

THE ECONOMIC COST OF BAD ACTORS ON THE INTERNET

FAKE ONLINE REVIEWS 2021



INTRODUCTION TO THE ECONOMIC COST OF BAD ACTORS ON THE INTERNET

The internet has heralded an economic revolution. The internet economy of the G20 countries alone is worth more than \$4.2 trillion representing 5.3% of their total GDP. However, as Tim Berners Lee, the father of the internet has put it: "While the web has created opportunity, given marginalized groups a voice, and made our daily lives easier, it has also created opportunity for scammers, given a voice to those who spread hatred, and made all kinds of crime easier to commit." In a series of reports, we reveal the monetary cost caused by bad actors on the internet. CHEQ has commissioned economist, Professor Roberto Cavazos at the University of Baltimore, to undertake the first ever in-depth economic analysis of the full scale of internet harm. For the first time, using economic analysis, alongside statistical and data analysis, we measure the global economic price paid by businesses and society due to problems including ad fraud, and fake online reviews.

THE COST OF FAKE ONLINE REVIEWS: A \$152 BILLION PROBLEM

Fake online reviews are defined as any positive, neutral, or negative review that is not an actual consumer's honest and impartial opinion and does not reflect a genuine experience of a product, service, or business. The sites on which reviews appear are multiple: ranging from online brands making online feedback part of their core offering (such as Amazon), sites that embed third-party review platforms such as Expedia, and platforms whose core purpose is to provide reviews and feedback (such as TripAdvisor).

In this way online reviews – and by extension fake reviews – play a major part in the global economy.

In this report we analyze the economic damage of fake reviews globally. We discover the price paid in the form of both direct and indirect costs which collectively undermine the cardinal principle of trust underpinning free market economies.

THE ECONOMIC BENEFITS OF ONLINE REVIEWS

Online reviews in their most ideal state serve a valuable economic function for all parties in a transaction. Genuine online reviews bridge information asymmetries between buyers and sellers, providing information that may not be otherwise be disclosed.

THE ECONOMIC BENEFITS OF FAKE ONLINE REVIEWS FOR BAD ACTORS

However, the benefits of trading in fake online reviews are clear and proven. The return on investment of soliciting fake reviews make them highly profitable. Firstly, fake reviews bring immediate benefits: an extra star on a restaurant's Yelp rating can increase revenue by 5 to 9%¹ The Federal Trade Commission has shown that outlay on fake reviews can provide a 20X payoff. For instance, in an enforcement case against Legacy Learning Systems Inc. it was found that \$250,000 outlay on fake reviews generated more than \$5 million in sales².

Secondly, the deployment of fake reviews causes a substantial short-term rocket in organic search positions and sales ranks lasting four weeks, even after deletion or detection.³ Thirdly, using fake reviews bad actors are able to "bootstrap" their reputations with fake information.⁴ Overall, the eventual culling of fake reviews occurs on average after 100 days, giving fraudsters enough time to turn a profit. In addition, like other online markets we have analyzed, such as ad fraud, the economic benefits outweigh the risks and costs of being caught. This incentivizes bad actors and the ongoing growth of this underground economy.

¹ Luca, Michael, and Georgios Zervas: "Fake It Till You Make It: Reputation, Competition, and Yelp Review Fraud." *Management Science* 62, no. 12 (December 2016).

² Federal Trade Commission (2011), 'Firm to Pay FTC \$250,000 to Settle Charges that it Used Misleading Online "Consumer" and "Independent" Reviews', Federal Trade Commission, <https://www.ftc.gov/news-events/press-releases/2011/03/firm-pay-ftc-250000-settle-charges-it-used-misleading-online>

³ The Market for Fake Reviews, Sherry He et al, Anderson School of Management, UCLA

⁴ Ibid

THE BOOMING MARKET FOR FAKE ONLINE REVIEWS

The trading of fake online reviews has become standardized with groups, commission structures, and loyalty schemes. Payments change hands from around [25 cents](#) to \$100 per review. Marketplaces include Facebook private groups increasingly solicit buyers to purchase their product and leave a five-star review in exchange for a full refund, and in some cases a \$5-\$10 commission. Some 23 fake review related groups operate per day.⁵ Other crackdowns have shown [bulk](#) packages of reviews selling at \$11,000 for 1000, with "review rings" further enrolling in loyalty schemes to ramp up output. In other cases, fake reviews are being weaponized. Much like ransomware, this extortion involves a demand for payment with the threat that an e-commerce site's online ratings will drop to one star if payments, of up to [\\$5000](#), are not executed. More hidden, fake reviews via bot-driven services are common on the dark web.

