

TikTok: The Privacy Controversy

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1 Abstract

TikTok the popular social media application gained national attention in the United States after Former President Donald Trump signed an executive order banning the application citing national security concerns. Several investigations into TikTok and class action lawsuits were launched. Many were concerned the application was invasively collecting and sharing data with the Chinese government, and spying on US citizens. TikTok has denied on several occasions any data is being shared with China. In addition to making their source code available for public review, TikTok has made several security changes and undergone third party audits to gain the trust of their users and government entities.

2 Early History of TikTok

Musical.ly, a new social media platform, founded by Alex Zhu and Luyu Yang became available to download on the Android and Apple App stores in 2014. Users could upload 15 second videos that typically included lip-syncing or dancing to popular songs. The new social media platform quickly gained popularity. Musical.ly became one of the first apps that was headquartered and designed in China that gained popularity in the US competing against other well established US based social media platforms like YouTube, Facebook, Instagram, Twitter, and Snapchat.

In November 2017 Musical.ly was sold to a larger Chinese social media company ByteDance. At the time Musical.ly claimed to have 60 million users, most of which are based in the United States. ByteDance was well known for their use of artificial intelligence that creates a tailored news feed for its user base¹. Musical.ly now had access to additional funds, and new machine learning technology that could be integrated into the app. The success for musical.ly continued as they focused efforts on expanding their reach and popularity in different countries.

In 2017 Musical.ly was merged with TikTok, a similar social media platform owned by ByteDance. At the time of the merge, musical.ly claimed to have around 100 million users, and TikTok which was launched in 2016, claimed to have 500 million monthly active users.² After the merger, TikTok surpassed Facebook, Instagram, Youtube, and Snapchat in monthly installs

for the first time since September. In 2018, Bytedance passed Uber and became the world's most valuable startup, with a \$75 billion dollar valuation. It has been reported that in 2019 TikTok has over 1 billion active users across 150 countries.³

As the platform gained popularity concerns were raised on TikTok's privacy and security practices. TikTok is aimed at users who are 13 years or older. However, younger users can bypass this restriction and use the platform. The South China Morning Post found that hundreds of Hong Kong children as young as 9 had exposed their full names, phone numbers, and schools by including the information on videos that were posted publicly on the platform. Young girls received messages from men asking them to "be their girlfriend" or requesting additional information about the poster. These problems are not unique to TikTok. TikTok has made statements suggesting they have improved moderation to combat these issues.⁴

3 United States Legal Trouble

In 2019, TikTok started facing legal trouble in the US. The Federal Trade Commission fined TikTok. Donald Trump signed an executive order banning the application accusing TikTok of sharing user data with the Chinese government, and multiple lawsuits were formed into one class action lawsuit against TikTok accusing the company of violating Illinois biometric data collection laws.

3.1 Federal Trade Commission

In February 2019, the Federal Trade Commission (FTC) found TikTok in violation of the Children's Online Privacy Protection Act (COPPA); a 1998 law that limits the collection of personal data of online users younger than 13 without parental consent. TikTok was fined a record \$5.7 million for illegally collecting names, email addresses, pictures, and locations of kids under the age of 13.⁵

In September 2019, shortly after TikTok's record fine, Google and YouTube were fined 170 million by the FTC. The settlement requires Google and YouTube to pay \$136 million to the FTC and \$34 million to New York for allegedly violating COPPA. The complaint stated Google and its subsidiary YouTube had been collecting personal information in the form of persistent

identifiers, commonly known as cookies, to deliver targeted ads to children without parental consent.⁶

3.2 Trump vs TikTok

3.2.1 United States Sanctions Against TikTok

On July 7th 2020, Bloomberg reported Gray Television's Greta Van Susteren questioned Trump on comments made by Secretary of the State Mike Pompeo in regards to their consideration in banning TikTok due to security concerns. Trump stated banning TikTok was 'one of many' options he was considering to punish China over the coronavirus.⁷

