The State of Online Review Fraud:

An Analysis of 4 Million Reviews on Google, Facebook, Yelp and Tripadvisor





In Partnership with:

THE TRANSPARENCY COMPANY

Forward: Why We Did This Study

The internet is facing a crisis of trust. Yet trust is critical to the success of everything that we in the technology industry do. It's at the center of any positive customer experience.

Multiple surveys from Edelman, Kantar, Nielsen and YouGov have found that digital media are generally less trusted than traditional media sources. Yet roughly 60% of consumer media time is spent online, where trust is in shorter supply.

One of the important ways brands build trust is with reviews. They have become a primary tool users rely upon to determine whether to spend money on a product or service. Approaching 90% of online consumers consult reviews during the purchase process. Reviews and ratings are also a major influence on search rankings and engagement on Google.¹

Given all this, there's now a kind of "reputation imperative" – the need to maintain a positive score on major sites for ranking and conversions. Over time this has led to what we would broadly call "fake reviews," attempts to game the system or harm rivals. The volume of fake reviews has grown and so has the critical media coverage. The major platforms and review sites respond to these news reports with statements about their takedown efforts and enforcement actions. But that hasn't stopped the flow of questionable reviews.

Fake reviews are like a cancer in the review corpus. But is it growing or shrinking? We decided to do something like a biopsy and analyzed four million reviews on the top U.S. local review platforms: Google, Yelp, Facebook and Tripadvisor.



Greg Sterling VP Market Insights, Uberall

The result is this report, conducted with The Transparency Company, which attempts to quantify the problem for the first time.



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Understanding the Problem

Review fraud is illegal. Fake reviews qualify as "unfair or deceptive acts or practices in or affecting commerce" under Section 5(a) of the US Federal Trade Commission Act. They're also barred by other laws and state consumer protection statutes.

Inauthentic or deceptive reviews also violate the content guidelines of the major platforms hosting them: Google, Amazon, Facebook, Yelp and Tripadvisor, all of which say they regularly remove "review spam." Yet the problem is growing. It's also global. Meaningful government or regulatory action against review fraud has so far been inconsistent.

The platforms' own efforts to remove deceptive reviews have been uneven. As a basic matter, they're under no compulsion to act and not liable for user-contributed content, under Section 230 of the US Communications Decency Act. In other words, they can't be sued for review fraud.

Media coverage often motivates action, however. And coverage of fake reviews has grown steadily. The Wall Street Journal, Washington Post and New York Times, among others, have written repeatedly about the corrosive impact of review manipulation on consumer decision-making. Media coverage has increased public awareness of review fraud. But does that coverage accurately reflect the underlying problem or inflate its perception? Nobody has fully quantified the problem.

In conducting this research, Uberall wanted to determine the scope of review fraud and understand where it's most prevalent.

We were trying to answer questions like:

- How big a problem is review fraud?
- Which of the platforms has the highest percentage of fake reviews?
- Which cities have the highest percentage?
- Which business categories feature the most inauthentic reviews?



Topline: What We Learned

Key Findings:

90%

Roughly 90% of consumers use reviews before buying, online or offline. ~70%

Google is the top consumer reviews site, used by ~70% of US consumers.

66%

of consumers say fake reviews are a "growing problem" or a "major problem."

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- There are at least 10 categories of review manipulation and fraud.
- The most common fraud type in our study was "fake profiles with fake reviews," generated or paid for by the business itself.
- Tough to quantify with precision, the value of review fraud is probably in the hundreds of billions of dollars annually.
- Google had the highest percentage of questionable reviews in the study (10.7%), followed by Yelp (7.1%), Tripadvisor (5.2%) and Facebook (4.9%).
- The business category, across sites, with the highest percentage of suspect reviews is Locksmiths (14.5%). Pharmacies had the lowest (1.3%).
- The urban area with the highest fake reviews percentage was Miami-Ft Lauderdale with 9.7%. Boston had the lowest, at 3.9% of all reviews.

Before we dive into these findings in detail, some context is warranted.



