CleanTap x VoterBot PoliticsOnDemand

Counterfeit CTV and the Vulnerability of Political Advertising

William Rand, Shailin Dhar, & Jenna Martinez
CleanTap, Inc.

November 2025

DISCLAIMER:

This research document was prepared by CleanTap to analyze observed patterns in Connected TV (CTV) ad delivery using bid-stream data sourced from multiple real-time bidding (RTB) marketplaces. Measurement verification appeared technically functional; however, the gap emerged in how buyer-side and platform-side controls were configured or applied. In particular, the ineffective use of blocking or monitoring tags (on the buyer side), or disregard for device/content signals (on the platform side), ultimately allowed delivery of the observed ad. Our intention is not to implicate, embarrass, or assign blame to any company, publisher, platform, supply-side partner (SSP), demand-side platform (DSP), or advertiser referenced herein. The entities mentioned in this report are not beneficiaries of these exploits. In many cases, they are victims of technical or systemic inefficiencies that undermine transparency and trust in the CTV ecosystem. CleanTap invites all relevant stakeholders to collaborate by confirming findings, validating data, and sharing insights on current safeguards and future initiatives designed to enhance the integrity of CTV advertising. The examples chosen to be presented should reflect positively more than negatively for the completeness and transparency of transaction data.

Table of Contents

Abstract

This study examines vulnerabilities in the American political advertising market delivered through connected television (CTV) marketplaces. Using controlled emulation and synthetic TV environments, CleanTap researchers evaluated whether programmatic systems reliably deliver political advertisements to verifiable audiences. Results indicate that political ads can be transacted, served, and measured within emulated or synthetic environments that satisfy standard marketplace signals. These findings support the conclusion that current CTV systems do not consistently distinguish between real and virtualized viewing conditions. Political campaign ads were observed to transact at elevated pricing levels within these environments, while third-party verification coverage remained limited and largely non-preventative. Indicators of audience targeting were not observable within the captured data, suggesting limited transparency into targeting mechanisms rather than their absence. Unlike enterprise advertisers, political campaigns operate within compressed, seasonal timelines with limited continuity of infrastructure and verification systems. These conditions increase exposure to unverifiable supply and reduce the ability to enforce quality controls in real time. Results suggest that a portion of political advertising spend may be transacted against unverifiable supply. In systems characterized by automation, opacity, and financial incentive, such conditions introduce structural exposure to inefficiency and potential exploitation. This raises concerns about both the economic integrity of political media buying and the reliability of political messaging reaching real viewers.

Keywords: *Civics, Political Engagement, Voter Turnout, Connected Television (CTV), Political Advertising, Programmatic Media, Counterfeit Ad Supply, Synthetic Traffic, Device Emulation, Advertising Fraud, Media Verification, Campaign Finance Efficiency, Digital Political Communication, Ad Tech Transparency, Election Integrity, Programmatic Supply Chains*

Executive Summary

Political advertising in the United States now relies heavily on programmatic connected television (CTV) systems, where billions of dollars are deployed with limited visibility into whether ads reach real viewers. Unlike enterprise advertisers, political campaigns operate within compressed timelines, with fragmented infrastructure, and inconsistent access to persistent verification systems. These conditions create a structurally vulnerable environment for media buying. This research evaluates whether political advertising delivered through CTV marketplaces is reliably reaching real audiences. Using controlled emulation, CleanTap deployed synthetic TV environments designed to replicate legitimate household devices across major streaming applications. Within these environments, we observed consistent participation in live auctions, delivery of active political campaign advertisements, and successful measurement of playback events. These findings support the conclusion that programmatic systems do not reliably distinguish between physical and non-physical viewing environments.

Across observed conditions, political advertising was transacted, served, and measured within synthetic environments that satisfied marketplace signals but did not represent real audiences. In addition, political campaigns were observed to transact at elevated pricing levels within these same environments, while verification coverage remained inconsistent and largely non-preventative. Audience targeting signals were not observable within the captured data, indicating limited transparency into how targeting is applied within programmatic systems.

The implications extend beyond inefficiency. Political campaigns are funded by donors whose contributions are intended to influence voter behavior. When those funds are transacted within unverifiable environments, that intent becomes uncertain. Within a system characterized by opacity, automation, and financial incentive, these conditions create not only exposure to low-integrity supply, but also the potential for adversarial or exploitative use of the marketplace without clear detection.

This study frames counterfeit CTV not only as a technical limitation in digital advertising systems, but as a structural vulnerability within political media infrastructure. Addressing this gap will require stronger device-level verification, pre-auction enforcement mechanisms, and greater transparency across the programmatic supply chain to ensure that political advertising is delivered as intended, to real voters on real screens.

About the Company

CleanTap is an advertising technology company founded in 2024. We address one of the most pressing issues plaguing the rapidly growing CTV advertising market: counterfeit inventory and misrepresentation. We operate a point of entry filtered ad exchange and curation service that provides verified, high-quality ad space for CTV buyers, with our core objective being to identify counterfeit CTV inventory and eliminate it from the marketplace.

Much of the ad space sold as "CTV" advertising isn't actually on connected “TV devices”, but small screens and virtual machines. Through our exchange as well as the analysis of ad space on behalf of partner companies, some of the things we routinely observe are issues that reflect this.

- We see desktop, mobile, and tablet inventory bundled into CTV packages.
- We see Digital out-of-home (DOOH) screens in airports, bars, restaurants, and point-of-sale kiosks falsely categorized as CTV.

The CleanTap objective is to identify bad CTV, and get rid of it before the auction, so that advertisers only see legitimate ad space. Our approach centers on filtering and curation done on the sell side at the point of entry. We proactively distinguish between legitimate connected TV placements and counterfeit inventory that masquerades as premium CTV space.

As co-founders of CleanTap, William Rand and Shailin Dhar have a decade-long history of vulnerability and exploit research within the digital advertising technology market. Co-founder and Head of Research, Jenna Martinez, led the framework and oversight of this experiment, providing leadership on research rigor and standards of reporting.

Introduction

Political advertising in the United States has rapidly shifted into programmatic connected television (CTV) environments, where billions of dollars in campaign spend are deployed through complex and largely opaque marketplaces. In 2024 alone, total U.S. political ad spending exceeded $11 billion, with a growing share allocated to digital channels, including CTV (AdImpact, 2024; eMarketer, 2024). Unlike traditional broadcast channels, these systems rely on automated transactions, self-declared device signals, and fragmented supply chains with limited real-time verification raising a fundamental question about whether political advertising is being delivered to real audiences at all.

This shift has expanded reach and efficiency, but it has also introduced structural vulnerabilities. Political campaigns, political action committees (PACs), and their media suppliers now operate within an ecosystem where the authenticity of media delivery cannot always be independently verified in real time. At the same time, the stakeholders funding this system, particularly individual donors, expect that their contributions translate into meaningful voter engagement. Public reporting indicates that at least $1.9 billion in political advertising was spent online during the 2024 election cycle, although the true figure is likely higher due to limited disclosure requirements (Brennan Center for Justice, 2025).

In this context, political advertising is not simply a commercial activity. It is a mechanism through which financial contributions are converted into political messaging and public influence. As digital channels continue to scale, estimated at approximately $3.46 billion in 2024, CTV has emerged as a central component of campaign strategy, further increasing reliance on programmatic systems (eMarketer, 2024; Premion, 2024). When that delivery pathway is compromised, as emerging evidence suggests may occur in certain programmatic environments, the consequences extend beyond inefficiency to questions of accountability and integrity.