On August 6th 2020, Former President Donald J. Trump used emergency economic powers to impose sanctions against TikTok. The executive order gave TikTok 45 days to sell its U.S assets to an American company or be outlawed. The app would be removed from the Apple and Google app store. TikTok would no longer be able to receive advertising revenue from American companies. The executive order cited national security concerns over TikTok's data collection stating *"This data collection threatens to allow the Chinese Communist Party access to Americans' personal and proprietary information — potentially allowing China to track the locations of Federal employees and contractors, build dossiers of personal information for blackmail, and conduct corporate espionage,"* TikTok began negotiating deals with several U.S. companies to purchase a portion of TikTok.⁸

3.2.2 TikTok Sale Negotiations

In September 2020, the owner of TikTok chose Oracle after rejecting a bid from Microsoft to become the majority stakeholder. As the sale of TikTok was in motion, a new regulation issued by China barred TikTok from transferring its technology to a foreign buyer without the explicit permission from the Chinese government.⁹

Former President Trump's executive order was challenged in court. In October 2020, U.S. District Judge Wendy Beetlestone ruled that President Trump exceeded his authority by invoking

his emergency economic powers to impose sanctions against TikTok, "The Government's own descriptions of the national security threat posed by the TikTok app are phrased in the hypothetical," Beetlestone wrote.¹⁰ In December 2020 a 2nd federal judge fully blocked the executive order. The administration was unable to provide evidence that TikTok had been sharing data with the Chinese government.¹¹

In February 2021, newly elected President Joe Biden and the administration asked for a suspension of the current legal proceedings while the new administration looked into the issue.¹²

3.2.3 Pentagon Warns Military Personnel

On December 16th 2020, the Pentagon sent a 'Cyber Awareness Message' warning personnel of the potential security risk of using TikTok. The message recommended that military personnel "uninstall TikTok to circumvent any exposure of personal information." All U.S military branches, Department of Homeland Security, and the TSA banned the use of TikTok on government-owned devices.¹³

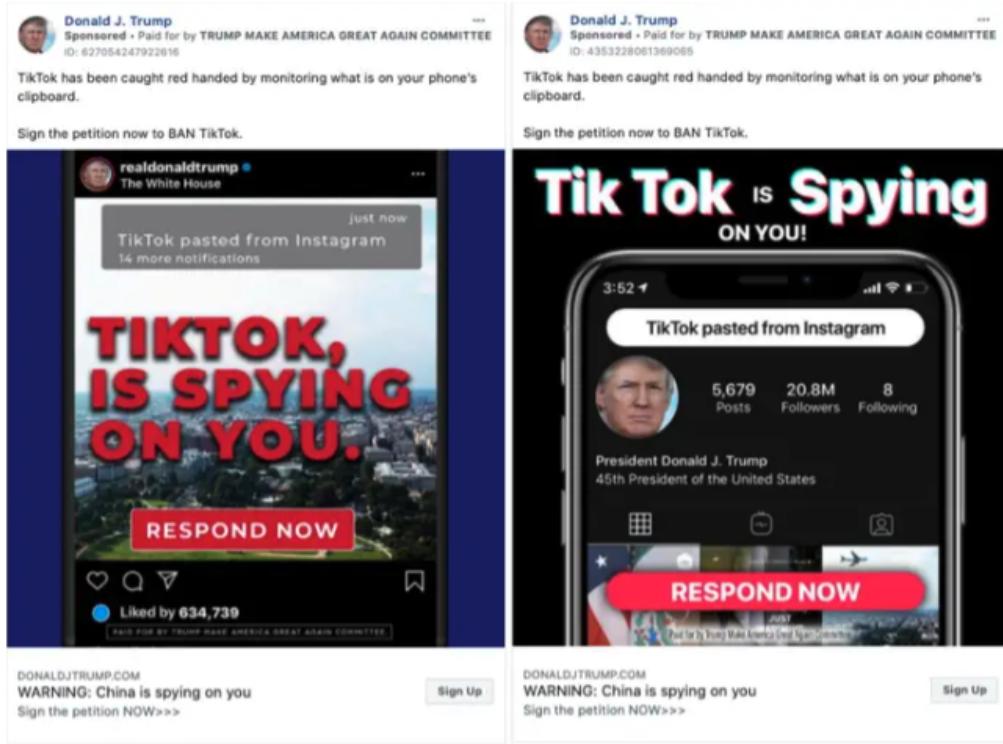
TikTok was not the only application to be banned from government-owned phones. "Dating, gambling, cryptocurrency, and any apps that attempt to bypass monitoring tools or download rules are forbidden on Marines' government phones."¹⁴