Hinting at the size of the vast market, in May 2021 an open database revealed the identities of over 200,000 individuals appeared to be involved in [Amazon](#) fake product review schemes.

Less sophisticated but powerfully effective, companies simply urge employees to write positive reviews of products, deliberately masking their identity including through [VPNs](#).

For instance, in 2019 Skin care brand Sunday Riley was found guilty by the FTC of writing fake Sephora reviews for almost two years under instruction from its management.⁶ In 2020, Student loan comparison site, LendEDU was fined \$350,000 by the FTC after investigations found that 90% of its reviews on Trustpilot were faked with most reviews written or made up by LendEDU employees, their family or friends, or other individuals with personal or professional relationships with the company.⁷

⁵ Ibid

⁶ Federal Trade Commission, November 6 2020 <https://www.ftc.gov/news-events/press-releases/2020/11/ftc-approves-final-consent-agreement-sunday-riley-modern-skincare>

⁷ FTC 26 May 2020 <https://www.ftc.gov/news-events/press-releases/2020/05/ftc-finalizes-settlement-lendedu-case-related-deceptive-rankings>

THE RISE OF BOT-DRIVEN FAKE REVIEWS

It must be noted that it may not be a human reviewing the product at all. Though click farms, buying of fake reviews, and competitor attacks, are common, it is increasingly done by bots landing through customer acquisition campaigns, particularly observed on travel or ecommerce paid search and paid social campaigns (designed to attract paying customers). CHEQ has found that bots clicking on ads such as paid ads are the same botnets generating fake reviews.

CHEQ cybersecurity analyst, Refael Filippov, says: "A classic fake reviews campaign would start with registering multiple users to the relevant ecommerce platform - this is increasingly done by landing through customer acquisition campaigns designed to get people to buy goods, or book hotels or holidays on a central site. Increasingly, botnets that are used to click on ads can also be the same ones that generate fake reviews hurting these sites credibility and businesses on them. We find a connection between bots that have posted reviews, and we know that they're bots because of cybersecurity analysis tests performed on clicks."

For instance, in the analysis of one large travel site reliant on reviews 2500 invalid clicks from bots generated fictitious reviews through paid campaigns designed to bring in legitimate prospects to purchase. This both damaged their customer acquisition, led to long-term bot-skewed metrics, and empowered bots to hurt the reputation of their online reviews.

The challenge of bots has been a long-term issue. Zach Pardes, Trustpilot's Director of Advertising says they are battling "bot-based fakes, where programs are written to generate fake text and post it to review platforms". Fred Killingsworth, CEO of Amazon consultancy Hinge [adds](#) "Reviews are critical to your success. "Bot reviews skew the entire experience."

Finally, though not widespread, the use of AI-driven bot reviews are likely to rise, since [researchers](#) trained a neural network that can churn out fake reviews. These are shown to be indistinguishable from real customer feedback.

The heady mix of competitors, incentivized fraud, bots, and AI alongside real economic payoffs makes the fake review market complex and fast-growing.

CALCULATING THE DIRECT ECONOMIC IMPACT OF FAKE REVIEWS

To calculate the economic impact of fake online reviews, we need to analyze the size of the ecommerce market, the level of penetration of online reviews in global online buying decisions, and the percentage of fake reviews in the economy.

THE GLOBAL COST OF ONLINE FAKE REVIEWS

Size of overall Global ecommerce web revenue (2020)	\$4.28 TRILLION
89% of global ecommerce web revenue influenced by reviews	\$3.80 TRILLION
Level of fake reviews in ecommerce globally	4%
Consumer spend influenced by fake online reviews globally	\$152 BILLION

The size of the overall global ecommerce web revenue is \$4.28 trillion.⁸ Of this spend we know that in today's economy the vast majority of consumers are influenced by reviews. Multiple studies reveal that at least 89% of consumers globally check reviews online before making purchases.⁹ This has gradually risen from around 82% eight years ago.¹⁰ Overall, we conclude that online reviews influence \$3.8 trillion of global ecommerce spend in 2021.

⁸ <https://www.emarketer.com/content/global-ecommerce-update-2021>

⁹ 2020: Trustpilot: The Critical Role of Reviews in Internet Trust shows 89% are influenced by fake reviews.

