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The Economic Cost of Invalid Clicks in Paid Search and Paid Social Campaigns

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Main Findings

Globally, approximately \$144 Billion is spent on paid search and paid social campaigns, not least as brands re-allocate parts of their trade marketing budgets from brick-and-mortar retail to product search on ecommerce platforms.¹ There has been a sharp rise in allocation of budgets to Google, while Amazon, Pinterest, LinkedIn, Instagram and other platforms are attracting a rising rate of PPC advertising dollars. As is the case in emerging digital advertising channels and strategies there is a parallel growth in invalid traffic. Based on empirical-based research, we found that 14% of PPC spending is invalid. Based on economic analysis of PPC budgets this is estimated to bring global annual losses to marketers of \$23.7 Billion by the end of 2020.² These invalid clicks are driven by many different sources, from standard web crawlers, to malicious bots, click farms, ad-fraud schemes and even competitor clicks with the largest spending enterprise accounts hit hardest by sophisticated invalid click fraud.

In line with what we have seen in other digital industries, we fully expect the number of invalid clicks to increase due to rising sophisticated attempts by fraudsters to hijack PPC budgets. Research has shown that inbound marketing strategies such as PPC work well, and as such, this sector is experiencing robust growth. There are various forecasts for growth in the PPC sector, but conservative source cites growth of 10% this year³. With this continuing growth and barring effective controls, the cost of invalid PPC traffic will only continue to rise with high-spending PPC sectors particularly affected. The 14% invalid click rate across campaigns is a global aggregate across sectors, including eCommerce, education, legal, travel and medical (set out in detail below). The percentage of invalid clicks found in each sector's PPC campaigns is based on the latest economic analysis, drawing upon sector level detection of invalid activity and interviews with PPC practitioners.

¹ Global Spend Source: <https://magnaglobal.com/magna-advertising-forecasts-winter-2019-update/>

² This assumes that global spend of 2019 of \$144 Billion will increase by 17.3% for 2020 or \$168.9 Billion

³ Marketing Charts, December 2019, drawn from *About the Data*: Figures are based on WARC data from their International Ad Forecast and Ad spend Database

Invalid Click Costs 2019, and 2020

2019	
\$20,160,000,000.00	Total PPC Invalid Click loss (global)
\$7,700,000,000.00	Total PPC Invalid Click loss (US)

2020	
\$23,786,000,000.00	Total PPC Invalid Click loss (global)
\$9,060,800,000	Total for USA in Invalid Clicks

The State of Economic Loss from Invalid Clicks Globally

Global Sector market losses in 2020

2020 Global estimates of sector based on U.S. sector composition*

Sector	% Fraud	Av cost per click for sector (Google search)	Av cost per click (Google display)	Digital Spending 2020	Average PPC of 47%	Loss to Fraud
Ecommerce /Retail*	9.67%	\$0.88	\$0.29	\$85,394,400,000.00	\$40,135,368,000.00	\$3,881,090,085.60
Education**	30.46%	\$1.74	\$0.40	\$5,794,620,000.00	\$2,723,471,400.00	\$829,569,388.44
Legal***	13.45%	\$5.88	\$0.60	\$3,049,800,000.00	\$1,433,406,000.00	\$192,793,107.00
Medical^	10.19%	\$3.17	\$0.37	\$4,086,732,000.00	\$1,920,764,040.00	\$195,725,855.68
Tourism/ Travel^^	16.84%	\$1.55	\$0.24	\$33,139,126,800.00	\$15,575,389,596.00	\$2,622,895,607.97

