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Article

Investigating the Extent and Nature of the Primate Pet Trade on TikTok

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Abstract: With online wildlife trade increasing and viral videos increasing demand, the trade in primates on TikTok is becoming more prevalent. Despite wildlife trade being banned on most social media platforms, the trade in primates persists. TikTok's policies ban the sale of live animals, and specific terms related to wildlife trade are banned; however, these search term bans are easy to get around, and sellers are still prolific on the site. This study documented primates for sale on TikTok using the search term "for sale monkey" over a four-month period (from mid-July to mid-November 2023) with the aim of determining how widespread primate trade is on TikTok, the legality of advertisements, and which countries advertise the most primates for sale. 42 individual advertisements were identified, spanning 6 different genera of primates and 5 different countries. Spider monkeys, rhesus macaques, and common marmosets were found to be the most commonly advertised species on TikTok. All spider monkeys were advertised from the USA, while the majority of the marmosets were advertised from the UK, and all of the rhesus macaques were advertised from Pakistan. The USA was the only country identified in this study that advertised a range of species, and the only species found in this study that was not advertised in the USA was the mona monkey. 44% of all species recorded were classified as either Endangered or Critically Endangered, and it was found that endangered species were more frequently sold illegally than non-endangered species. The findings of this study underline a need for stricter primate legislation and wildlife law enforcement, especially if the UN's sustainable development goals are to be achieved by 2030. They also show a need for TikTok to broaden their restrictions on wildlife trade on their app.

Keywords: social media; Internet; online; marmoset; macaque; spider monkey; mona monkey; capuchin monkey

1. Introduction

1.1. Wildlife trade

Animals are often poached from the wild and sold alive to clients as pets, circus animals, tourist attractions, or lab subjects [1]. Dead animals are also sold for use as food (as bushmeat or as delicacies), decoration or clothing [1–3], traditional medicine [4,5], and in superstitious activity [3,5]. In some cases, people who rely on hunting and farming as their primary source of income will resort to illegal hunting to support them financially or as subsistence hunting or farming [1,3].

The legal wildlife trade is valued at over \$400 billion per year worldwide [6]. While it is harder to estimate the value of the illegal wildlife trade, it is thought to be worth between \$4 billion and \$23 billion [7]. CITES (the Convention on International Trade in Endangered Species of Wild Flora and Fauna) oversees endangered wildlife trade globally with the goal of protecting threatened species through controlling wildlife trade [8]. CITES currently has 184 contracting parties, which include all but one primate-range country (East Timor). However, CITES has limited power in wildlife law enforcement as it is up to individual countries to enforce national wildlife laws based on the CITES treaty [9]. Despite CITES's efforts, illegal animal trade is still prevalent due to a lack of enforcement of CITES in some animals' countries of origin [1,2].

All recognised countries (except for Palestine and the Vatican City) are UN members, therefore, they are subject to the UN's sustainable development goals (SDGs). Target 15.7 requires member countries to take steps towards stopping poaching and trafficking of protected species and to make efforts to reduce the supply and demand for illegal wildlife products. Additionally, target 16.4 requires countries to reduce illicit financial activity and organised crime, which includes illegal wildlife trade for profit, by 2030. However, it is clear that some countries are not doing enough to attain the Sustainable Development Goal targets by 2030. One study in Indonesia (one of the primary primate exporter countries) showed that there was up to 200 times the legally permitted number of civets being caught from the wild and domestically traded [10].

The wildlife trade has seen a shift towards online trade in recent years [11]. Wildlife trade is present on the dark web; however, 90% of this trade consists of plants being illegally sold for use as recreational drugs or traditional medicine. The dark web only constitutes a small proportion of overall online trade [12]. With most of the online wildlife trade happening on the surface web, purchasing animals online has become more accessible to the general public, with trade now being prevalent in countries outside of animals natural range [13].