¹⁰ A 2013 European Consumer Center Network web survey showed that 82% of respondents read consumer reviews before shopping

LEVEL OF FAKE REVIEWS IN ECOMMERCE GLOBALLY

Next, we must establish the contentious level of fake reviews in the global economy. Some government probes have estimated the number at only between 1 and 2%¹¹. The highest end estimates of fake reviews include a highly influential study of fraud committed on the Yelp review site identified up to 16% of all its reviews as fake.¹² Higher still, [according to review detection software, Fakespot](#), up to 42 per cent of reviews are fake. At the summit of ranges, the French Directorate-General for Competition has put the [figure](#) as high as 45%.

¹¹ <https://www.gov.uk/cma-cases/fake-and-misleading-online-reviews>

¹² Luca, Michael, and Georgios Zervas: "Fake It Till You Make It: Reputation, Competition, and Yelp Review Fraud." *Management Science* 62, no. 12 (December 2016).

OFFICIAL FIGURES OF FAKE REVIEWS: 4%

Ecommerce site	% fake reviews
Trip Advisor	0.6%
Yelp	8%
Trust Pilot	5.7%
Amazon	<1%

For the purposes of this study, we have calculated the economic losses based on actual data supplied by the major review sites themselves. Based on leading players, this places global fake reviews at an average of 4%. This has been published by the companies in a range of transparent reporting.

The fact that companies relying on reviews increasingly make their levels of fake reviews (and actions to solve the problem) known in a transparent corporate manner reflects the sizable economic threats to their business and public perception interest.

For instance, Amazon which makes up 49% of all US ecommerce, states that less than 1% of reviews are fake. "Our approximation is that less than 1 percent of reviews are inauthentic," said Sharon Chiarella, former vice president of community shopping, noting however that "sometimes individual products have more suspicious activity." In its 2021 Annual report Yelp claims "As of December 31, 2020, approximately 8% of the reviews submitted to our platform had been removed. In 2021, TrustPilot published its first transparency report revealing 5.7% of reviews (2.2million) were removed.

This overall low range is also shown in Google's analysis of fake postings and reviews on Google Maps, which [found](#) that fewer than 0.5% of local searches were "policy-violating reviews" or "fake business profiles."

With 4% levels of bogus reviews among the large sector of sales (\$3.8 trillion) influenced by reviews, we conclude that the direct influence of fake reviews on online spending is set to cost \$152 billion globally in 2021. Within this large-scale figure, the fake review challenge is having an impact on all leading ecommerce countries and sectors. Below, this large figure of direct costs is broken down by country and specific ecommerce sectors.

E-COMMERCE SPENDING INFLUENCED BY FAKE ONLINE REVIEWS IN FIVE COUNTRIES

	Size of overall ecommerce revenue (US \$)	Value of spend influenced by online reviews (US \$)	Country consumer spend influenced by fake reviews (US \$)
US	\$791 BILLION	\$703 BILLION	\$28 BILLION
UK	\$140 BILLION	\$125 BILLION	\$5 BILLION
AUSTRA	\$25.7 BILLION	\$22.8 BILLION	\$900 MILLION
JAPAN	\$181 BILLION	\$161 BILLION	\$6.44 BILLION
CANADA	\$64 BILLION	\$57 BILLION	\$2.27 BILLION

US ECOMMERCE SECTORS INFLUENCED BY FAKE ONLINE REVIEWS

	Size of web sales in sector	Value of spend influenced by online reviews	Consumer spend influenced by fake online reviews
FASHION ECOMMERCE	\$110.6 BILLION	\$98.4 BILLION	\$3.96 BILLION
BEAUTY AND PERSONAL CARE	\$22.54 BILLION	\$20 BILLION	\$800 MILLION
ENTERTAINMENT	\$28.06 BILLION	\$24.92 BILLION	\$1 BILLION
FURNITURE AND HOMEWARE	\$52.6 BILLION	\$46.8 BILLION	\$1.87 BILLION
ELECTRONICS	\$95 BILLION	\$84.5 BILLION	\$3.3 BILLION
TRAVEL	\$115 BILLION	\$102 BILLION	\$4.1 BILLION

INDIRECT COSTS: PRICING IN TRUST AND TRANSPARENCY

Direct costs, described above, refer to the losses and opportunity costs imposed on society by the fact that a crime or attack is carried out. In this case this involves the direct economic influence of fake reviews on online spending. However, the US government has suggested that to best understand the cost of harm,

estimates should consider both the financial and non-monetary effects of harm.¹³

Such indirect costs could impact quality of life, increase fear, or change behavior. Some researchers have concluded that crime's most costly factors stem from these less tangible effects.