Why CleanTap Became Involved

This work began when a Washington, D.C. based media consultancy responsible for planning and purchasing digital video for dozens of political campaigns and PACs engaged CleanTap to audit the quality of their CTV ad delivery. As they prepared for a significant increase in spend ahead of the 2026 election cycle, their goal was to better understand whether their media investments were reaching real audiences.

CleanTap's prior research has demonstrated that spoofed CTV environments, emulated "Smart TV" and "Android TV" devices, can successfully receive premium advertising through legitimate programmatic exchanges. These findings raised a critical question: do the same vulnerabilities exist within political media buying, where infrastructure, timelines, and safeguards differ significantly from those of enterprise advertisers?

To support this effort, CleanTap was asked to conduct an exploratory analysis of active political campaigns during the 2025 Virginia election cycle. The objective was to observe how political advertising is delivered across programmatic CTV environments and to identify any gaps between declared and actual viewing conditions.

Political Advertising Market Dynamics

Political advertising now operates at a scale comparable to major consumer brands, with billions of dollars flowing through digital channels each election cycle. However, the operational structure of political campaigns differs fundamentally from that of enterprise advertisers. Consumer brands maintain continuous, year-round campaigns supported by dedicated teams, persistent vendor relationships, and established verification infrastructure. In contrast, political campaigns operate in short, high-intensity cycles, often with temporary teams, limited continuity, and inconsistent access to measurement and verification tools.

These differences create a material gap in safeguards. While even the most sophisticated enterprise advertisers experience exposure to counterfeit or low-quality CTV supply, political advertisers are inherently more vulnerable due to the absence of persistent infrastructure and standardized quality controls. This vulnerability is especially pronounced in local, regional, and state-level campaigns, where resources are more limited and media buying practices are less standardized. National campaigns, while still exposed to the same underlying risks, benefit from longer planning horizons and more established vendor ecosystems.

Supply Chain Complexity and Adversarial Dynamics

In addition to technical fragmentation, the programmatic advertising supply chain operates as a highly complex, multi-layered system, in which each intermediary has only partial visibility into the transaction. This structure introduces not only inefficiencies, but also conditions under which adversarial behaviors can emerge without clear detection. Research in distributed computing environments has shown that in pay-per-use systems, attackers can exploit automated scaling and billing mechanisms by generating synthetic demand that appears indistinguishable from legitimate activity, a pattern described as an economic denial of sustainability (EDoS) attack, in which pay-per-use systems are exploited through sustained synthetic demand that mimics legitimate activity (Aldhyani & Alkahtani, 2022).

While originally identified in cloud infrastructure, the same economic dynamics apply to programmatic advertising markets, where impression-based pricing and automated bidding systems create similar exposure. In such environments, the combination of opacity, automation, and financial incentives can allow manipulated or low-integrity supply to persist within otherwise legitimate transaction pathways. Under these conditions, structural vulnerabilities are expected to manifest in observable ways within transaction-level data. These may include inconsistencies between declared and actual delivery environments, variations in pricing behavior, uneven application of verification mechanisms, and the presence of audience targeting signals within non-verifiable contexts. These dynamics provide a basis for examining how political advertising is transacted, delivered, and measured within programmatic CTV systems.

Purpose of the Study

This study examines whether political advertising delivered through CTV marketplaces is reaching real, verifiable audiences. Building on prior CleanTap research, we evaluate the integrity of programmatic delivery systems by introducing controlled, synthetic viewing environments designed to replicate legitimate CTV devices.

Using these environments, we observe whether political advertisements are served under standard marketplace conditions and assess how delivery is determined across transaction, pricing, verification, and targeting layers. By analyzing bidstream and event-level data, this study seeks to identify measurable discrepancies between declared system signals and actual delivery conditions.

At the center of this analysis is a single question: In a system where every campaign dollar represents both financial capital and political intent, is political CTV advertising actually reaching real audiences?

Operational Definitions

- **Connected TV (CTV)**: A television device or large full-screen format connected to the internet that can stream digital video, typically via an app-based platform. In practice, this term is inconsistently applied; some define it strictly as a large household screen, while others include any device running a CTV-capable app.
- **FAST (Free Ad-Supported Streaming TV)**: Channels and platforms offering linear-style programming for free, monetized through advertising. Examples include Pluto TV, Tubi, and Xumo.
- **AVOD (Ad-Supported Video on Demand)**: Platforms offering on-demand content for free or at a reduced subscription cost, supported by ads rather than, or in addition to, subscription revenue.
- **Supply Path**: The chain of intermediaries between a publisher and an advertiser, typically including the publisher, supply-side platform (SSP), ad exchange, and demand-side platform (DSP).
- **Supply-Side Platform (SSP)**: A technology provider that helps publishers automate the sale of their advertising inventory to multiple buyers, often via real-time bidding (RTB).
- **Demand-Side Platform (DSP)**: A technology platform used by advertisers to buy digital ad inventory across multiple exchanges and SSPs programmatically.
- **Exchange**: A marketplace where multiple supply aggregators and bidding buyers connect, enabling the programmatic auctions of ad impression opportunities.
- **Bid Request**: The standardized packet, in JSON, of information sent from an SSP to DSPs in real time, containing metadata about the ad impression opportunity (device, app, content, audience, location, 3rd party system IDs, etc.).
- **User-Agent String (UA)**: A text identifier sent by a device or browser to describe itself, including device type, operating system, and version. In CTV, these are often self-declared and not hardware-verified, making them vulnerable to spoofing.
- **Generic Smart TV / Generic Android TV**: Catch-all classifications often used in bid requests when device metadata is incomplete, unverified, or intentionally vague. Commonly associated with spoofed or emulated environments.
- **Emulated Device / Virtual Machine (VM)**: A software-based replication of a hardware device, allowing an operating system (e.g., Android TV, Tizen, WebOS) to run in a non-native environment such as a server or desktop computer.
- **HDMI Dummy Plug**: A small plug-in device that simulates the presence of a connected display, tricking the operating system or application into enabling display-dependent functionality even when no physical screen is attached.

- **Device ID / Identifier for Advertising (IFA)**: A persistent, platform-specific identifier used for ad targeting and measurement. Replication of IFAs across multiple devices or IP addresses is a common fraud indicator.
- **Pre-Bid Verification**: The process of checking an ad impression for quality and compliance after it enters the auction but before a DSP bids on it.
- **Pre-Auction Intervention**: The process of filtering or rejecting low-quality impressions before they enter the auction at all. CleanTap uses this approach to remove counterfeit supply from circulation upstream.
- **App Farm**: A controlled set of devices, virtual machines, or emulators configured to repeatedly run specific apps or content to generate ad revenue.
- **Watch-and-Earn Scheme**: A monetization tactic in which automated systems continuously view ad-supported content to collect rewards, cash payouts, or ad revenue shares.
- **AVOD/FAST Loop**: A repeated playback cycle of ad-supported video content to generate artificial ad impressions without genuine audience engagement.
- **Political Action Committee (PAC):** An activist organization that collects donor contributions to promote specific related messaging to influence voter turn out and election outcomes. PACs can accept donations directly from individuals or organizations to support candidates or political parties within certain regulated limits.

Observed Gaps

CleanTap's review of the political CTV marketplace identified several recurring deficient conditions across campaign media operations and ad-tech infrastructure. Collectively, these conditions increase the likelihood of delivery to counterfeit or unverifiable traffic endpoints and inform the hypotheses evaluated in this study.