Why Review Fraud is Growing

There's an enormous amount at stake for businesses of all sizes with online reviews. More and better reviews translate directly into online visibility, brand equity and revenue. This creates powerful incentives for businesses to pursue positive reviews and suppress or remove negative reviews.

Reviews Turn into Revenue

It almost doesn't need to be said: online reviews impact consumer decision-making. Multiple surveys confirm that a majority of people – between 82% and 97% of all internet users, depending on the survey – rely on reviews in making buying decisions. Reviews have become an indispensable part of the customer journey.

A 2019 Uberall study (<u>"Reputation Management Revolution</u>") found that even a modest percentage increase in star ratings can translate into a significant (25%) gain in customer engagement; and those with at least a four-star rating significantly outperform competitors. A 2020 survey, conducted by Zogby Analytics for MomentFeed, found that 39% of consumers won't even consider a business with less than four stars; 73% won't consider one with less than three stars. Businesses fundamentally get this.

Reviews Build Consumer Trust

TrustPilot established, in a 2020 study, that in both the US and Europe consumers trust review sites. And an earlier TrustPilot report (2019) found that perceptions of brand trustworthiness are closely linked to reviews: overall volume, positive review counts and brand responses to negative reviews.

While there are many sites that feature reviews, consumer usage is concentrated on a few leading platforms. For local business reviews, Google is the clear leader, used by nearly 70% of consumers. Facebook, Yelp and Tripadvisor all see significant usage as well.







Source: Uberall consumer survey, 2021 (n=1,018 US adults)

Reviews Impact Search Rankings

Search marketers are always looking for ways to improve search visibility and rankings. One well-established area of opportunity is reviews; on all the major platforms reviews impact rankings. Google explicitly says this: "Google review count and review score factor into local search ranking. More reviews and positive ratings can improve your business' local ranking."²

The widely cited Local Search Ranking Factors Survey³ found that reviews grew in their ranking influence between 2015 and 2020. More significantly, reviews dominate the top Google local "conversion factors," according to leading local SEO practitioners participating in the study.

Top Factors Perceived to Influence Local Conversions



Types of Review Fraud

Digital marketers, bloggers and journalists often use the terms "fake reviews" or "review fraud" loosely to describe multiple types of review manipulation. Perhaps a better way to put it is "inauthentic" or "deceptive" reviews. Those concepts capture a range of activities that can involve business owners, product makers, retailers, consumers and paid-review vendors.

Here's a non-exhaustive list of the various categories of deceptive or inauthentic reviews:

- Companies buy positive (or negative) reviews from vendors.
- Companies generate self-serving fake reviews using fake online profiles.
- Companies bribe real customers to write positive reviews or remove negative reviews.
- Consumers lie or exaggerate a bad experience to achieve a benefit (e.g., discount).
- Employees write positive reviews (usually at the employer's request).
- Competitors write negative reviews about rivals.

- Friends and family generate positive reviews to consciously boost a business.
- Former employees write negative reviews to retaliate against an ex-employer.
- Review blackmail: a person/entity generates one-star reviews and demands a ransom to not write more bad reviews.
- A company acquires a product/ business and repurposes existing positive reviews to sell a different product (more common on Amazon).

Then there's "review-bombing," a fusillade of reviews posted in response to a business taking public position, often on a controversial issue (e.g., vaccine entry requirements). Such reviews can be positive or negative and generally have nothing to do with the actual product or service. Compared with other forms of review fraud, this is easily spotted. Yelp has been the leader in policing this phenomenon.



Much more challenging to disrupt is the cottage industry producing fake reviews for sale. Purveyors of counterfeit reviews are often hiding in plain sight. A simple search for "buy five-star [platform name] reviews" yields numerous results. A few are for reputable companies selling review management software. Most offer to generate positive (or negative) reviews for a price.

The screenshot list below is from one of these companies⁴, which appeared on the first page of Google for the query "buy 5 star reviews on Google." The company sells 100 reviews at \$1.50 per review. Its site claims, "Our reviews on Google seem like original real customer's reviews, which is exactly what you need to grow your business trust to your customers".