The value of all primate trade internationally is estimated to be between \$117 million and \$138 million per year; illegal primate trade is thought to make up \$1 million to \$7 million of this value [13]. In 2021, 42.2% of recorded live primate exports came from Cambodia, and 49.7% of imports went into the United States [14]. From 2020 to 2021, Cambodia's live primate exports increased by 62.7%; similarly, the United States imports of live primates increased by over 70% [14]. Europe makes up approximately 25% of live primate imports. Spain is the biggest European importer of live primates, making up over a third of the European live primate imports, while France is the biggest exporter of live primates (nearly 9%) and also the second largest importer of live primates (over 6%) [14]. Other hotspots for live primate export include Mauritius (19%), Vietnam (9.61%), and Singapore (6.64%). Other top importers include Canada (8.39%), Singapore (6.57%), and Japan (6.18%) [14].

Some countries, such as Italy and the Netherlands, have completely banned private ownership of primates [15]. In the USA, the legality of primate ownership is dependent on the state; some states (like California and New York) have a complete ban on owning primates, other states have partial bans or limitations on primate ownership, and some states (such as Florida) have no laws pertaining to primate ownership [16]. In the UK, a Dangerous Wild Animals Licence is required to own most primate species; however, several species of monkeys, such as marmosets and tamarins, can currently be owned without a licence [17].

Traditionally, primates have been sold internationally through large companies that either caught wild primates or bred primates in captivity with the intent of selling them [13]. Smaller (often local) traders also sold primates in pet shops or in other physical markets [13]. Sometimes the wild-captured primates were poached specifically for the pet trade [18]; other times, mature primates will be hunted for bushmeat, and their babies will be sold on to pet traders [19].

1.2. The Effects of the Internet on Primate Trade

Videos and other media on the internet often portray primates as cute and human-like, but rarely demonstrate how difficult they are to keep as pets while ensuring all of their welfare needs are met [20]. Online videos of primates are widely believed to increase the demand for pet primates; one study examined the content of the comment section on a video of a galago and found that 95% of the comments indicated some desire to own a galago [21]. This study also found an increase in the use of the search term "pet galago" on Google that correlated with an increase in live galago exports [21]. Younger people have proven to be more interested in owning a non-domesticated pet [22]. This is potentially a result of younger people being more online than older generations. The most frequently traded primates online include capuchins, marmosets, tamarins, slow lorises, and macaques [13]; despite differences in the popularity of specific species between countries, posts advertising capuchins and marmosets have been found in every country that the online trade has been studied in [13].

Reaching and communicating with a wider consumer market has been made increasingly easy by the internet. Traders can use social media and other online sites to reach a broader range of potential buyers, who can then initiate private and direct contact with the seller. Online pet shops or social media accounts allow primate traders a level of anonymity that they would not have in a physical pet shop or face-to-face trade [20]. It is rare that posts where animals are being traded against social media policy will be reported to the proper authorities; it is more likely that the post or account will be removed, and the seller will start again with a new account [6]. This minimal enforcement of social media sites' policies against the sale of live or threatened animals means that sellers can often get away with selling animals illegally without law enforcement being alerted.

1.3. The Use of Social Media in Monitoring Primate Trade

Primate trade on social media was found to be more prevalent in countries with an internet penetration rate of over 50% [13]; therefore, countries with low internet penetration rates had relatively little, if any, online primate trade. The same study determined the extent of online primate trade in many countries and showed Indonesia, the USA, Russia, and South Africa to be hotspots for online primate trade. The study also found that Facebook, Instagram, and online pet shops were the main sources of posts advertising primates for sale [13]. Previous online wildlife trade studies have searched for traders at one specific time and then tracked them over time (11,23-24); others monitored specific search terms or hashtags over time [21]. Some studies tracked accounts that had been identified through previous research [23,25]; others used relevant key words or search terms to find accounts to track [11,13,24] or tracked one specific trade group [26]. One study used application programming interfaces (APIs) to collect social media data [27].