Delivery Environment Integrity

Political campaigns rarely maintain continuous verification contracts, resulting in fragmented or absent protection across programmatic partners. At the platform level, DSPs and SSPs handling political buys often rely on default inclusion lists and may lack proactive enforcement of invalid traffic flags associated with "Generic Smart TV" or emulated devices. Industry guidance indicates that while IVT detection is widely implemented, enforcement is not required at the pre-bid stage, and final decisions to transact or serve ads remain with DSPs and SSPs (Media Ratings Council, 2025).

In addition, controls are typically reactive rather than preventive, with fraud detection and brand safety reviews occurring, if at all, after spend has already cleared and outside the window for meaningful correction. These conditions create an environment in which non-verifiable or synthetic devices may be accepted into auctions and treated as valid endpoints.

Pricing Disparity

Political advertising operates under compressed timelines and high-stakes competitive conditions, particularly during peak election cycles. Realtime bidding (RTB) platforms primarily prioritize reach and speed, which can lead to inflated bids and reduced sensitivity to inventory quality. In fragmented marketplaces with limited transparency, this dynamic increases the likelihood that political campaigns transact at higher effective CPMs relative to comparable

consumer advertising targets, particularly when competing within constrained or opaque supply environments with limited toolkits.

Verification Coverage

The transient nature of political campaigns and PACs results in inconsistent adoption of third-party auditing and verification tools. Unlike enterprise advertisers with persistent infrastructure, political buyers often operate without continuous measurement integrations or standardized enforcement frameworks. Combined with the structural limitations of pre-bid enforcement, this results in uneven or incomplete verification coverage across ad delivery sequences.

Audience Targeting Signals

In commercial programmatic advertising environments, bidstream data and transaction-level signals can often reveal indicators of audience segmentation through data synchronization, enrichment, and third-party integrations. For example, in competitive sectors such as consumer packaged goods, advertisers may target audiences using predefined segments (e.g., beverage affinity segments from third-party providers such as LiveRamp). When such signals are observable within transaction data, they can be used to infer or reverse engineer elements of competitive targeting strategies.

Hypothesis

Based on the patterns observed in the bidstream and the structural dynamics outlined above, CleanTap hypothesizes that:

H1: A measurable portion of programmatically transacted political CTV advertising inventory is delivered to non-physical environments, including virtualized or spoofed devices, rather than to verifiable connected television hardware. These environments are capable of requesting and rendering premium CTV advertisements while transmitting generic or ambiguous device metadata that is not reliably filtered by existing marketplace safeguards.

H2: Political campaign advertisements are expected to transact at higher bid prices relative to non-political consumer advertising within comparable CTV inventory environments.

H3: A minority of observed political CTV ad delivery sequences include third-party verification signals or measurement integrations.

H4: Bidstream and event-level data associated with political CTV advertising contain indicators of audience segmentation, including the use of third-party voter or demographic targeting attributes.

Method

Design

This study uses a standardized experimental framework developed through prior CleanTap research to evaluate CTV ad delivery in controlled synthetic environments. The methodology is intentionally consistent to support replication and cross-study validation, with minor adjustments specific to political advertising conditions.

This experiment evaluated whether counterfeit CTV devices configured with generic TV and even overt bot indicators could request and receive political campaign advertisements through the existing CTV advertising supply chain. A synthetic test environment was used instead of human participants, allowing controlled observation of ad delivery and auction data flows. The use of synthetic viewers and avoidance of human-user data processing was especially important in this experiment, as the target segment for these campaigns was the American voter population within a defined geography. Data protection considerations for political audiences are significantly more sensitive than those for consumer populations, as post-view engagement events, including clicks, account interactions, form submissions, and donation activity, may be tied to identifiable individuals. Prior incidents involving the misuse of voter data in political advertising contexts have underscored the importance of minimizing exposure to real user data in experimental research settings (Confessore, 2018; Isaak & Hanna, 2018).

Cluster analysis of bidstream data indicated patterns consistent with automation: device signatures marked as “Generic Smart TV” or “Generic Android TV,” perfectly uniform impression intervals, and improbable device-IP combinations across disparate subnets. These anomalies were disproportionately present in long-tail FAST inventory and were often linked to aggressive reseller activity. We reserved our full efforts on sophisticated spoofing to attempt to recreate the observations in live exchange activity, and recorded the seller visibility whenever available in the metadata.

The testbed was built around a Raspberry Pi configured to operate as a virtual streaming device. This low-cost (USD $35–$50), commercially available device was selected for its compatibility with popular streaming applications and ability to emulate common CTV platforms such as Roku, FireTV or Android TV. Using freely available code, the Raspberry Pi was able to run unmodified Free Ad-Supported Streaming Television (FAST) applications, including Pluto TV, Tubi, and Xumo. Given the proportion of political advertising spend on YouTube, our emulated TV viewing agent was given a specific webdriver modification to enable automated viewing and ad-data collection on both YouTube web and app environments.

To inspect and record ad delivery data, all network traffic from the Raspberry Pi was routed through a laptop running man-in-the-middle proxy software (mitmproxy). This allowed decryption of traffic, capturing of bid requests, auction parameters, impression events, and creative tracking metadata.

Image 1: ***Raspberry Pi with TV Hat***

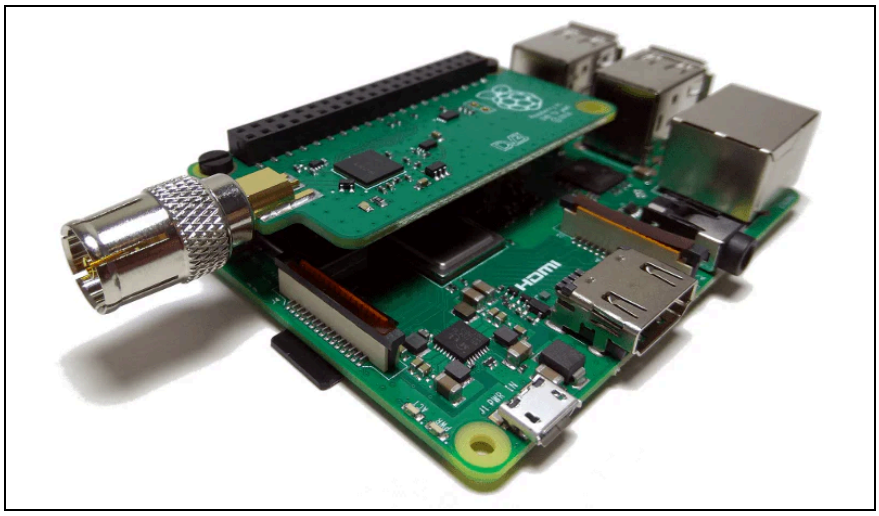

Image 2: ***Raspberry Pi with HDMI Dummy Plug***

Sample Size

To remain in compliance with legal boundaries and ethical research norms, we deliberately limited the operational scale of our testing. The total volume of ad requests and impressions was capped to remain well below thresholds that would trigger legal scrutiny, such as those defining “material financial harm”, especially in this context, to grassroots community funded campaigns for social change. Our research team, drawing on over a decade of experience supporting legal investigations into advertising fraud, is acutely aware that even academic testing involving large-scale counterfeit activity can be viewed unfavorably by regulatory bodies. As such, we intentionally restricted our activity to simulate proof-of-concept scenarios rather than stress-test systemic impact at full scale.