The company promises unique IP profiles, in-country review profiles, which are "complete," all within 24 hours. These methods are designed to defeat the machine learning models used to detect fake reviews.



Buying Fake Reviews in Bulk

In our study, the most common form of review fraud was "fake profiles with fake reviews," typically solicited or paid for by the business itself.

Crowdsourced "review spam" policing tactics used by Google and many of the other platforms are flawed. Businesses paying for or generating positive reviews, generally aren't going to turn themselves in. Fake reviews are also increasingly sophisticated and difficult to spot (as the example above indicates). Most people don't know how. A 2021 University of Utah study asked subjects to evaluate the accuracy of a series of Facebook news headlines and identify the false ones: 3 out of 4 got it wrong most of the time. The research is not directly on point but it's analogous. In fact, it's even more difficult to identify fake reviews than fake news headlines – unless you know what to look for.

Amazon's 1% Claim

While we didn't include Amazon in our proprietary research, review manipulation is widespread on the site. The company's public position is that less than 1% of its reviews are inauthentic. Amazon says it uses multiple methods to detect and minimize fraud. A recent Wall Street Journal article quoted an Amazon spokesperson who said, "The company analyzes 10 million reviews weekly, using a combination of human moderators and machine-learning tools to stop abuse."⁵

Over the past several years, Amazon has taken a few high-profile enforcement actions against egregious review manipulators. These recently included banning more than 600 Chinese brands on 3,000 different seller accounts that violated its review guidelines, including cash incentives for customers to write positive reviews. There have also been multiple instances of cash incentives to delete negative reviews.⁶ Review fraud on Amazon is unquestionably higher than 1%. For example, a 2018 analysis by Fakespot found that in some product categories (e.g., electronics and beauty/cosmetics), suspicious or fake reviews were rampant.

In some they were actually the majority:



Source: Fakespot analysis of Amazon top 10 product categories (2018)

Amazon strongly disputes such claims and has accused Fakespot of inflating its figures for PR purposes. Even if we discount these numbers by 50%, there would still be a chasm between what Amazon says and what Fakespot reported. And the recent expulsion of 600 Chinese brands also hints at the scale of the problem.

Google, TrustPilot, Yelp and other sites make claims similar to Amazon about their own review-fraud diligence. In a 2021 blog post⁷ Google said, "We blocked or removed 55 million policy-violating reviews and nearly 3 million fake Business Profiles [in 2020]. This is 20 million fewer reviews than we removed in 2019 as we saw a drop in the overall number of reviews due to fewer people being out and about during COVID-19." Google also says most fraud attempts are detected and blocked before they appear in Google search or Maps results.

This is praiseworthy. However, as we show below, review fraud is alive and well on Google.



Financial Impact of Fake Reviews

CHEQ and the University of Baltimore recently produced an economic analysis⁸ of the impact of fake reviews on consumer buying. Using only self-reported data from review sites, the study found that in the aggregate, 4% of online reviews were fake. It then extrapolated from there that "the direct influence of fake reviews on online spending is set to cost \$152 billion globally in 2021."

While \$152 billion is a very large number, it almost certainly undervalues the problem, because it accepts at face value the platforms' own reporting on review fraud. It also focuses only on "e-commerce." But that's only a small part of the story.

The services economy is much larger than retail spending. In the US, services constitute more than 75% of GDP– about \$16 trillion. While ~90% of online consumers rely on reviews, if even only 10% of services spending is impacted by online reviews that would implicate nearly \$2 trillion. Accordingly, the financial impact of reviews, and potentially review fraud, on the services sector is many times larger than on e-commerce.



First of Its Kind Analysis

Much of the recent news coverage of review fraud is based on anecdotal examples, which can be useful but don't convey the full extent of the problem. The platforms themselves have published occasional reports discussing their anti-fraud efforts.⁹ There are also some third-party studies examining a single platform.¹⁰ To our knowledge there has never been a quantitative, comparative analysis of millions of reviews across multiple platforms.