3.2.4 Advertisements Against TikTok

TikTok users coordinated several efforts to interfere with the reelection campaign of Donald Trump. Users organized an effort to get individuals to sign up for rallies with no intention of showing up. The goal was to claim the available tickets to reduce attendance for the event. Trump's campaign manager stated that over 1 million people requested tickets to a rally in Tulsa for June of 2020, however, only an estimated 6,200 individuals were present.¹⁵

In five days between July 17th to July 21 2020, the Trump reelection campaign spent upwards of \$80,000 on 450 separate anti-TikTok ads. One of the most viewed ads was a video that replaced

the TikTok logo that was replaced with an Asian man looking through binoculars. "TikTok is spying on you."¹⁶ encouraging viewers to sign a petition to ban TikTok.



3.3 Class Action Lawsuit

In addition to the executive order, dozens of federal lawsuits against TikTok were merged into a single class action lawsuit. The lawsuit claims TikTok collects biometric facial characteristics, locations, close contacts, and then privately sends that data to servers in China.¹⁷

The Biometric Information Privacy Act (BIPA) was passed in Illinois in 2008. The BIPA Guards against the unlawful collection and storing of biometric information. The BIPA is the only US law that allows private individuals to file a lawsuit for damages stemming from a violation.¹⁸

The technology experts hired by the plaintiffs attorneys claim to have studied the collection and journey of TikTok data, they state that troves of information are being sent to servers in China "under the control of third parties who cooperate with the Chinese government". "Such information reveals TikTok users' precise physical location, including possibly indoor locations

within buildings, and TikTok users' apps that possibly reveal mental or physical health, religious views, political views, and sexual orientation," attorneys for users wrote in legal filings. The lawsuit also states that TikTok starts collecting data even before a user opens an account.¹⁹

In addition to BIPA violations, the lawsuit claims TikTok broke other data collection laws. "Defendants also covertly transmit personally identifiable information about each TikTok user's video viewing history to third parties without notice or consent, in violation with the Video Privacy Protection Act (VPPA).²⁰

On February 25th, 2021 TikTok agreed to a \$92 million settlement. The settlement applies to 89 million TikTok users in the United States. TikTok spokesperson said "the company disagrees with the assertions in the lawsuit but the company decided it was in its best interest to settle the case so they can focus on building a safe and joyful experience for the TikTok community." In addition to the \$92 million, the settlement states "TikTok will no longer record a user's biometric information, including facial characteristics, nor track a user's location using GPS data. TikTok also commits to stop sending U.S. users data overseas and the app said it would no longer collect data on draft videos before the content is published."²¹

Facebook had faced a similar lawsuit. Facebook was ordered to pay Illinois users \$650 million alleging the company created and stored scans of their faces without permission. The lawsuit claimed facial recognition was used for a photo-tagging feature. Users could upload a phone and Facebook would recognize other users in the photo and recommend linking that individuals profile.²²

4 China and High-Tech

4.1 Made In China 2025

In 2015, China released their Made In China (MIC) 2025 plan. This plan outlines China's initiative to become a global powerhouse in high-tech industries. The 10-year plan aimed at upgrading their manufacturing infrastructure and focusing on 10 key sectors, which includes

robotics, energy-efficient cars, and artificial intelligence. One aspect of the plan stood out to many; it called for domestic companies to control not just Chinese markets, but also global ones.