Measures

The study captured and analyzed the following data parameters tied to the advertising events:

- *Bid Requests*: Number of populated auction requests sent based on ad breaks in streaming content.
- *Completed Auctions*: Number of victorious and accepted bids on ad opportunities, these event URLs
- *Ads Received (Imps)*: Number of advertisement creatives delivered to streaming app
- *Ads "Renderred"*: Number of advertisements received to device and queued in stream
- *Post-View Tracking*: Number of impression events where post-event tracking events were communicated to buy side systems
- *Sell Side Systems*: Names of entities and technology firms that facilitated ad transactions on behalf of seller
- *Buy Side Systems*: Names of entities and technology firms that facilitated ad transactions on behalf of buyer
- *Brands:* Names of the advertising brands that purchased the ad space generated by the experimental counterfeit device
- *Analytics/Measurement*: Names of the entities and technology firms that collected data from the transaction for the purposes of measurement or analytics
- *CPM Range & Average*: This refers to the range of CPM values and average (mean) of the bid prices paid by the brands and their buy side systems.

Procedure

1. *Device Setup & Configuration*
   - 1.1. Installed HDMI dummy plug to emulate a connected display.
   - 1.2. Sideloaded commercial FAST apps (Pluto TV, Tubi, Xumo) without modification.
   - 1.3. Configured the Raspberry Pi to run these apps and navigate between channels autonomously.
2. *Network Routing & Traffic Capture*
   - 2.1. Routed all device traffic through mitmproxy for decryption and inspection.
   - 2.2. In some runs, used AWS data center proxies to create clearly detectable non-residential traffic; in others, residential Wi-Fi was used to simulate realistic home networks.
   - 2.3. Periodically altered user-agent strings to include explicit bot declarations (e.g., "I'm a bot. Please don't buy or sell the ad space I'm seeing.").
3. *Automated Operation*
   - 3.1. Developed scripts to operate the Raspberry Pi without human intervention, launching apps, switching channels, and playing content.
   - 3.2. Operated headless for long runs; occasionally connected a small debug screen for visual documentation.
   - 3.3. Focused playback on local and national news programming during morning and evening primetime windows
4. *Data Collection*
   - 4.1. Restricted data collection to event chains associated with political campaign advertisements
   - 4.2. Captured request/response pairs from SSPs, DSPs, and ad servers.
   - 4.3. Logged impression events, auction metadata, and creative asset details.
   - 4.4. Recorded device advertising IDs, IP addresses, CPM pricing, and geolocation data.

5. *Test Scale & Ethical Controls*
    5.1. Limited the experiment to under 10,000 ad opportunities, with an estimated total spend under $900, to minimize financial impact.
    5.2. No campaign performance was intentionally disrupted, and no private systems were accessed.
    5.3. This filtering ensured that observations were limited to politically relevant ad delivery events.

Results

Key Findings

Across 21 days of controlled testing, synthetic CTV environments consistently participated in and cleared live programmatic auctions for political advertising. Ads were successfully delivered, rendered, and measured across multiple platforms, despite originating from non-verifiable or explicitly declared bot conditions. These results indicate that current CTV systems are not reliably distinguishing between authentic and synthetic viewing environments within political media transactions. The tables below show the breadth of the data collected in this experiment.

Table 1: Index of Log Activity

Purpose/Role	Endpoint Examples	Company Examples	Number of Events Available In Logs
Sell Side Transaction	fwmrm.com, springserve, pubmatic	Pubmatic, FreeWheel, Magnite	2000+
Buy Side Transaction	vam-bid.adsrvr, amazonadsystem	TheTradeDesk, Amazon DSP	2000+
Tracking/Beacon	enduser.adsrvr.com, scorecardresearch.com, adobe,	Comscore, Adobe, TheTradeDesk	5000+
Ad-Serving - Seller	googleapis, springserve	Google, SpringServe	2000+
Ad-Serving - Buyer	innovid.com, google	Innovid, Google	2000+
Content App Host	pluto.tv, mtvnservices.com,	Pluto/Paramont, Tubi, Xumo	2000+
Measurement-Verification	dvtech, adsafeprotected	DoubleVerify & IntegralAdScience	500+
Measurement-Analytics	extremereach, vaultcdr, kochava	ExtremeReach, Kochava	500+
Audience Graph Sync	rlcdn.com, enduser.adsrvr, tapad,	LiveRamp, TapAd, TheTradeDesk	1000+

The web request logs recorded and preserved from this activity, contain a series of https requests with system specific url parameters corresponding to each impression event. For any single advertisement impression, there are multiple ad-technology systems that receive data related to the transaction and serving of the ad. These include seller platforms, buyer platforms, ad-servers, measurement systems, analytics services, and others.

Examples of Counterfeit CTV Monetization

Below are examples of individual impression events, with the preserved chain of all of the observed related https requests. Specific parameter components of each individual request URL have been parsed out.

Example 1: (Pluto.tv x Pro-Spanberger)

A TV Streaming agent was deployed with deliberately obvious characteristics to assess content platform detection capabilities. In this case, the streaming agent retained its default Raspberry Pi user agent ("Dalvik/2.1.0 (Linux; U; Android 15; Pi 4 Build/BP1A.250505.005)") without modification,with all traffic routed through Amazon Web Services infrastructure to maximize detectability. The TV streaming agent accessed the app (pluto, youtube, etc.) and then focused on shows channels about news or politics, where normal content playback allowed advertising, and tracking operations to proceed until sufficient data was collected. The example web events below tell the story of one ad placement, one auction and one creative of one campaign. But during each ad break, or designated “pod” for transactional purposes, there are anywhere from 3-6 individual ads depending on video duration.

Image 3: Actual Creative (Pluto.tv x Pro-Spanberger)

Table 2: Impression Details for Example 1 (Pluto.tv x Pro-Spanberger)

Advertiser	Spanberger for Governor
Price (CPM)	$38.00
Buy Side System	TheTradeDesk
Buyer Ad-Server	TheTradeDesk

Publisher/App	Paramount/Pluto.tv
Sell Side System	Freewheel
Assumed Player Size (*HxW*)	1080 x 1920
Agency	Unknown
Placement Type	Midroll
Creative Length	15 seconds
Ad View Completion	4/4
Measurement/Attribution	Adobe, comScore, LiveRamp
Content/Channel	CBS News Baltimore
Declared Device	Dalvik 2.1.0, Android, Raspberry Pi 4 Build,

Table 3: Sequence of Events Related to Ad Impression Example 1 (Pluto.tv x Pro-Spanberger)

Events in Sequence	Domain Endpoint	Company	Purpose
1	7f077.v.fwmrm.net	FreeWheel	Ad Request / Decision
2	vam-bid.adsrvr.org	The Trade Desk	Bid Feedback / Win Notice
3	sb.scorecardresearch.com	comScore	Measurement / Analytics
4	enduser.adsrvr.org	The Trade Desk	Impression Tracker
5	enduser.adsrvr.org	The Trade Desk	Impression Tracker
6	ads.stickyadstv.com	StickyAdsTV / FreeWheel	Ad Serving / Tracking
7	ads.stickyadstv.com	StickyAdsTV / FreeWheel	Ad Serving / Tracking
8	user-sync.fwmrm.net	FreeWheel	Measurement / Analytics
9	dpm.demdex.net	Adobe AAM	Tracking / Beacon
10	beacon.krxd.net	Krux / Salesforce	Tracking / Beacon

Events in Sequence	Domain Endpoint	Company	Purpose
11	idsync.rlcdn.com	LiveRamp	Tracking / Beacon
12	k.pluto.tv	Pluto / Paramount	Tracking / Beacon

The following is a breakdown of specific ad events from the above table titled: *Sequence of Events Related to Ad Impression Example 1 (Pluto.tv x Pro-Spanberger)*

Ad Event 2

Example 1 (Pluto.tv x Pro-Spanberger)