* Retail, eMarketer, July 2019

** Education Statistica, September 2019

*** Legal American Bar Association Journal April 1 2017

**** Medical, eMarketer, July 2019 Search Spend

***** Tourism/Travel eMarketer, July 2019

***** Finance eMarketer, July 2019

2020 US Sector Market Losses from invalid clicks

Sector	% Fraud	Av cost per click for sector (Google Ads) search)	Av cost per click Google Ads (display)	Digital Spending 2020 USA.	Average PPC of 47%	Loss to Fraud
Ecommerce/ Retail*	9.67%	\$0.88	\$0.29	\$32,844,000,000.00	\$15,436,680,000.00	\$1,492,726,956.00
Education**	30.46%	\$1.74	\$0.40	\$2,228,700,000.00	\$1,047,489,000.00	\$319,065,149.40
Legal***	13.45%	\$5.88	\$0.60	\$1,173,000,000.00	\$551,310,000.00	\$74,151,195.00
Medical^	10.19%	\$3.17	\$0.37	\$1,571,820,000.00	\$738,755,400.00	\$75,279,175.26
Tourism/ Travel^^	16.84%	\$1.55	\$0.24	\$12,745,818,000.00	\$5,990,534,460.00	\$1,008,806,003.06
Finance^^^	15.21%	\$3.72	\$0.72	\$7,624,500,000.00	\$3,583,515,000.00	\$545,052,631.50

Sector Spotlights

eCommerce - \$3.8 billion globally lost to invalid clicks; US Loss \$1.4 billion

In the largest eCommerce sector, at least \$3.8 billion is expected to be lost globally on PPC campaigns alone by the end of 2020. This is based on around 9.7% invalid clicks discovered across multiple eCommerce campaigns. In one case analyzed, a fashion retailer was running their PPC and shopping campaigns across Facebook, Bing Ads, YouTube, Instagram, Snap and Amazon, with an average CPA of \$12. Here, 12% of all clicks were invalid (non-human, fraudulent or with no purchase intentions). The company found such invalid clicks across all campaigns: Bing, Snap, Amazon, Facebook and Instagram. Looking at individual popular keywords, "men's jacket" saw a 56% invalid click rate, "shoe coupon" a 52% invalid click rate, and "Asics New", a 48% invalid click rate.

The problem of bots attacking lead opportunities and sales for ecommerce companies is well established. Online retail loss from invalid clicks is sizable even set against an industry in which global web sales amounted to a staggering \$3.4 trillion in 2019. Such invalid click activity can cause havoc across an organization, severely disrupting lead generation and sales processes. In one lawsuit, Ticketmaster acknowledged that the cost of bots restricting other customers use of the site through their abusive conduct, using number and letter generators to gain access to events posed a huge problem for the business. Nevertheless, the ticketing giant argued that accessing more than 1,000 pages of the site and making more than 800 reserve requests in a 24- hour period, made potentially bad actors liable for damages in the amount of twenty-five cents (\$0.25) for each page request or reserve request. In total, they claimed a loss of over \$5000 in a one-year period. This sits alongside wider costs including "several damage assessments,

designing of new security features, and diverted resources to combat defendants' unauthorized use of Ticketmaster's website and mobile platform."⁴

Global Travel: \$2.6 billion globally lost to invalid clicks in 2020; US Loss \$1 billion

In the travel sector, at least \$2.6 billion is expected to be lost globally on PPC campaigns by the end of 2020, based on around 17% invalid clicks discovered across multiple campaigns. This assumes an expected spend of around \$15.6 billion on social and search PPC spend in the industry by the end of 2020. In one example, provided to researchers, PPC campaign managers, found many top travel keywords, displaying very high click-through rates (CTRs) but low acquisition rates. Researchers found that 24% of the top travel company's keywords regularly generated invalid clicks. These invalid clicks came from two primary sources: web crawlers and competitor clicks. The invalid click rates for each particular keyword ranged from 5% to 90% in some cases.

