide, improve, analyze and personalize the Services for You. We have enhanced our privacy center to provide You with more ability to access and control Your data.

Subject always to obtaining your prior consent, we may:

- provide your information to third parties (such as Google and advertising networks) to serve more relevant advertisements or special offers and promotions to You
- provide Your availability status to other Users
- allow other Users, at Your option, to either obtain your contact details or send a message to You to request Your contact details

We do not:

- store or share any personal information of contacts from Your address book
- provide reverse number look up of contacts from Your address book

Figure 46 – Truecaller Privacy Policy - EU⁵³

Former Truecaller employees told us that GDPR adoption in the EU effectively killed the app's utility there, adding that Truecaller deleted all non-business data and moved their data centres to India as a consequence.

*"I think a very easy way to see that is what happened in EU, right? If you have subscription to things like App Annie or one of these sites, which show you the usage of apps in various geos, right? **If you can go back and see there what happened to Truecaller in, let's say, Italy or Sweden or U.K. before and after GDPR. And you can see it. Like there's a sudden fall in rankings, and nobody downloads the app anymore. Because after that, it's only for businesses that are calling you, right? It's not for end users...."***

*"So, which means about 90%, it's a guesstimate, of their data is unconsented, which means, in India, of the Indian population, also approximately 90%, maybe 80%, it's something in that range, is unconsented data. So, they may end up having to delete the data. **Just like in Europe, they were forced to delete all the data, nonbusiness data.**"*

- Tegus Interview (emphasis added)

We were unable to verify that deletion of data obtained prior to GDPR was required but were able to verify that GDPR travels with the data: it applies regardless of geography.

Nigeria

In 2019 the National Information Technology Development Agency (NITDA) of Nigeria opened an investigation into alleged privacy breaches of over 7 million Nigerians by Truecaller. Their findings alleged 3 instances of Truecaller's Privacy Policy as incompatible with Nigeria Data Protection Regulations (NDPR).

⁵² EU countries are Iceland, Liechtenstein and Norway

⁵³ <https://www.Truecaller.com/privacy-policy-eu>



A month later at a conference NITDA's Director General stated that Truecaller would "find ways to harmonise operations to comply with [NDPR]." ⁵⁴.

Truecaller's Nigerian Privacy Policy, effective March 29, 2021, differs from the Rest of World policy in one key area: app downloads from the Apple App store or Google Play store will not access the user's address book in any case. Users who obtain the app another way (preloaded on their phone, for example) will need to enable the enhanced search feature.

Address book. If you have granted consent , we access the contacts in your address book . By granting such access, you confirm that you are authorized to share the information in your address book with us. If the Truecaller App is downloaded from the Apple App Store or Google Play we do not receive, store or share any of the contact information in your address book.

Enhanced search. If you download the Truecaller App from a source other than the Apple App store or Google Play store, or use our web services, and choose to enable the Enhanced Search feature, we accept contact information comprising names, phone numbers and email addresses from your address book. Users of our web service need to register using third party services such as Google or Microsoft. For web users who enable the Enhanced Search feature we accept and use the address book contacts and the user profile information associated with the third-party services to enhance the results shared with other users. Truecaller uses this information for CallerID to identify

Figure 47 – Truecaller Privacy Policy - Nigeria⁵⁵

As of April 1, 2021, Nigeria has roughly 170m mobile phone users, though only 10-20% use smartphones⁵⁶. At the time of the NITDA's investigation the agency reported that Truecaller had 7 million active users. We doubt that Truecaller will be able to grow further in Nigeria without paying heavily for preloaded installations on phones sold in the country.

California

Truecaller's California privacy policy is largely the same as the EEA's due to the California Consumer Privacy Act.

Brazil

Truecaller's Brazil privacy policy effective October 8, 2021⁵⁷ specifically states that if the Truecaller app is downloaded from the Apple App or Google Play stores then "[Truecaller] does not receive, store or share any of the contact information in your address book".

South Africa

Truecaller's South Africa privacy policy effective July 1, 2021⁵⁸ specifically states that if the Truecaller app is downloaded from the Apple App or Google Play stores then "[Truecaller] does not receive, store or share any of the contact information in your address book".

⁵⁴ <https://www.premiumtimesng.com/news/more-news/356531-Truecaller-to-harmonise-operations-in-nigeria-nitda.html>

⁵⁵ <https://www.Truecaller.com/nigeria-privacy-policy>

⁵⁶ <https://guardian.ng/technology/the-growth-of-smartphone-usage-in-nigeria/>

⁵⁷ <https://www.Truecaller.com/brazil-privacy-policy>

⁵⁸ <https://www.Truecaller.com/south-africa-privacy-policy>