URL:


```
"https://vam-bid.adsrvr.org/bid/feedback/freewheel?t=1&iid=925e1330-152f-428e
-bbd3-c7d6a9739392&crid=7npndc0n&wp=38.000000&aid=0&wpc=USD&sfe=1af81501&puid
=19cc022b-a313-9caf-67d9-182fc81be84a&bdc=131&tdid=&pid=vjwdtje&ag=4f33r13&ad
v=nubgx34&sig=1T5qOdek6n5HmlwOJoepvJB1KzhHxZKwIcD9goHegc2Q.&bp=38&cf=9378862&
fq=0&td_s=paramountstreaming&rcats=&mste=&mfld=4&mssi=&mfsi=&uhow=64&agsa=&rg
z=20149&svbttd=1&dt=Mobile&osf=Android&os=Android150&br=Chrome&rlangs=01&mlan
g=&svpid=520311&did=PARA-1626308&rcxt=InApp&lat=39.046900&lon=-77.490300&tmpc
=24.53000000000003&daid=19cc022b-a313-9caf-67d9-182fc81be84a&vp=0&osi=&osv=&s
ft=2&bx=120&mdl=4&vpb=MidRoll&cc=1~KLUv_WNa1XJFMABdCABjED5sATwWDQFELIE8lkAePw
CVH4AowoDdwwA7P8BKYQAUV8i6fwCdKwxz_4AhXgCeFwDFB4D0A-TBybYn8rgEBrj6AHTQWplDR3R
R8WoerfX6jECAIaIICNtBP8y4wC1NfguS37r7lZBs7eyWnd9Kwm4FYbdysFqoWC1QrBamB1qQDlDS
QqSllVcCbUVXmZmLLrW0ry-xolraFwsDWju89z4rjc-y-iwoIs68lDaMsHJk6egJe6xcH5YiLSyrx
4LisZKwQCgsMEdPmOX-n6qeD5L33fkPqffzfnvn2br3nVsOXBlYQXRLpl4M4RnkpgDYEQRFOhoHjF
gG4AT8lVZE3kTbt7b8nA5Jfgg.&dur=1~KLUv_SMFoCgkUIUBAOAKTkNjcl9EaWdpdGFsX0xpbmVh
clRWIhkI_WNyBfwbLjQQY3WGHOqIZiVxKBAZDA..&durs=1jDz7X&crrelr=&vc=0&said=e4f9f-
1757451521462496977-PARA-1626308-5&ict=Unknown&auct=3&mgnr=news&cxdur=60.01-7
5&cxlvs=1&im=1&mc=104a7f63-b75b-47ff-86ff-fa4eac2350c1&ev=2e_qcFsUYV5AmTXlThY
-QQ..&csg=EgAaACIAKAEyBXR2LXBnOgRuZXdzQP____8HSMwcUgRuZXdzWgVUVi1QR2IA&abr="
```


Table 4: Ad Event 2 Key Values- ***Example 1 (Pluto.tv x Pro-Spanberger)***

Key	Value	Definition
t	1	Event trigger flag indicating feedback call execution
iid	925e1330-152f-428e-bbd3-c7d6a9739392	Impression ID used to track the ad event
crid	7npndc0n	Creative ID associated with the advertisement
wp	38.000000	Win price (CPM) for the impression in USD

Key	Value	Definition
aid	0	Auction ID or internal auction reference
wpc	USD	Currency of the winning bid
sfe	1af81501	Internal supply-side or event flag identifier
puid	19cc022b-a313-9caf-67d9-182fc81be84a	Platform user or device identifier
bdc	131	Internal bid or data classification code
tdid		The Trade Desk user identifier (not populated)
pid	vjwdtje	Partner or placement identifier
ag	4f33r13	Ad group identifier
adv	nubgx34	Advertiser identifier
sig	[hashed value]	Cryptographic signature validating request integrity
bp	38	Bid price value
cf	9378862	Campaign or configuration ID
fq	0	Frequency control flag
td_s	paramountstreaming	Supply source or publisher (Paramount Streaming)
rcats		Content category field (not populated)
mste		Internal measurement parameter
mfld	4	Internal field or classification flag
mssi		Measurement session identifier (not populated)
mfsi		Measurement field identifier (not populated)

Key	Value	Definition
uhow	64	User environment or device capability code
agsa		Internal ad group signal (not populated)
rgz	20149	Geographic ZIP code (Ashburn, VA)
svbttd	1	Indicates server-side bidding via The Trade Desk
dt	Mobile	Declared device type
osf	Android	Operating system family
os	Android150	Operating system version
br	Chrome	Browser
rlangs	01	Language setting
mlang		Secondary language field
svpid	520311	Supply vendor or publisher ID
did	PARA-1626308	Device identifier
rcxt	InApp	Request context (in-app environment)
lat	39.046900	Latitude
lon	-77.490300	Longitude
tmpc	24.53	Temperature or environmental metadata signal
daid	19cc022b-a313-9caf-67d9-182fc81be84a	Device advertising ID
vp	0	Video playback state flag
osi		Operating system identifier (not populated)
osv		Operating system version (not

Key	Value	Definition
		populated)
sft	2	Supply type classification
bx	120	Bid or exchange parameter
mdl	4	Device model classification code
vpb	MidRoll	Video position within content
cc	[encoded string]	Encoded consent or compliance signal
dur	[encoded string]	Duration or timing metadata
durs	1jDz7X	Duration signal identifier
crrelr		Creative relevance field
vc	0	Viewability or verification flag
said	e4f9f-1757451521462496977-PARA-1626308-5	Supply chain transaction identifier
ict	Unknown	Inventory classification type
auct	3	Auction type
mgnr	news	Media genre
cxdur	60.01-75	Content Duration Range
cxlvs	1	Content Experience Values
im	1	Impression indicator
mc	104a7f63-b75b-47ff-86ff-fa4eac2350c1	Measurement correlation ID
ev	[encoded value]	Event metadata
csg	[encoded value]	Content signal grouping
abr		Additional bid response field

Ad Event 3

Example 1 (Pluto.tv x Pro-Spanberger)

URL:

"https://sb.scorecardresearch.com/p?c1=3&c2=18896682&c3=v0i5wbq&c4=7npndc0n&c5=4f33r13&c11=134&c12=19cc022b-a313-9caf-67d9-182fc81be84a&c16=ttd&ns_ad_vevent=v_start&ns_ad_pcd=&ns_st_pu=paramountstreaming&ns__t=1757451521&ns__p=925e1330-152f-428e-bbd3-c7d6a9739392&ns_ap_device=Mobile&cs_vp_sv=1&rn=591017&ccrlite=1&ccr=1&gdpr=0&gdpr_consent=&ax_uuid="

Table 5: Ad Event 3 Key Values- ***Example 1 (Pluto.tv x Pro-Spanberger)***

Key	Value	Definition
c1	3	Comscore client type identifier
c2	18896682	Comscore client or account ID
c3	v0i5wbq	Campaign or placement identifier
c4	7npndc0n	Creative ID associated with the ad
c5	4f33r13	Ad group or campaign grouping ID
c11	134	Content or category classification code
c12	19cc022b-a313-9caf-67d9-182fc81be84a	Device or user identifier
c16	ttd	Data source identifier indicating The Trade Desk
ns_ad_vevent	v_start	Video event indicating playback start
ns_ad_pcd		Ad playback completion data field, not populated
ns_st_pu	paramountstreaming	Publisher or supply source (Paramount Streaming)
ns__t	1757451521	Event timestamp
ns__p	925e1330-152f-428e-bbd3-c7d6a9739392	Impression ID
ns_ap_device	Mobile	Declared device type
cs_vp_sv	1	Video start verification flag

Key	Value	Definition
rn	591017	Random number used for cache busting
ccrlite	1	Indicates lightweight measurement mode
ccr	1	Comscore collection flag
gdpr	0	GDPR applicability flag (0 = not applicable)
gdpr_consent		GDPR consent string, not populated
ax_uuid		Anonymous user identifier, not populated

Additional Audience Sync Examples:

URL:
`"https://user-sync.fwmrm.net/ad/u?mode=auto-user-sync&_fw_gdpr=&_fw_gdpr_consent="`

FreeWheel User Sync: This endpoint is operated by FreeWheel (sell-side system) to automatically synchronize the viewer's identity profile across platforms. The *auto-user-sync* parameter indicates an automated process to match the device's cookies or other ID's with existing data profiles.