TikTok is a video-based social media app that was first launched in China in 2016 and later gained popularity internationally in 2018 [28]. TikTok has over a billion users worldwide, with 150 million users in the US and over 18 million users in the UK [29]. It is currently the top social media app on the Google Play Store and is the highest trending social media app on the Apple App Store, making it more popular than both Facebook and Instagram. As a platform, it hosts short-form video content between 15 seconds and 10 minutes long, often accompanied by a song or a popular audio clip. The site has been deemed exceptional due to its strong algorithm, allowing users to reach their target audience efficiently and more quickly than on other sites [28]. 36.2% of TikTok users are reported to be between 18 and 24 years of age [30], making TikTok's younger userbase larger than Facebook's (where only 21.5% of users are between 18 and 24 years old) [31]. According to TikTok's Industry Entry Policy, the promotion or sale of any live animals and the sale of animals that are endangered, vulnerable, or threatened are prohibited [32]. In 2022, TikTok partnered with the World Wide Fund for Nature to ban 400 search terms that were linked to wildlife trafficking [33], some of which include primate-related terms. Despite TikTok's rules regarding the sale of live or threatened animals, studies have still found live animals (including primates) for sale on the app [21,27,34].

1.4. Aims, Objectives and Predictions:

There are a number of studies on the online wildlife trade, but there are fewer on the pet trade via social media specifically, and there are currently no publications on primate trade via TikTok. With TikTok's growing popularity and its younger, potentially more impressionable userbase than other social media sites, it is important to understand how primate traders are advertising primates on the app and how widespread the trade may be. This study aims to investigate the extent of the primate pet trade on TikTok and to determine where sellers are posting from and whether the posts are legally or illegally advertising these primates. The study also aims to determine which species are most commonly advertised on TikTok. The main objective is to use a specific search term to collect data every week on videos deemed to be relevant (containing a primate for sale). It is hypothesised that the majority of posts will be from the USA; however, a large proportion is still expected to come from European countries, most likely Spain, France, and the UK. The most common species advertised for sale on TikTok are predicted to be capuchins and marmosets. Most of the posts are expected to be from locations where it is legal to advertise and sell primates

2. Materials and Methods

Several search terms were trialled before data collection over a period of two weeks before data collection began; some terms relating to primate sales were banned (such as “monkey for sale”), and others brought up an excessive number of videos that were not related to primates in any way (such as “primate for sale”, which brought up mostly videos related to the words “prime” or “Primark”). The search term “for sale monkey” was selected as the most appropriate search term for collecting relevant data as it brought up many videos of primates for sale and relatively few videos unrelated to primates. “for sale monkey” was searched weekly for four months (from mid-July to mid-November 2023) in order to find videos of primates uploaded in that week and record data relating to the relevant videos. The data was cross-checked each week to ensure no videos were recorded more than once. Only publicly available data was recorded; no researchers interacted with the users on TikTok [21]. Advertisements that were clearly scams were removed from the dataset; scams were defined as videos that claimed that the primate was free and a buyer would just pay a shipping fee, and users that posted videos with completely dissimilar surroundings to other videos on the users account or posted content that was visibly stolen from other users accounts.

The usernames of the accounts that uploaded each post were recorded to identify and track individual accounts. The data was later anonymised to protect the identities of the sellers [24]. The dates that the videos were posted on were recorded in order to check if the video had been deleted one month later. The species (where possible) or genus of the primates featured in each video were recorded; where the species or genus were unclear, a screenshot was taken and numbered in order to identify the primates at a later date. All words that were included on screen, in the audio, or in the video caption were recorded to aid in species identification and to determine the likely location that the primate is being sold from. The likely location of each post and legislation from each location were used to determine whether the post was legal in the location it was posted from. Posts were sorted into three categories: legal, illegal, and posts of undetermined legality. The undetermined legality category was assigned to posts from countries or states where a license is required to own, breed, or sell primates, as there was no definite way to determine if the sellers had the correct licenses. Legal posts were from countries or states where no license is required to own a primate, and illegal posts were from countries or states that completely prohibit private ownership of primates. The number of views, likes, comments, and favourites that each video received was recorded. The original price that the seller requested for each primate was recorded, and where relevant, any discounted prices were also noted. Each video was revisited one month after the video was uploaded in order to check if the video had been deleted.