Our Study Methodology

Uberall partnered with <u>The Transparency Company</u> to perform review fraud analysis. The Transparency Company uses a machine learning model trained on millions of reviews (both real and fake) to assess their legitimacy.

Here's a simplified overview of the numerous considerations that go into its individual review assessments:

- **Content and context of the review:** Using natural language processing (NLP), the system looks at review content: word choices and grammar, the prevalence of keywords, region-appropriate speech and other elements.
- **Distance between reviewer and businesses reviewed:** The location of the reviewer is compared to the locations of the reviewed business(es). Too much geographic distance or variety suggests fraud.
- **Review volume and velocity:** How quickly did the business collect its reviews, over what period of time? Are there associated groups of profiles ("review pods") that have reviewed the same businesses?
- **Profiles, real or suspect:** The system assesses user profiles, profile images and associated information to determine profile authenticity.

This analysis, while not 100% conclusive, offers a high degree of confidence about the authenticity of individual reviews. The system, however, isn't perfect. For example, it can't detect when a real person is bribed to write a positive review or delete a negative one.



Our study examined one million reviews on each of the four platforms, Google, Facebook, Yelp and Tripadvisor, for a total of four million reviews analyzed. We performed the analysis across 19 popular local service categories, in 19 US metro areas. We chose these industries to reflect a mix of business and professional categories, including licensed and non-licensed professionals. The locations are the top US media markets.

Among other questions, we wanted to determine if there were locations or categories that saw a higher frequency or density of review fraud.

Business Categories

Cosmetic surgeons Dentists Dermatologists Digital marketing agencies Home contractors **HVAC** Insurance (life + health) Locksmiths Luxury hotels Motels Moving companies Nursing homes/assisted living Personal injury lawyers Pharmacies Plumbers Real estate agents Restaurants Veterinarians Vocational/technical schools

Alphabetic order

Locations

New York Los Angeles Chicago Philadelphia Dallas-Ft. Worth San Francisco Bay Area Washington, DC Houston Boston Atlanta Phoenix Tampa-St. Petersburg Seattle-Tacoma Detroit Minneapolis-St. Paul Miami-Ft. Lauderdale Denver Orlando-Daytona Cleveland-Akron

Ordered by Nielsen DMA Rankings 2020

Our preliminary results showed suspect review totals higher in some categories than we report below. But because this is a confidence-based analysis, we decided to be more cautious in our interpretation of results.



Where the Fake Reviews Are

Google is the dominant local reviews site, used by nearly 70% of US consumers (Uberall, 2021). It's therefore not surprising it had the highest percentage of suspect reviews in the study. Next in descending order were Yelp, Tripadvisor¹¹ and Facebook.



Average % of Suspect Reviews by Site

Source: Uberall-Transparency Company (2021)



Fake Review % - Highest to Lowest

Business Categories



Locations

MIAMI-FT LAUDERDALE **-9.7%** - 9% LOS ANGELES 8.8% - 8.1% 7.9% NEW YORK 7.8% 7.2% HOUSTON 7% SEATTLE-TACOMA 7% SAN FRANCISCO 7% 6.8% MINNEAPOLIS 6.6% WASHINGTON DC 6.5% PHILADELPHIA 6.3% ORLANDO-DAYTONA 6.1% 6% DALLAS-FT. WORTH 5.9% **CLEVELAND - AKRON** 5.5% 3.9% AVERAGE: 7.7%

Source: Uberall-Transparency Company (2021)

While it might surprise people, it will come as no revelation to SEO practitioners that the category with the highest average review fraud is Locksmiths (14.5%). However, on Google specifically it's Moving Companies (22.3%). Locksmiths comes in at number three (20.3%) after Plumbers, which is number two (21.4%).



At the other end of the spectrum, across platforms, Pharmacies had the lowest overall rate of fraud (1.3%). That was followed by Vocational/Technical Schools (2.9%) and Luxury Hotels (3.2%). These are probably "acceptable" or "unavoidable" review fraud levels. In the aggregate they still represent many thousands – if not hundreds of thousands – of reviews.