URL:
`"https://dpm.demdex.net/ibs:dpid=796&dpuuid=044134d8-7d6b-451d-9ddd-eaf5cff85abe_af2f9a0b2a8e92b8"`

Adobe Audience Manager Tracker: This endpoint url pings Adobe's Audience Manager (demdex.net) with a unique identifier *dpuuid* generated from the viewing session. In this case, the viewer is synthetic and being added to 3rd party segments as a "voter" or user relevant to political campaigns.

URL:
`"https://beacon.krxd.net/usermatch.gif?partner=freewheel&partner_uid=044134d8-7d6b-451d-9ddd-eaf5cff85abe_af2f9a0b2a8e92b8"`

Krux/Salesforce User Match Pixel: This endpoint url fires a tracking pixel *usermatch.gif* to Salesforce's data management platform (fka Krux). The *partner=freewheel* parameter

suggests that this is an explicit cookie sync or ID sync between Salesforce and the preexisting user ID in FreeWheel's system.

URL:
`"https://idsync.rlcdn.com/709633.gif?partner_uid=044134d8-7d6b-451d-9ddd-eaf5cff85abe_af2f9a0b2a8e92b8"`

LiveRamp Audience Graph Sync: This endpoint url fires a 709533.gif pixel on *rlcdn.com*, owned by LiveRamp, a major industry identity resolution provider. By passing this sync to LiveRamp, the seller system and/or publisher, are tying this spoofed device and synthetic viewer to LiveRamp's massive identity graph. LiveRamp is commonly used in political campaigns to match digital devices to potential voters, and therefore should be a first port of diligence for political advertisers, agencies, and advisors.

Example 2: (Pluto.tv x Anti-Winsome)

A TV Streaming agent was deployed with deliberately obvious characteristics to assess content platform detection capabilities. In this case, the streaming agent retained its default Raspberry Pi user agent ("Dalvik/2.1.0 (Linux; U; Android 15; Pi 4 Build/BP1A.250505.005)") without modification,with all traffic routed through Amazon Web Services infrastructure to maximize detectability. The TV streaming agent accessed the app (pluto, youtube, etc.) and then focused on shows channels about news or politics, where normal content playback allowed advertising, and tracking operations to proceed until sufficient data was collected. The example web events below tell the story of one ad placement, one auction and one creative of one campaign. But during each ad break, or designated “pod” for transactional purposes, there are anywhere from 3-6 individual ads depending on video duration.

Image 4 : Actual Ad Creative (Pluto.tv x Anti-Winsome)

Table 6: Impression Details for Example 2 (Pluto.tv x Anti-Winsome)

Advertiser	Spanberger for Governor
Price (CPM)	$38.00
Buy Side System	TheTradeDesk
Buyer Ad-Server	TheTradeDesk
Publisher/App	Paramount/Pluto.tv
Sell Side System	Freewheel

Assumed Player Size (*HxW*)	1080 x 1920
Agency	Unknown
Placement Type	Midroll
Creative Length	30 seconds
Ad View Completion	4/4
Measurement/Attribution	Adobe, comScore, LiveRamp
Content/Channel	CBS News Baltimore
Declared Device	Dalvik 2.1.0, Android, Raspberry Pi 4 Build,

Table 7: Sequence of Events Related to Ad Impression Example 2 (Pluto.tv x Anti-Winsome)

Events in Sequence	Domain Endpoint	Company	Purpose
1	7f077.v.fwmrm.net	FreeWheel	Ad Request / Decision
2	ny1-bid.adsrvr.org	The Trade Desk	Bid Feedback / Win Notice
3	sb.scorecardresearch.com	comScore	Measurement / Analytics
4	enduser.adsrvr.org	The Trade Desk	Impression Tracker
5	enduser.adsrvr.org	The Trade Desk	Impression Tracker
6	k.pluto.tv	Pluto / Paramount	Tracking / Beacon

The following is a breakdown of specific ad events from the above table titled: *Sequence of Events Related to Ad Impression Example 2 (Pluto.tv x Anti-Winsome)*

Ad Event 3
Example 2 (Pluto.tv x Anti-Winsome)

CLICK THRU URL: https://www.worstofwinsome.com/ still active as of Mar 22, 2026

URL:
```
https://sb.scorecardresearch.com/p?c1=3&c2=18896682&c3=v0i5wbq&c4=p5065wqz&c5=4f33r13&c11=134&c12=05b4e194-27a6-53d3-a4a1-1d4185f2e48a&c16=ttd&ns_ad_vevent=v_start&ns_ad_pcd=&ns_st_pu=paramountstreaming&ns__t=1760193620&ns__p=68173
```

54e-a708-42d2-bcfc-92d27f55edf2&ns_ap_device=Mobile&cs_vp_sv=1&rn=720915&ccrl
ite=1&ccr=1&gdpr=0&gdpr_consent=&ax_uuid=

Table 8: Ad Event 3 Key Values- ***Example 2 (Pluto.tv x Anti-Winsome)***

Key	Value	Definition
c1	3	Comscore client type identifier
c2	18896682	Comscore client or account ID
c3	v0i5wbq	Campaign or placement identifier
c4	p5065wqz	Creative ID associated with the ad
c5	4f33r13	Ad group or campaign grouping ID
c11	134	Content or category classification code
c12	05b4e194-27a6-53d3-a4a1-1d4185f2e48a	Device or user identifier
c16	ttd	Data source identifier indicating The Trade Desk
ns_ad_vevent	v_start	Video event indicating playback start
ns_ad_pcd		Ad playback completion data field, not populated
ns_st_pu	paramountstreaming	Publisher or supply source (Paramount Streaming)
ns__t	1760193620	Event timestamp
ns__p	6817354e-a708-42d2-bcfc-92d27f55edf2	Impression ID
ns_ap_device	Mobile	Declared device type
cs_vp_sv	1	Video start verification flag
rn	720915	Random number used for cache busting
ccrlite	1	Lightweight measurement mode flag

Key	Value	Definition
ccr	1	Comscore collection flag
gdpr	0	GDPR applicability flag
gdpr_consent		GDPR consent string, not populated
ax_uuid		Anonymous user identifier, not populated

Ad Event 5

Example 2 (Pluto.tv x Anti-Winsome)