The number of posts advertising primates for each species and country was recorded. The average asking price in USD and the percentage of advertisements that were deleted within a month of them being uploaded were calculated for each species and country. The most common country that each species was advertised in was determined, and the percentage of each species that was advertised in their most common country was calculated. The most common primate advertised in each country was determined, and the percentage of posts from each country that advertised their most common species was calculated. The average number of views, likes, comments, and favourites that each advertisement received per day was also calculated for each country and species. A correlation test was completed to determine the extent of the correlation between the average asking price, online trade scores and GDP per capita (taken from [13]).

3. Results

Spider monkeys were the most commonly advertised primate species on TikTok; 100% of the spider monkey advertisements were from accounts based in the US (Table 1). Macaques were most frequently posted in Pakistan (85.71% of macaque advertisements were from accounts based in Pakistan); on average, they were the most popular posts based on all metrics of interactions per day, and they had the highest average asking price. Posts advertising macaques were also deleted after a month less frequently than other species (except for the guenon), with only 7.69% of macaque advertisements being deleted after one month. Marmosets had the lowest average asking price of all

primate species; they were most commonly advertised in the UK (72.73% of marmoset advertisements were from UK accounts). The average asking price per country negatively correlated with the country's online trade scores ($r = -0.70$) but did not strongly correlate to the country's GDP per capita ($r = 0.27$).

Table 1. The number of primates advertised, the average asking price, the average interaction rates, the most common country of advertisement, the percentage of each primate advertised in their most common country, and the percentage of posts deleted after one month on TikTok per genus.

Genus	Number of primates advertised	Average price (USD)	Average views/day	Average likes/day	Average comments/day	Average favourites/day	Most common country of advertisement	% of primates advertised in most common country	% of advertisements deleted after 1 month
Spider monkey	17	6,843.75	1,056.70	50.57	4.38	2.11	USA	100%	58.82%
Macaque	14	12,500	6,523	271.11	6.26	9.8	Pakistan	85.71%	7.69%
Marmoset	11	3,808.67	133.54	4.06	0.67	0.28	UK	72.73%	22.22%
Capuchin	3	5,500	254	6	2.25	0.25	Trinidad and Tobago	66.67%	50%
Squirrel monkey	1	no data	104.33	3.67	0	0	USA	100%	100%
Guenon	1	no data	5.5	0.25	0	0	Nigeria	100%	0%

Some of the species that were advertised on TikTok were only identified at the genus level. There were no apes or prosimians advertised for sale; only old-world and new-world monkeys were identified. Every marmoset recorded was identified as a common marmoset (*Callithrix jacchus*). All of the 17 spider monkeys were most likely Geoffroy's spider monkeys (*Ateles geoffroyi*). One macaque was identified as a long-tailed macaque (*Macaca fascicularis*), 12 macaques were identified as rhesus macaques (*Macaca mulatta*), and one macaque was unidentified. One of the capuchins advertised was unidentified, and the other two were either Trinidad white-fronted capuchins (*Cebus trinitatis*) or Venezuelan brown capuchins (*Cebus brunneus*). The guenon was determined to most likely be a mona monkey (*Cercopithecus mona*). The squirrel monkey that was advertised was not identified.

At least 44% of the species advertised on TikTok across all countries were classified as endangered or critically endangered (Table 2). Most of the endangered primates that were found were spider monkeys (found for sale exclusively in the USA); others include the long-tailed macaque (which was also found in the USA); and the Trinidad white-fronted or Venezuelan brown capuchin.