The location with the highest review fraud percentage across business categories was Miami-Ft Lauderdale at 9.7%. Boston had the lowest at 3.9%. However, on Google, 12.3% of reviews in Miami-Ft Lauderdale were suspect, compared to only 6% on Facebook. We're tempted to call Boston the "most honest city in America" and Miami the least.



Fake Reviews: High and Low Categories for Each Site

It makes sense that Google has the most fake reviews in our study; it's arguably the most important local reviews destination. Reviews matter to Google's algorithm and everyone knows it. As already mentioned, positive reviews translate into revenue. Businesses and digital marketers are focused on Google and ranking in search results.

Though the average percentage of suspect reviews on Google was just under 11% across all 19 industries, it was higher in a number of categories:



These figures come out of a total of one million Google reviews analyzed. But Google's total review count is in the hundreds of millions of reviews, if not billions. Yelp says it has more than 220 million reviews on its site. Google's review corpus is much larger; it may be 10 times larger.

Let's conservatively assume Google's total US review corpus is a little over twice the size of Yelp's. That would mean something approaching 500 million reviews. Just under 11% of that total would mean 54 million dubious reviews on Google, which illustrates the potential scale of the problem, just in the US. As mentioned, Google itself said that in 2020 it disqualified "55 million policy-violating reviews" (globally).



Crowd-Policing (Mostly) Doesn't Work

Most people shopping online or doing research on locksmiths, movers or plumbers, for example, can't spot fake reviews. They also don't have the time, inclination or expertise to truly help Google police review fraud. Yet crowdsourcing is a tool that Google and others promote and use to identify and flag fake reviews.

One reason crowdsourcing isn't particularly effective is because the largest category of review fraud is coming in one form or another from businesses themselves. As the table below indicates, the largest group of suspect reviews in our study are paid reviews generated from fake profiles. These are probably companies buying positive reviews from a vendor (some of this may be third-party lead generation as well). Companies generating their own positive reviews have no reason to flag them for removal. This is an inherent contradiction in the crowdsourcing approach.

Types	Profile/Content	0	Ð
Paid Fake Reviews	Fake Profiles with Fake Reviews	7.4%	4.4%
Competitor Reviews, Employee Reviews, Ex-Employee Reviews, Review Clusters	Real Profiles with Fake Reviews	2.3%	0.4%
Paid Reviews	Fake Profiles with Real Reviews	1.1%	0.2%
Real First-Person Consumer Reviews	Real Profiles with Real Reviews	89.2 %	95%

Dominant Categories of Review Fraud

Source: Uberall-Transparency Company (2021)



The 2.3% of fake reviews coming from multiple sources, including competitors and ex-employees, are more amenable to crowd-policing. Here business owners can potentially flag inauthentic reviews for Google to investigate and take down. Crowdsourcing can thus be modestly effective as a tool to address a portion of online review fraud.

However, Google has long been promoting the sophistication of its natural language understanding and AI models¹² to improve the consumer search experience. One would think these capabilities could be more fully brought to bear in the algorithmic policing of fake reviews.

Perhaps Google and the other publishers, to varying degrees, believe it's not possible to eliminate review fraud and fake reviews are simply a "cost of doing business." The CHEQ e-commerce analysis, using selfreported data, put the industry average at 4%. Even 1% on Google would still represent millions of reviews.



But ~11% (and more in some categories) is unacceptable, especially given Google's technical capabilities.



Need for Consistent Enforcement

Each of the major platforms has slightly different content guidelines, but all of them prohibit review manipulation. Of the four major sites we examined Yelp is the strictest; it's also an outlier when it comes to review solicitation. Yelp explicitly states, "Don't ask anyone to review your business, be it customers, mailing list subscribers, friends, family, etc."

Google and the others are less strict. In fact, the consensus among digital marketers is that businesses must solicit customer reviews in order to ensure their steady flow for ranking and consumer consumption. (Consumers demand minimum review volumes and recency.) In this context, Google is the anti-Yelp; it actively encourages and enables review solicitation. This is not necessarily a problem, provided review solicitation is ethical.