URL:


```
https://enduser.adsrvr.org/enduser/video/?ve=start&imp=6817354e-a708-42d2-bcfc-92d27f55edf2&ag=4f33r13&crid=p5065wqz&cf=9378862&fq=0&t=1&td_s=paramountstreaming&rcats=&mste=&mfld=4&mssi=&mfsi=&sv=freewheel&uhow=154&agsa=&wp=38.000000&rgz=20149&dt=Mobile&osf=Android&os=Android150&br=Chrome&svpid=520311&rlangs=01&mlang=&did=PARA-1626308&rcxt=InApp&tmpc=10.200000000000045&vrtd=14,15&osi=&osv=&daid=05b4e194-27a6-53d3-a4a1-1d4185f2e48a&dnr=0&vpb=MidRoll&crrelr=&npt=&cc=1~KLUv_WNa1XJFPAC9CAAjEUHeAJ43cOcNWNkCeL8CdywaAohYAnksgTx-ACo_AFGEAbuHAXZ-gJXCACiukHX_ADpX6MH9A4Z4AXheABQfANIPkAcn257I4xIY4OoD0EFrZQ4d0UXFq3m01uszAgGGiCIg7O15lcoFbmnyW5D81t2vhGRrZ7fs_FYSdisIu5WD1ULFaoFitTA90IJ0IIkWIi2tvBJoK7rKzFx0qaV9fYkV1dK-WBjQ2uG991lpfJbVZ0ERcealtGGElSNLR0_YY-X6sBRpYVk9FhSPlYQFQmGBOXrCLPf_VPV8kLzvzn9IvZ_32zvP1r3v3HLgysAKEtVpBQ5BdKzeFAAT1MV9KphRYBmAAwT8lVZE3kTbt7b8nA5Jfgg.&dur=1~KLUv_SMFoCgkUIUBAOAKTkNjcl9EaWdpdGFsX0xpbmVhclRWIhkI_WNyBfwbLjQQY3WGHOqIZiVxKBAZDA..&durs=1jDz7X&bdc=22&mdl=4&ict=Unknown&said=e533a-1760193619142297916-PARA-1626308-5&auct=3&mgnr=news&cxdur=60.01-75&cxlvs=1&csg=EgAaACIAKAEyBXR2LXBnOgRuZXdzQP____8HSMwcUgRuZXdzWgVUVi1QR2IA&sfe=1b21ec54&vp=0&ast=
```


Table 9: Ad Event 5 Key Values- ***Example 2 (Pluto.tv x Anti-Winsome)***

Key	Value	Definition
ve	start	Video event indicating playback start
imp	6817354e-a708-42d2-bcfc-92d27f55edf2	Impression ID
ag	4f33r13	Ad group identifier
crid	p5065wqz	Creative ID
cf	9378862	Campaign or configuration ID

Key	Value	Definition
fq	0	Frequency control flag
t	1	Event trigger flag
td_s	paramountstreaming	Supply source or publisher
rcats		Content category field, not populated
mste		Internal measurement parameter
mfld	4	Internal classification flag
mssi		Measurement session identifier, not populated
mfsi		Measurement field identifier, not populated
sv	freewheel	Supply vendor (FreeWheel)
uhow	154	Device or playback environment code
agsa		Internal ad group signal, not populated
wp	38.000000	Winning bid price (CPM)
rgz	20149	ZIP code (Ashburn, VA)
dt	Mobile	Declared device type
osf	Android	Operating system family
os	Android150	Operating system version
br	Chrome	Browser
svpid	520311	Supply vendor or publisher ID
rlangs	01	Language setting
mlang		Secondary language field
did	PARA-1626308	Device identifier
rcxt	InApp	Request context

Key	Value	Definition
tmpc	10.20	Environmental or telemetry signal
vrtd	14,15	Video-related event tracking codes
osi		Operating system identifier, not populated
osv		Operating system version, not populated
daid	05b4e194-27a6-53d3-a4a1-1d4185f2e48a	Device advertising ID
dnr	0	Do-not-record or privacy flag
vpb	MidRoll	Video position within content
crrelr		Creative relevance field
npt		Playback tracking field, not populated
cc	[encoded string]	Consent or compliance signal
dur	[encoded string]	Duration metadata
durs	1jDz7X	Duration identifier
bdc	22	Internal bid or data classification code
mdl	4	Device model classification
ict	Unknown	Inventory classification type
said	e533a-1760193619142297916-PARA-1626308-5	Supply chain transaction identifier
auct	3	Auction type
mgnr	news	Content genre
cxdur	60.01-75	Content duration range
cxlvs	1	Content experience flag
csg	[encoded value]	Content signal grouping

Key	Value	Definition
sfe	1b21ec54	Internal event or supply flag
vp	0	Video playback state
ast		Asset or stream field, not populated

Discussion

The findings of this study support three of the four proposed hypotheses and collectively point to structural limitations in how political CTV advertising is transacted, delivered, and validated within programmatic marketplaces.

With respect to H1, synthetic and non-verifiable environments were consistently accepted into live auctions, received political advertisements, and generated valid playback and measurement signals. These results confirm that current systems do not reliably distinguish between physical connected television devices and virtualized or spoofed environments. This outcome was observed even under conditions that included non-residential traffic and explicit indicators of automation, showing that the limitation lies not in the availability of detection signals, but in how those signals are enforced within transaction systems.

For H2, political campaign advertisements were observed to transact at elevated bid prices within comparable inventory conditions. In the context of compressed timelines, competitive urgency, and limited optimization, political campaigns are more likely to prioritize speed and reach. This creates a condition in which higher-value transactions may occur within environments that lack corresponding guarantees of audience authenticity.

The findings related to H3 further reinforce this dynamic. Third-party verification signals were not consistently present across observed ad delivery sequences, and when present, functioned primarily as post-delivery measurement rather than real-time enforcement. This distinction is critical: the system is capable of identifying irregularities, but is not structurally designed to prevent transactions from occurring in response to those signals.

In contrast, H4 was not supported. Consistent indicators of voter or demographic targeting were not observable within the captured bidstream and event-level data. This likely reflects that the sensitive or revealing parameters in crawlable endpoint URLs are increasingly encoded.

Taken together, these findings point to a broader structural condition within programmatic advertising: a system in which scale, automation, and transaction velocity are prioritized over verifiability and control. As described by Hwang (2020), digital advertising markets can exhibit characteristics of a “subprime” system, where low-quality or unverifiable inventory is able to circulate alongside legitimate supply, obscuring underlying value. Within such a system, incentives become critically important. The generation of synthetic or low-integrity traffic does not require disruption to be effective; it only requires participation within existing transaction rules. As described in studies of economic denial of sustainability (EDoS), sustained, low-level synthetic demand can extract value from automated systems without triggering immediate detection (Aldhyani & Alkahtani, 2022). Programmatic advertising, with its impression-based pricing and automated bidding, exhibits similar economic characteristics.

In the political context, these dynamics introduce additional risk. Political campaigns operate under conditions of urgency, limited oversight, and high financial stakes, where media spend is directly tied to influence over public opinion. Within such an environment, any

structural vulnerability that allows unverifiable or synthetic inventory to transact creates a pathway for economic distortion. While this study does not attribute observed behavior to specific actors, the combination of financial incentive, limited transparency, and system-level vulnerability creates conditions in which adversarial or competitive exploitation is both feasible and difficult to isolate. This pattern is consistent with broader observations in complex digital ecosystems, where fragmented infrastructure and distributed accountability enable sustained exploitation without centralized coordination (Krebs, 2014). In such environments, the absence of strong enforcement mechanisms does not merely allow inefficiency, but creates an environment in which exploitation can persist as a byproduct of system design.

Importantly, none of these dynamics require a failure of measurement systems. Across all observed events, ad serving, tracking, and analytics infrastructure functioned as designed. The gap, therefore, is not in detection, but in enforcement. Systems are capable of observing invalid or unverifiable activity, but are not consistently structured to prevent it from participating in the marketplace.