Table 2. The country of advertisement, the probable region of origin of each primate found on TikTok, and their IUCN Red List status (regions of origin and Red List status from IUCN, 2024).

Country of advertisement	Genus	Species	Number advertised	Probable region of origin	Red List status
USA	<i>Ateles</i>	<i>geoffroyi</i>	17	Central America	Endangered, population decreasing
	<i>Macaca</i>	<i>fascicularis</i>	1	South and Southeast Asia	Endangered, population decreasing
	<i>Macaca</i>	<i>Unknown</i>	1	Asia or Africa	Unknown
	<i>Callithrix</i>	<i>jacchus</i>	3	Brazil	Least concern, population decreasing
	<i>Cebus</i>	<i>unknown</i>	1	South America	unknown
	<i>Saimiri</i>	<i>unknown</i>	1	Northern South America	Least concern to Near threatened
Pakistan	<i>Macaca</i>	<i>mulatta</i>	12	Pakistan	Least concern, population trend unknown
UK	<i>Callithrix</i>	<i>jacchus</i>	8	Brazil	Least concern, population decreasing

Trinidad and Tobago	<i>Cebus</i>	<i>trinitatis</i> or <i>brunneus</i>	2	Trinidad (<i>trinitatis</i>) or Venezuela (<i>brunneus</i>)	Critically endangered, population decreasing (<i>trinitatis</i>) or Endangered, population decreasing (<i>brunneus</i>)
Nigeria	<i>Cercopithecus</i>	<i>mona</i>	1	Nigeria	Near threatened, population decreasing

The USA had the highest number of posts of all recorded countries (the USA had 24 posts), whereas Trinidad and Tobago and Nigeria had the lowest number of posts (both countries had only 1 post) (Table 3). The USA had the highest average asking prices, while the UK had the lowest. There was no data for Pakistan and Nigeria's average asking prices, and Trinidad and Tobago's average price was based on only one advertisement. Pakistan had the highest engagement rates in all metrics except for comments per day (of which the USA had the highest rate), and Nigeria had the lowest engagement rates in all metrics. The USA was the only country with a range of species; despite this range, over 77% of the posts from the USA were advertising spider monkeys. The only species recorded in this study that was not present in US posts was the guenon. All other recorded countries had only one species advertised per country, regardless of how many advertisements came from that country. All posts from Pakistan were of macaques, all posts from the UK were marmosets, the one post from Nigeria was a guenon, and the one post from Trinidad and Tobago advertised two capuchins. No posts advertising primates for sale were deleted after one month in Pakistan, Nigeria, or Trinidad and Tobago; however, over 52% of posts from the USA and a third of posts from the UK were deleted after one month. Countries with very few posts (Nigeria and Trinidad and Tobago) only posted native or near-native species. Only three posts advertised species that were potentially native to the countries they were advertised in: the guenon, which is native to Nigeria; the macaque, which is native to Pakistan; and the capuchin, which is native to Trinidad and Tobago. No non-native species were advertised in countries that have native species.

Table 3. The number of posts advertising primates, the average asking price, the average interaction rates, the most common genus advertised, the percentage of posts from each country advertising the most common genus, and the percentage of posts deleted after one month on TikTok per country.

Country	Number of posts from country	Average price (USD)	Average views/day	Average likes/day	Average comments/day	Average favourites/day	Most common genus advertised	% of posts advertising most common genus	% deleted after 1 month
USA	24	6,900	921.52	48.56	4.38	2.05	Spider monkey	77.3	52.2
Pakistan	11	no data	6,380.01	280.27	0.1	9.87	Macaque	100.0	0
UK	6	3,213	141.5	3.28	0.55	0.28	Marmoset	100.0	33.3
Nigeria	1	no data	5.5	0.25	0	0	Guenon	100.0	0
Trinidad and Tobago	1	6,000	254	6	2.25	0.25	Capuchin	100.0	0