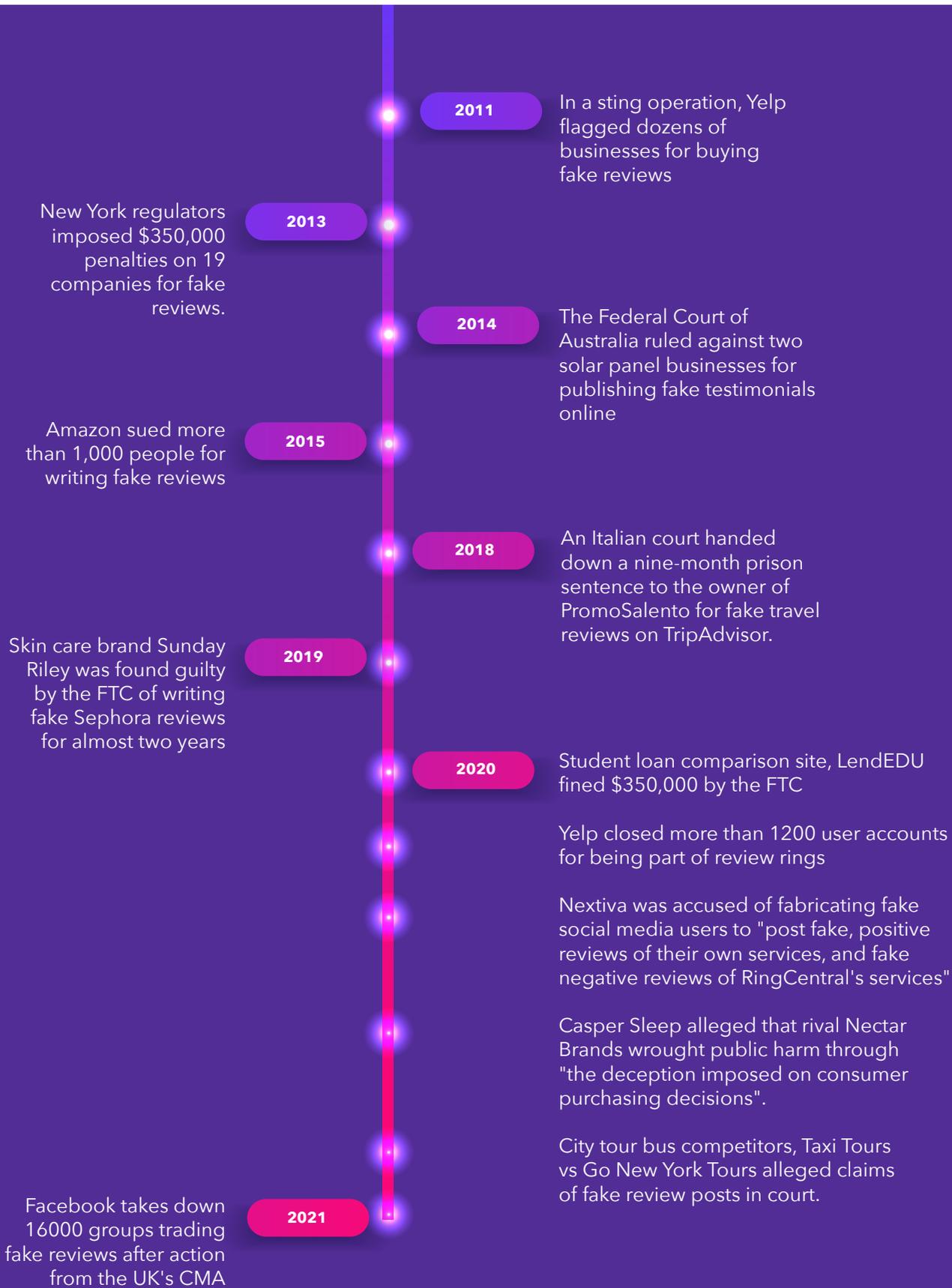
ENFORCEMENT COSTS

The high price of court cases brought about - both by public bodies and competitors fighting each other's alleged treatment of fake reviews - is a major indirect cost that must be added to our \$152 billion direct loss. The costs of enforcement, lawyer's fees, court time, executive and employee headspace, and litigating over fake reviews can stretch into millions of dollars.