The challenges for Enterprises and PPC spending

Domains that spend the most on AdWords (Google Ads)

Rank	Domain	Monthly Budget
1	amazon.com	\$31.4 M
2	info.com	\$20.1 M
3	consumersadvocate.org	\$12.7 M
4	homedepot.com	\$6.81 M
5	smarter.com	\$6.72 M

Given the scale of spending on large campaigns the potential for fraud losses is enormous. Amazon ranks top for Google Ads spending (\$31.4 million a month), with other campaigns such as Home Depot spending around \$6.8 million a month.⁵ There is inevitably a greater level of complexity when it comes to complex organizations. In the U.S., complexity is one of the principal reasons why in 2014 it is estimated that Medicaid (with an annual spend of \$597 billion) made \$17 billion in improper and or fraudulent payments⁶. In the words of PPC expert, [Ted Ives](#), "Enterprise Search Engine Marketing (SEM) campaigns are exciting to design and execute; budgets are large, and there are numerous customers to satisfy by connecting them with the information they need via a myriad of keywords and ads. However, enterprise SEM campaigns tend to grow over time and become very messy and difficult to manage." We found for instance

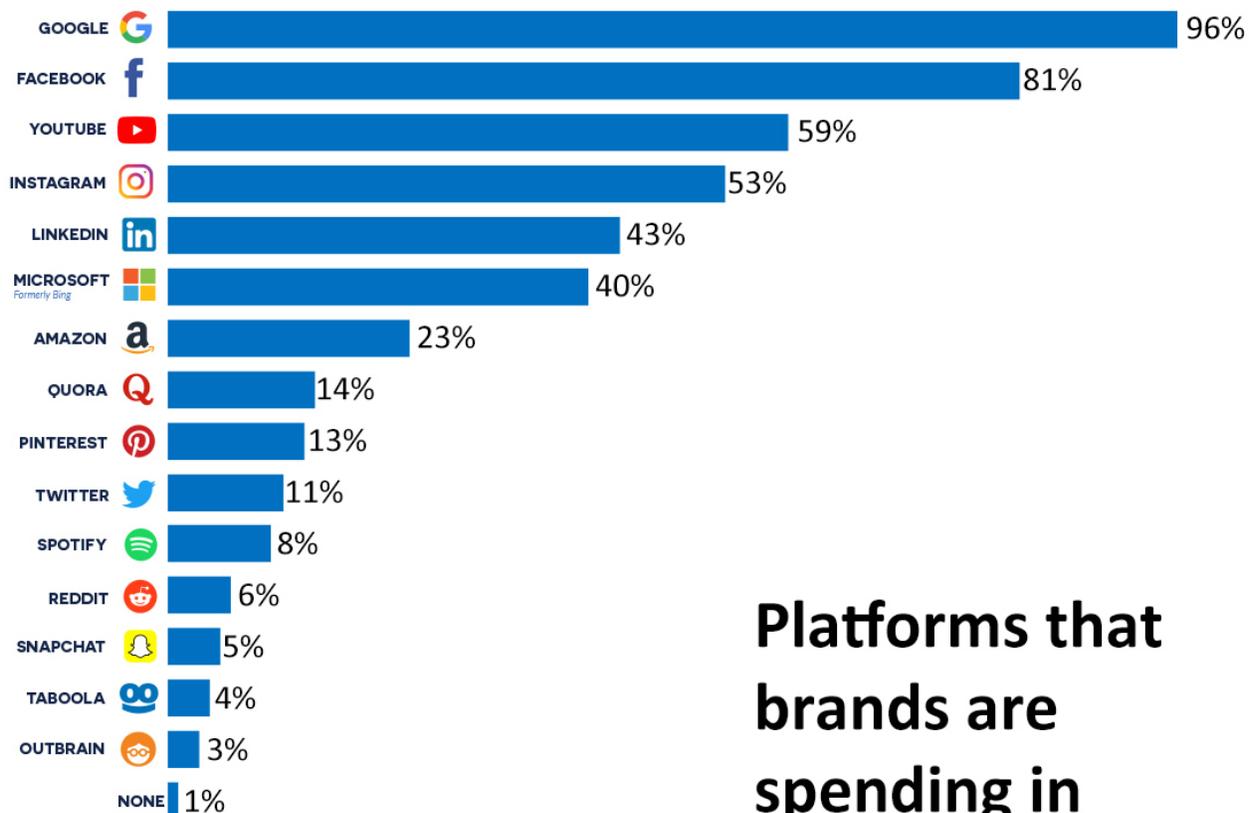
⁴ Ticketmaster L.L.C. v. Prestige Entm't W., Inc. <https://casetext.com/case/ticketmaster-llc-v-prestige-entmt-w-inc>