In 2018, the Trump Administration released a 215-page report into the findings of an investigation on the concerns of China's unfair practices related to technology transfer, intellectual property, and innovations. The Trump administration referred to the MIC 2025 plan as a prime example of how China promotes unfair competition and disadvantages by subsidizing Chinese companies and limiting market access to foreign ones.²³

4.2 Artificial Intelligence Research

In 2017, China published their “New Generation of Artificial Intelligence Development Plan.” The new plan plays a role in China’s bigger economic plan, MIC 2025. When the new plan was published, 27.68% of research papers in the AI field were published by China more than any other country in the world.²⁴ The plan also included a National AI Industrial Park suggesting it would help to achieve their goal by building a cluster of innovative AI focused companies.²⁵

4.2.1 Artificial Intelligence in Consumer Products

AI has proven to be very lucrative for companies. In 2016 Netflix estimated its recommendation engine brought \$1 billion dollars in value to the company.²⁶ Social media companies use AI to keep users engaged and keep them on the app longer. However, these algorithms by design are made to influence human behavior. In some cases these users are pushed to extreme and divisive content. In 2016, Facebook delivered an internal presentation on extremism in Germany, which noted that “64% of all extremist group joins are due to our recommendation tools.”²⁷

On their website Bytedance states they “combine the power of artificial intelligence with the growth of mobile internet to revolutionize the way people consume and receive information.” The company owns another application called Toutiao which uses AI to offer a customized news feed. “Toutiao utilizes AI technologies and strategies like data mining and user behavior analysis to connect its customers with customized advertising campaigns.”²⁸

There are several ways AI is used by TikTok. The algorithm learns individual preferences by using ‘likes’ and comments, in addition to how long the users stay engaged with the video. The algorithm then starts to build a personality profile on each user and offers a customized feed called the ‘For You’ page. This profile can also be used to offer ads based on interests, age, geographical location, and more. TikTok uses a separate AI to help moderate the platform filtering inappropriate content by removing videos and flagging them for human review.²⁹

4.3 Data Collection

Former President Donald Trump used his executive powers to place sanctions against TikTok specifically citing concerns on data privacy. Per the executive order “This data collection threatens to allow the Chinese Communist Party access to Americans' personal and proprietary information — potentially allowing China to track the locations of Federal employees and contractors, build dossiers of personal information for blackmail, and conduct corporate espionage.” noting that TikTok’s terms of service include a provision allowing them to share data with TikToks parent company Bytedance.³⁰

TikTok has denied the claims that the company shares any user data with the Chinese Government. The head of security at Bytedance Roland Cloutier said that any request from China for TikTok user data would go through the US government because TikTok’s servers are based in the US. Adding that TikTok’s app does not exist in China, so the Chinese government has no jurisdiction over it. Roland also noted that TikTok has never received a request from the Chinese government.³¹

Prior to the TikTok sanctions Huawei, a global telecommunications supplier and phone manufacturer based in China that has been banned in the US since 2012 was added to the US Department of Commerce's Bureau of Industry and Security Entity List by executive order by Donald Trump in 2019. The US had banned Huawei networking equipment over concerns of Chinese espionage. The UK and Sweden have also banned the use of Huawei 5G networks for similar concerns.³²

4.3.1 Engineers Based in China

While Roland claims the Chinese government has no access to user data, China-based engineers supporting TikTok have access to US user data, “which includes names, birthdays, home addresses, phone numbers, emails, passwords, PayPal account information, contact lists, private videos, direct messages and parts of the log-in history.”³³

Chinese citizens must comply with China’s national security laws which include Article 7 of the National Intelligence Law states that: ‘Any organization and citizen shall, in accordance with the law, support, provide assistance, and cooperate in national intelligence work, and guard the secrecy of any national intelligence work that they are aware of. The state shall protect individuals and organizations that support, cooperate with, and collaborate in national intelligence work.’ China classifies this as intelligence work, meaning the citizen is required by law to assist the government, and are legally unable to speak about the matter.

TikTok has worked to put barriers in place to limit the access of data for China-based engineers. It’s been noted this has been difficult due to the nature of support the application requires. Some tools used to support the application are written in Chinese making it harder for western based engineers to support some aspects of the application.