In the Google My Business dashboard, business owners can access a "get more reviews" module, which generates a short URL to share with customers. This policy, together with roughly 150 million Google Local Guides around the world writing reviews, has enabled Google to become the dominant review destination for millions of consumers globally.

As with the others, Google's guidelines allow for removal of reviews that feature "fake" or "deceptive" content, as well as content not relevant to the business, illegal, sexually explicit, obscene or that reflects a conflict of interest. If a review violates any of these rules it can be removed. And this approach can and does address some types of review fraud, such as competitors leaving negative reviews or "wrong business" reviews. But absent a next-level commitment by the platforms review fraud will continue to grow.

What's needed is consistent enforcement and strong penalties. Otherwise the temptation to grow review counts and ratings by hook or by crook is very strong. Yelp has had the most public and consistent position on review manipulation, to its credit – although it had the second highest percentage of fake reviews in our study.

Cynics speculate that Google financially benefits from allowing fake reviews to remain on its site. I don't think that's right. Rather, it's probably not an especially high priority, precisely because purging fake reviews isn't tied to revenue. However, if the public loses confidence in Google reviews there could be an indirect financial impact over time. Yet Google's dominant position in the market means it's unlikely people will be switching to Bing, Yahoo or DuckDuckGo for local search because of questionable review integrity.



Decline of Consumer Trust

Multiple surveys have established the oft-repeated digital marketing maxim, "online reviews are trusted as much as recommendations from friends and family." But perhaps because of increasing news coverage of review fraud, consumers have recently become more wary.

There's growing evidence of a decline in consumer trust.

In 2019, roughly 80% of consumers surveyed said they had read a fake review "in the past year."¹³ This reflects general awareness of the problem but still suggests it's limited or isolated. But a 2021 survey from Reviews.com indicated that roughly 39% of consumers trust online reviews less than they did five years ago.¹⁴

More striking, a 2021 Uberall survey found 66% of consumers said fake reviews represent a "growing problem" or a "major problem." Almost half of the 66% described it as a "major problem."

What these surveys collectively reveal is a meaningful decline in consumer trust. Because fake reviews are difficult to spot, one way consumers are coping is by looking at multiple review sites for the same product or service.

About 88% of consumers in the Uberall survey said they consulted multiple review sites sometimes (58%) or always (30%) as a hedge against fraud on any individual site.



The Future of Reviews

Apple's recently introduced native review platform may point the way to one future for online reviews. It represents a departure from Google and Yelp's use of star ratings and narratives. Apple offers only a thumbs up or down recommendation. Facebook has done a version of this since 2018, and Nextdoor also takes a "recommended" approach to local business reviews.

With Apple's new system there's no written comments option. There are, however, secondary attributes users can also rate (e.g., customer service, atmosphere). Smartly, Apple also appears to be using device location to prevent fraud. Google could equally and easily do this. Apple will present review opportunities to users when it sees they have visited a place multiple times. And Apple may only accept reviews from people who've actually visited the business or location in question, effectively shutting out offshore review factories and any location spoofing.

While Apple's approach is intriguing, it's untested. Amazon and a few others use "verified purchaser" labels to signal higher confidence in reviews. This is another approach that needs to be more widely utilized, though it's not foolproof, as Amazon has discovered.

Regardless of the specific anti-fraud mechanisms, fake reviews is a problem that needs to be more systematically and vigorously addressed. Reviews have been an invaluable consumer

There now appear to be several paths forward:

- Using more technical sophistication and aggressive enforcement to bring review fraud down to low single digits
- 2 Embracing a review framework, like Apple's, which is structurally harder to cheat
- 3 Allowing only actual verified buyers to write reviews

These are not mutually exclusive approaches; they can and should be used in combination with one another.

(and business) tool and their integrity should be carefully guarded.

We're also seeing the return of experts (e.g., The Wirecutter) and the rise of pseudo-expert influencers as hedges against review fraud. But none of these is a foolproof defense against fake reviews, each has challenges. **Yet business as usual should not be an option.**



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