Over two-thirds of all posts identified in this study were deemed legal, with the remainder being either illegal or of undetermined legality as it was impossible to determine if the sellers had the required licenses to breed or own primates in their region. All eight of the posts deemed illegal were from the USA; the majority (6) came from Colorado, and one post came from Massachusetts and Illinois, respectively. All but one post of undetermined legality also came from the USA, with the other post being from Trinidad and Tobago. Out of the US states, Tennessee (7 posts from 2 accounts), Colorado (6 posts from 2 accounts), and Texas (4 posts from 2 accounts) had the greatest number of posts advertising primates for sale. 52% of posts advertising primates in the USA came from states where a permit is required to buy and sell primates or where it is illegal to own primates. Only 39% of all posts containing endangered primates were from regions where it is legal to own primates

without a licence; 33% were illegally advertised; and 28% were from regions where licences are required. All but one illegal advertisement of an endangered primate was from the USA.

4. Discussion

Marmosets and macaques, which were commonly advertised on TikTok in this study, were expected to be among the most popular species based on Nijman et al.'s study on the extent of online primate trade [13]. However, this study found relatively few capuchins and no tamarins or slow lorises on TikTok; these species were commonly advertised online in Nijman et al.'s study. It is possible that species such as the slow loris may be more commonly sold in Southeast Asian countries, such as Indonesia, and that posts advertising slow lorises did not come up due to the search term used in this study being in English. It is not known why capuchins were not as heavily advertised on TikTok as they have been on other social media platforms [13] as capuchins are relatively common among pet primates in the USA [35], where most of the TikTok advertisements came from. Capuchins may not have been advertised in the UK as they require a Dangerous Wild Animals licence to legally keep [17]. Spider monkeys were not expected to be as common as they were on TikTok, their popularity could be due to videos of spider monkeys as pets going viral in recent years [36].

4.1. Primate Legislation by Country

The USA's state-by-state laws on primate ownership make it harder to determine whether a primate is being legally sold and may also account for the greater range of species that were advertised in the USA. Tennessee, Colorado, and Texas had the highest number of posts and accounts advertising primates for sale. In both Texas and Tennessee, it is legal to own most non-ape primates without a licence, and no species are fully banned if you have an exotic species licence. This explains the increased rates of primate advertisements in these states, as none of the species advertised required a licence to own or sell. However, in Colorado, it is illegal to own any primate species; therefore, the higher number of posts and accounts advertising primates for sale in Colorado are likely illegal and would suggest that the laws on primate trade and ownership in Colorado are not being enforced very effectively. The high engagement rates on posts and high average asking prices for primates advertised in the USA show that there is a high demand for pet primates in the USA and that people are willing to pay a significant amount to own one. A previous study on owners of exotic animals in the USA found that 29% of people bought their animals because they were cool or unique [37]. The high number of endangered species and potentially illegal advertisements would suggest that people in the USA are uneducated on the laws preventing primate ownership and the threat that pet trade poses to wild populations. It may alternatively suggest that people buying primates in the USA are not bothered by the fact that they may be endangered or illegal. One study found that participants' (60% of whom were from the USA) opinions on owning an exotic pet did not significantly change when informed about their welfare, legality, or conservation [38].

The laws regarding owning exotic or wild species in Pakistan are outdated and unclear. It seems that it may be illegal to own a monkey in specific regions of Pakistan (especially species native to Pakistan), but there is limited enforcement of laws pertaining to wild animal ownership [39]. The high number of macaques, which are native to Pakistan, for sale within Pakistan are likely being illegally advertised. There are regional wildlife acts in place for Islamabad and Sindh that prohibit the capture and ownership of all wild animals or protect Himalayan rhesus macaques [40], but there are currently no laws affecting primate trade in regions that were identified on TikTok in this study. However, there are plans to ban ownership of monkeys in the Punjab region of Pakistan, which encompasses Tollinton Market in Lahore, where all 11 advertisements from Pakistan came from [41].