⁵ Data from Spyfu, accessed February 2020

⁶ 2MEDICAID: Key Issues Facing the Program GAO-15-677: Published: Jul 30, 2015. Publicly Released: Jul 30, 2015

in large enterprises companies disclosing affiliate fraud—hosts of affiliate networks attempting to take credit for thousands of clicks on a regular basis. This creates a dangerous situation where companies are duped by businesses they are transacting with. For instance, Uber found a huge case of attribution fraud, in which Kevin Frisch, former head of acquisitions at Uber, turned off two-thirds of the ride-hailing giant's \$150m spend to attract new drivers, seeing no change in the number of app installs, and revealing huge spend on potentially fraudulent partners. There is also a tendency to throw good money after bad bots. The practice of remarketing or retargeting—the tactic of serving targeted ads to people who have already visited or acted on your website—is often merely a reconnection with bot networks, incentivizing further invalid clicks to a site.

Platforms marketers will spend more in over the next 12 months



**Platforms that
brands are
spending in**

Techniques used by fraudsters

The overall techniques used can include competitor clicks (this typically involves competitors eating up your ad budget by mass clicking on ads and forcing the hitting of budget caps early on in the day). It can also include clicks by automated clicking tools (such as bots) robots or other deceptive software such as malware, alongside botnets (a number of Internet-connected devices, each of which is running one or more bots used to steal data, send spam and fill in forms). Bots in themselves account for approximately 45% of all web traffic⁷ and account for a large scale of click fraud. In many cases, enterprises have reported having up to 70%-90% of clicks turning out to be bot clicks.⁸

Google, by far the largest player in this market, takes a proactive approach to mitigating invalid clicks, investing heavily in trying to filter them out and issuing refunds to customers for invalid clicks which they weren't able to catch. However, Google (along with other prominent PPC platforms) remains a massive target for millions of hackers and fraudsters worldwide and as a result is unable to prevent all instances of invalid, non-human and fraudulent clicks. This has led many to seek out a proactive solution protecting their campaigns across platforms on which PPC ad dollars are spent.

Growth of New PPC Platform spending Leading to a rise in invalid users

The rise in spending across new platforms brings with it a wave of new types of invalid clicks. While the dominance of Google and Facebook for ad spend is well-known, Amazon has risen with 12% of the search market and 4% of the total digital advertising market, from almost nothing two years ago.⁹ Other popular platforms targeted for PPC dollars include Bing, Yahoo, Facebook, Baidu, Snap, Twitter, Amazon, and LinkedIn. For instance, Kevin Lee, Executive Chairman and Founder of Didit, and a recognized expert in PPC has pointed out that LinkedIn has sent out refunds to multiple parties for "external entities that are generating invalid clicks on ads served on LinkedIn."¹⁰ As a general point, compared to other sectors, online advertising is less regulated and less interconnected, creating a breeding ground for fraud. Online advertising has created a situation in which the situation and interests of many parties are not aligned, and there is little to disincentivize fraudsters.

⁷ What'cha Goin to do when the bad bots come for you? Matt Toomey, Aberdeen Research, April 11, 2017.