4.3.3 The Australian Strategic Policy Institute Research

The Australian Strategic Policy institute published an article ‘TikTok privacy concerns and data collection’. The researchers used an HTTP web proxy to intercept and view data sent from a device with TikTok installed on it. Some important points made in the report include:

1. All transmissions were encrypted, but they noticed some requests were encrypted beneath this already encrypted transmission channel. Also noting, it's unusual to find additional encryption under the secure TLS link.
2. At the time of the research, TikTok’s Privacy Policy states they collect “keystroke patterns or rhythms” The analysis of the source code identified “a number of locations where keyEvent parameters are being passed to various functions.”

3. In March 2020, it was discovered that TikTok, along with other popular apps like LinkedIn and the Fox News App were reading the user clipboard on iOS which has the potential to expose sensitive user information such as credit card details, and passwords. TikTok has stated they have since resolved the issue.
4. The paper also concluded that TikTok has made several changes in more recent versions to require less user permissions and collect less data.³³

4.3.2 TikTok's Privacy Policy

TikTok privacy policy can be viewed on their website. Per their policy, TikTok collects information on you that is shared from third party social network providers. They also collect information contained in the messages sent on the platform, and the information in your phonebook.

If you choose to link or sign up through other social networks like Facebook, Twitter, Instagram, or Google, they may collect information from these services. They can even collect information about you from any publicly available source.

Information automatically collected includes usage information, and device information. Per TikTok's website "We collect information about the device you use to access the Platform, including your IP address, unique device identifiers, model of your device, your mobile carrier, time zone setting, screen resolution, operating system, app and file names and types, keystroke patterns or rhythms, and platform." Metadata from uploaded content, and information from cookies. TikTok's "Platform Cookie Policy" states they use different technology to track and gather user data. The technologies listed include session cookies, persistent cookies, local storage, Application Programmable Interface (API), Software Development Kits (SDKs), Pixels, and Mobile advertising IDs. The information gathered is used for many purposes, among them include analytics and advertising.

TikTok offers the option to opt out of personal ads and gives recommendations on how to change device settings to limit ad tracking. However, none of the technologies can be deactivated.

Individuals may also send a request via email or to the physical address on their website to access or delete the information TikTok has collected on them.

5 TikTok's Response

TikTok has made many statements addressing the concerns of data privacy. Reiterating that TikTok only stores data in the United States with a backup data center in Singapore. No user data is subject to Chinese law.

On April 19th, 2021 TikTok announced that they are ISO 27001 certified in both the US and the UK. ISO sets information security standards that are globally recognized. As TikTok states, “During the ISO certification process, independent third-party auditors performed a series of rigorous checks to confirm TikTok's global security, risk, and controls operations meet the highest standards”³⁴

TikTok also launched the ‘Transparency and Accountability Center’ on their website. TikTok has released transparency reports that display statistics on content that was removed on the platform and the reason for the removal. The report also includes a section detailing the legal information requests sorted by country TikTok has received and the rate at which they complied with the request. TikTok has created a physical space where people are invited to view and evaluate TikTok’s source code.

5.2 Other Changes

TikTok has made several other notable changes to protect users and their data. On January 13th 2021 TikTok announced they had implemented ‘enhanced default privacy settings’. Default privacy settings for registered user accounts within the age range of 13-15 are automatically set their profile to private. In addition, only users who are ‘friends’ with the account can comment on the videos posted. Videos created by anyone under the age of 16 will not be downloadable. Users under the age of 13 would have a limited app experience with additional safeguards and privacy settings directed towards these users. Users under the age of 13 will only have access to age-appropriate videos.³⁵

TikTok has been expanding their resources in the US and slowly removing the China-based team.³⁶ In addition to opening their source code, working with third party security experts, TikTok also has an active bug bounty program where they encourage security researchers to review their app and submit any vulnerabilities. TikTok has paid independent security researchers over 133 thousand dollars for vulnerabilities reported.³⁷

7 Conclusion

TikTok, the popular social media platform, captured the attention of many across the United States. Concerns over data collection and security launched several investigations and lawsuits, some of which resulted in fines for the company and payouts to consumers. TikTok continues to deny all claims that any data has been shared with the Chinese government. Like other social media platforms, TikTok does collect data on their users in alignment with industry standards and in response to both government and consumer concerns TikTok has made several changes to increase security and transparency and improve the trust between users and governmental entities.

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