Marmosets were the only species advertised for sale in the UK; they are completely legal to own without a Dangerous Wild Animals licence [17]. However, legislation has recently been put in place that will ban the private ownership of primates that are not kept to a zoo-level standard by the 6th of April, 2026. This legislation will require those who can keep primates to these high standards to be licenced; owners that fail to meet these standards can be fined an unlimited amount and could have

their primates confiscated [42]. The six marmoset advertisements from the UK were likely completely legal, as they do not require a licence to own [17].

There are no clear laws banning private primate ownership in Nigeria; in fact, the legislation on animal warfare in Nigeria is seen as inadequate, and the laws that are in place to protect wild and domestic animals are not properly enforced [43]. Therefore, the guenon that was advertised in Nigeria may not be illegal, but as it is a Nigerian native species, it was likely taken from the wild.

In Trinidad and Tobago, capuchins are protected under the Conservation of Wild Life Act, which means that it is illegal to keep or sell any capuchin species without proper permits [44]. The Trinidad white-fronted capuchin was designated an environmentally sensitive species in 2022, meaning it is illegal to possess, trade, or sell this species [45]. It is unclear from the singular video advertising capuchins in Trinidad and Tobago if the capuchins were Trinidad white-fronted capuchins or Venezuelan brown capuchins, the latter of which would be legal if the owner or seller has a permit to keep them. It is possible that these capuchins could have been taken from the wild in either Trinidad or the neighbouring Venezuela.

4.2. Adherence to the Sustainable Development Goals and CITES Legislation

All five of the countries that primates for sale were advertised in are UN member countries. These countries are all supposed to be aiming to reduce poaching and trafficking of protected species and to reduce illegal wildlife trade as per targets 15.7 and 16.4 of the SDGs. Potentially illegal trade was detected in four of the five countries identified in this study (all but the UK), three of which were advertising potentially native species that were not thought to be bred in captivity; this would suggest that those countries are not doing enough to deter poaching, trafficking, and illegal trade of primates as per the Sustainable Development Goals. As the UK government plans to place restrictions on primate ownership in 2026, they must take precautions to ensure that illegal trade does not arise under the new laws.

Similarly, all five of the countries that advertised primates for sale are also contracting parties of CITES and have been since 1984 at the latest. None of the species identified in this study were included in CITES Appendix I; all identified species were classified under Appendix II. However, there was one unidentified macaque species (*Macaca*) and one unidentified squirrel monkey species (*Saimiri*) that could not be ruled out as Appendix I species. All of the species advertised would require an export permit to trade internationally, but no posts advertised that they were willing to sell primates across country borders. This does not rule out the possibility that any of the sellers would be willing to trade internationally at the buyer's request.

4.3. Asking Price

The average asking price per country seems to depend on their most common species. The USA had the highest average asking price and advertised mostly spider monkeys (which were on average more expensive, likely because they are larger). The UK only had posts advertising marmosets (which tended to be cheaper than larger species like spider monkeys and capuchins) and therefore had the lowest average asking price. There was no data for the average asking price in Pakistan and Nigeria, as none of the posts from these countries indicated any price. It is possible that the USA and the UK had higher average asking prices than other countries due to their higher GDP per capita [13].

The average asking price per country may also depend on their online trade scores (OTS) [13], which take into account the availability of primates online, the range of platforms or sellers detected, the range of species for sale, and the number of individuals for sale. These online trade scores fit with the findings of this study, as countries with higher OTSs (like the US and the UK) tended to have a greater range of species, individuals, and sellers compared to countries with lower OTSs, which had fewer species and/or sellers. The GDP per capita may not correlate with the average asking prices in this study due to the fact that the English search term tended to show posts in English or from English-speaking countries.