Benjamin Edelman points out the complexity of acting court against fake reviews "in light of its cost relative to the value of a typical transaction". He argues that the decision to take action must be "set against "the difficulty of pursuing claims against a distant counterpart and the heightened difficulty of proving any disputed question of fact".¹⁴

Nevertheless, the appetite for prosecutions has grown as the seriousness of neglect of fake reviews has become a corporate-wide challenge.

¹³ Benjamin Edelman, The Market Design and policy of online review platforms, Oxford Review of Economic Policy, 2017



INVESTMENT BY

ECOMMERCE PLAYERS

Other indirect costs include the considerable time and resources invested in tackling the challenge. Amazon has [spent](#) over \$500 million and employed over 8000 people in 2019 alone to reduce fraud and abuse. In a major and interesting update, Google adopted a new "[Product Reviews Algorithm](#)" to attack the problem at source.

The update aimed at rewarding high-level product review content, above thinner content. Other updates to Google Maps [fraud detection](#) have been implemented. "Through better detection of click farm activity we are making it harder to post fake content cheaply, which ultimately makes it harder for a click farm to sell reviews and make money."

THE OUTSIZED EFFECTS OF FAKE REVIEWS ON BUSINESS REVENUE

Businesses can be severely hurt with one or two negative reviews, and this brings home the economic pain set out through this report. Tommy Noonan, now founder of Review Meta, was alerted to the problem after setting up a review site for gym supplement which was bombarded with fake reviews. "It is a small site, but if it is happening to supplementreviews.com, it must be happening elsewhere". In another court case from Australia a [plastic surgeon](#)

claimed that his business dropped by 23% in the week after a fake review was posted. In a court case in 2018 (United States District Court Eastern District of California) California based Super Mario Plumbing said their business dropped 25% and were forced to reduce the work of two employees as a result of a competitor's fake review. Elsewhere, an Ottawa shop selling dumplings cited the time and money they spent: "It took 10 days for 13 years' worth of work to break down [the issue],"

¹³ <https://www.gao.gov/assets/700/691895.pdf>

said Kamilla Riabko of Ottawa Perogies. In a fight over bus passengers two New York bus companies (Taxi Tours vs Go NY Tours) alleged that "fake positive online reviews...wrongly diverted" customers from TopView to Big Bus, damaging their bottom line. In an April 2020 court action, Nextiva was accused of fabricating fake social media users to "post fake, positive reviews of their own services, and fake negative reviews of RingCentral's services on various platforms". In a mud-slinging mattress war, about reviews on Google and Amazon, plaintiff Casper Sleep alleged that Nectar Brands wrought public harm through "the deception imposed on consumer purchasing decisions" flagging the wider harm of consumer's inability to find honest and independent reviews in a potentially opaque marketplace".¹⁵

LOSS OF TRUST IN ONLINE BUYING

In addition, trust is damaged – consumers who buy products that deployed fake reviews are left feeling deceived and potentially unwilling to trust future sites or reviews. The presence of fake reviews makes consumers suspect, with [85 percent](#) believing the reviews they read were "sometimes or often fake". Elsewhere, [Bazaarvoice](#) found 28% of respondents said a fake review would cause them to distrust other reviews, and 26% said it would lead them to distrust the brand. "Simply put, once shoppers suspect a company of having fake reviews, trust is in question," says Joe Rohrlich, chief revenue officer at Bazaarvoice.

¹⁵ September 2020, Casper Sleep Inc vs Nectar Brand UNITED STATES DISTRICT COURT SOUTHERN DISTRICT OF NEW YORK

CONCLUSION

The vast economic cost of fake online reviews – straining sectors from fashion and beauty, to travel – reflects the ubiquity of online reviews across the \$4.28 trillion ecommerce sector. The ease and access to fake reviews is only increasing whether by humans or botnets, click farms or groups. This makes online reviews one of the largest markets hit by bad actors and among the costliest in economies where ecommerce further expanded during the COVID-19 pandemic and continues to grow. This confirms a European Commission [report](#) citing fake consumer reviews as one of the most market-distorting factors in ecommerce causing severe consumer detriment. It has become a clear economic necessity to act against fake online reviews and further diminish the reach of bad actors undermining online buying decisions.