⁸ Marketo Engage: Message Board Bot or Not? – Are you suffering from 'bot clicks'? Accessed February 2020

⁹ Magna Advertising Forecasts winter 2019

¹⁰ <https://www.clickz.com/does-linkedin-have-an-invalid-click-problem/46111/>

Interviews with PPC Experts

PPC experts interviewed cite the vital importance of ending PPC fraud, as part of a wider and more strategic goal of optimizing campaigns. Wil Reynolds, founder and VP innovation at Seer Interactive, with 21 years of doing search and with clients from Asos, to BBVA Compass and Harvard University, recently found that invalid or fraudulent traffic comprised 30% of the money spent on the overall search partner network. The ability of new invalid clicks to assert themselves was discussed by Francis Shovlin, who said the incongruous clicks were new to him even after 12 years in the field. In other reported cases, fraudsters have demanded bitcoin in exchange for a promise not to flood publisher's ads with [bot and junk traffic that may force Google's automated anti-fraud systems](#) to suspend a user's AdSense account for suspicious traffic. Jonathan Kagan, VP of Biddable media at MARC USA, a leading advertising agency with more than \$350 million in billings and 250 employees, says that despite Google having "the best track record for finding it retroactively and crediting for it" he has seen fraud on campaigns "on and off for the past 16 years". He says: "In one example, there was a town 40 miles north of Winnipeg, with a population of less than 2,000 people, but we saw more than 2,500 clicks over a 30 day period coming from the town, which we didn't even target to start off with. For competitors, we were able to do page customization based on geo targets and crossed it with Google Analytics source/medium, to realize it had to come from the competitor's office".

Senior PPC specialist Rob Lewis, at Candour has implemented hundreds of successful campaigns. He says [there was one] "client they had spent half a million pounds on conversions which it turned out didn't generate any actual leads at all, it was just spam when we investigated the actual leads from their customer relationship system. It was just filled with gobbledygook essentially." He adds: "spammy traffic often head straight to the 'Thank You' page after arriving on the site without any intermediary steps and this is particularly so if there's no capture form in place, and the user doesn't have to fill in all of the details on our contact form. It may be that they're just literally scouring the website for a Thank You URL and heading straight there as well."

Adaeze (Dezie) Okpoebo, Lifecycle marketing manager at NASDAQ-listed software company LogMein adds that bot clicks in particular caused "many issues" not least "sales reps following up on false leads, and bad and misleading reporting." This demonstrates the company-wide damage caused by the click fraud problem.

Conclusion: PPC The Next Step for Action and Transparency in Advertising

The online advertising industry has previously raised the problem of ad fraud in traditional CPM campaigns. However, almost no attention has been paid to rising PPC fraud, as detailed in this paper. This is despite the fact that globally, paid search remains the most-used digital advertising format attracting 47% of total digital ad revenues, with Google search alone worth \$98 billion in 2019. In the case of cost-per-thousand (CPM) fraud on display, low cost CPM rates on ad buys have become dangerous and suffused with fraud. In the former case, coalitions of top companies with multi-billion-dollar advertising spend including Unilever, GSK, and Accenture have urged urgent action to stop ad fraud in campaigns.¹¹ Now CMOs and PPC experts are seeking to cleanse their PPC campaigns with equal vigor, which as we have seen will see marketers lose \$23.7 Billion by the end of 2020.

¹¹ The Drum, 22 November 2019, Conscious Advertising Network recruits from GSK and Accenture to combat ad abuse

The turning of attention to the rise of the PPC fraudster comes as spend continues to grow in this sector of digital advertising. Internet traffic funneled through pay-per-click advertisements brings approximately 50% more lead conversions than organic web traffic. Google has said that businesses make an average of \$2 in income for every \$1 they spend in Google Ads. Other platforms are also picking up larger PPC spend.

However, as advertisers continue to spend big on search and social PPC campaigns, invalid traffic will continue to become more prevalent. As has been shown in other areas of online advertising, fraudsters continue to target ad budgets, where they can enjoy extremely high returns with almost no risks of being caught. It is incumbent on the fast-growing and successful marketing industry to optimize its results by tackling the threats of sophisticated and widespread click fraud perpetrated by determined and malicious bad actors.

About the Author

Professor Roberto Cavazos, Executive in Residence at the Merrick School of Business at the University of Baltimore, has over 25 years' experience in economic analysis, statistical & data analysis, project and program management and policy, and technology with extensive experience in fraud analytics and analysis for government and private sector organizations.