4.4. English Speaking Countries and TikTok's User-Base

The search term used to find posts in this study ('for sale monkey') is likely the reason that all of the posts that were found came from either primarily English-speaking countries (the UK, the USA, Nigeria, and Trinidad and Tobago) or Commonwealth countries (Pakistan, Nigeria, Trinidad and Tobago), where speaking English is common. As the search term was in English, most of the posts that came up were also in English (with some posts from the USA being in Spanish with English key words as hashtags). The USA, Nigeria, Pakistan, and the UK are among the six highest countries in terms of the number of English-speaking people [46]. The USA is the top country by number of TikTok users, and Pakistan is the seventh-highest country by TikTok users [47]. The combined effect of high TikTok user bases and high numbers of English speakers in the USA, Pakistan, the UK, Nigeria, and, to a lesser extent, Trinidad and Tobago explains the presence of primate advertisements on TikTok in these countries in this study. It is possible that the USA and the UK had high numbers of posts due to their higher internet penetration rates and online primate trade scores than the other three countries in this study [13].

Considering India's high English-speaking population [46], it would be expected that posts advertising primates on TikTok would also be found in India; however, TikTok has been banned in India since 2018. It is quite surprising that no posts were found from the Philippines considering their high English-speaking population [46] and their high numbers of TikTok users [47]. The Philippines was the 9th biggest exporter of primates in 2022 [14]. This may suggest that the Philippines has a greater focus on exporting primates than trading them nationally. Indonesia was the second largest country by number of TikTok users [47], so it would be expected that Indonesia would have posts advertising primates on TikTok, especially considering the level of social media primate trade within Indonesia in previous studies [24]. However, it is possible that Indonesian primate advertisements did not appear in this study as the use of the English language in Indonesia is relatively low, especially in rural areas [48]. It was hypothesised that France and Spain were to be among the top European primate advertisers on TikTok; however, it is likely that French or Spanish posts did not appear under the English search term as there would be little reason for advertisers to use English in their posts in these countries. It would be useful to include search terms in other key languages in future studies in order to get a better idea of the true extent of the worldwide primate trade on TikTok.

5. Conclusions

We showed signs of trade on Tik Tok despite the ban of search terms, simply trying a combination of search terms in different orders. The primate advertisements found in this study were limited to primarily English-speaking or Commonwealth countries. The USA has the greatest range of primate species for sale, and despite clear laws preventing the sale and ownership of primates in some states, illegal trade is clearly still present on TikTok. The primate trade in all other countries was limited to one species. Countries like the UK and some US states would benefit from stricter restrictions on primate ownership and trade, as it is clear that there is a substantial amount of primate trade occurring on TikTok in these areas. Other countries like Nigeria and Pakistan have confusing or unclear legislation on primate ownership and trade, and laws that are clear are seemingly not enforced to a high enough standard. These countries would benefit from clearer legislation on primate trade and ownership and stricter enforcement of wildlife laws.

The majority of posts on TikTok were determined to be legal; however, the illegal trade on TikTok was not insignificant, with almost 20% of posts being illegal and a further 17% being of undetermined legality. The most common primates advertised included spider monkeys, macaques, and marmosets, all of which have been previously established to be common in the primate trade [13]. Endangered species were concerningly common on TikTok, with at least 43% of primates that were advertised being endangered or critically endangered. The higher proportion of illegally advertised endangered primates (33%) than illegally advertised non-endangered primates (8%), particularly in the USA, suggests that stricter law enforcement is required in the USA, especially in Colorado.

Future research would strongly benefit from using a broader range of search terms in a wider range of languages in order to collect a larger and more globally representative dataset. Collecting

data with the same or similar methods from other social media platforms simultaneously would give a more profound understanding of primate trade on social media as a whole as opposed to just the primate trade on TikTok.

Supplementary Materials: The following supporting information can be downloaded at the website of this paper posted on Preprints.org. Table S1: Dataset used for the analysis.

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