In the context of political advertising, this distinction carries significant implications. Campaign media spend represents not only financial investment, but a mechanism for shaping public discourse. When delivery systems cannot reliably ensure that impressions correspond to real audiences, the relationship between spend and influence becomes uncertain. This introduces not only inefficiency, but a structural vulnerability in how political messaging is distributed at scale.

Conclusion

This study confirms that programmatic CTV systems used in political advertising do not reliably distinguish between real and synthetic viewing environments. Across all test conditions, non-verifiable devices were accepted into auctions, received political advertisements, and generated valid measurement signals, indicating that the limitation lies in enforcement rather than detection. Political campaign ads were observed to transact at elevated prices within these same environments, while verification coverage remained inconsistent and largely non-preventative. At the same time, audience targeting signals were not observable within the captured data, underscoring the opacity of targeting mechanisms rather than their absence.

Together, these findings suggest that political advertising operates within a system that cannot consistently ensure delivery to real audiences. Without stronger upstream controls and enforcement mechanisms, campaign spend will continue to flow through environments that are measurable, but not verifiable.

References

AdImpact. (2024). 2024 election cycle ad spending report. https://go.adimpact.com/cycle-in-review-24

Aldhyani, T. H. H., & Alkahtani, H. (2022). Artificial intelligence algorithm-based economic denial of sustainability attack detection systems: Cloud computing environments. *Sensors, 22*(13), 4685. https://doi.org/10.3390/s22134685

Brennan Center for Justice. (2025). Online ad spending in the 2024 election totaled at least $1.9 billion. https://www.brennancenter.org/our-work/analysis-opinion/online-ad-spending-2024-election-totaled-least-19-billion

Confessore, N. (2018, March 17). Cambridge Analytica and Facebook: The scandal and the fallout so far. The New York Times. https://www.nytimes.com/2018/03/17/us/politics/cambridge-analytica-trump-campaign.html

eMarketer. (2024). Political ad spending will jump nearly 30% vs. 2020. https://www.emarketer.com/press-releases/2024-political-ad-spending-will-jump-nearly-30-vs-2020/

Hwang, T. (2020). *Subprime attention crisis: Advertising and the time bomb at the heart of the internet.* Farrar, Straus and Giroux.

Isaak, J., & Hanna, M. J. (2018). User data privacy: Facebook, Cambridge Analytica, and privacy protection. Computer, 51(8), 56–59. https://doi.org/10.1109/MC.2018.3191268

Krebs, B. (2014). *Spam nation: The inside story of organized cybercrime—from global epidemic to your front door.*

Media Ratings Council, Inc. (2025). *MRC IVT requirements and processes for pre-bid comments on the recent Adalytics blog*. https://mediaratingcouncil.org/sites/default/files/News/MRC%20Statement%20on%20pre%20bid%20IVT%20requirements%20and%20processes.pdf

Premion. (2024). Survey finds CTV in the limelight as political ads surge ahead of the 2024 election. https://premion.com/expert-insights/survey-finds-ctv-in-the-limelight-as-political-ads-surge-ahead-of-2024-election/

APPENDIX

EXAMPLE 1: FULL URL SEQUENCE

FILE: mitm_exploration_20250909_165239.json
ENTRY: #367

URL:
"https://7f077.v.fwmrm.net/ad/l/1?s=e4f9f&n=520311%3B520311%3B82125%3B191701%3B376521%3B379619%3B381963%3B384777%3B386329%3B505334%3B510839%3B511664%3B512028%3B512029%3B515123%3B515188%3B515189%3B516273%3B516274%3B516448%3B511939%3B511940%3B512166%3B512167%3B512188%3B515219%3B516328%3B516374%3B516584%3B516830%3B516834%3B516869%3B517097%3B517365%3B517370%3B517375%3B517411%3B517420%3B517424%3B518308%3B519114%3B519276%3B519346%3B519353%3B519611%3B519629%3B519771%3B520024%3B520177%3B520606%3B523319%3B524565%3B524796%3B524880%3B524990%3B525748%3B527997%3B528776%3B528945%3B529012%3B529256%3B529333%3B529939%3B530362%3B530966%3B531823%3B531849%3B532203%3B535045%3B537323&t=1757451521462496977&f=201326592&r=520311%3B512166&adid=53782914&reid=831890587&arid=65536&auid=&cn=defaultImpression&et=i&_cc=53782914,831890587,m325676;0;0.,,1757451521,1&tpos=0&async=0&iw=&uxnw=520311&uxss=sg922798&uxct=4&metr=1031&init=1&vcid2=044134d8-7d6b-451d-9ddd-eaf5cff85abe_af2f9a0b2a8e92b8&asid=291448750&ssid=17834780&dealid=314871"

URL:
"https://vam-bid.adsrvr.org/bid/feedback/freewheel?t=1&iid=925e1330-152f-428e-bbd3-c7d6a9739392&crid=7npndc0n&wp=38.000000&aid=0&wpc=USD&sfe=1af81501&puid=19cc022b-a313-9caf-67d9-182fc81be84a&bdc=131&tdid=&pid=vjwdtje&ag=4f33r13&adv=nubgx34&sig=1T5qOdek6n5HmlwOJoepvJB1KzhHxZKwIcD9goHegc2Q.&bp=38&cf=9378862&fq=0&td_s=paramountstreaming&rcats=&mste=&mfld=4&mssi=&mfsi=&uhow=64&agsa=&rgz=20149&svbttd=1&dt=Mobile&osf=Android&os=Android150&br=Chrome&rlangs=01&mlang=&svpid=520311&did=PARA-1626308&rcxt=InApp&lat=39.046900&lon=-77.490300&tmpc=24.530000000000003&daid=19cc022b-a313-9caf-67d9-182fc81be84a&vp=0&osi=&osv=&sft=2&bx=120&mdl=4&vpb=MidRoll&cc=1~KLUv_WNa1XJFMABdCABjED5sATwWDQFELIE8lkAePwCVH4AowoDdwwA7P8BKYQAUV8i6fwCdKwxz_4AhXgCeFwDFB4D0A-TBybYn8rgEBrj6AHTQWplDR3RR8WoerfX6jECAIaIICNtBP8y4wC1NfguS37r7lZBs7eyWnd9Kwm4FYbdysFqoWC1QrBamB1qQDlDSQqSllVcCbUVXmZmLLrW0ry-xolraFwsDWju89z4rjc-y-iwoIs68lDaMsHJk6egJe6xcH5YiLSyrx4LisZKwQCgsMEdPmOX-n6qeD5L33fkPqffzfnvn2br3nVsOXBlYQXRLpl4M4RnkpgDYEQRFOhoHjFgG4AT8lVZE3kTbt7b8nA5Jfgg.&dur=1~KLUv_SMFoCgkUIUBAOAKTkNjcl9EaWdpdGFsX0xpbmVhclRWIhkI_WNyBfwbLjQQY3WGHOqIZiVxKBAZDA..&durs=1jDz7X&crrelr=&vc=0&said=e4f9f-1757451521462496977-PARA-1626308-5&ict=Unknown&auct=3&mgnr=news&cxdur=60.01-75&cxlvs=1&im=1&mc=104a7f63-b75b-47ff-86ff-fa4eac2350c1&ev=2e_qcFsUYV5AmTXlThY-QQ..&csg=EgAaACIAKAEyBXR2LXBnOgRuZXdzQP____8HSMwcUgRuZXdzWgVUVi1QR2IA&abr="

URL:
"https://sb.scorecardresearch.com/p?c1=3&c2=18896682&c3=v0i5wbq&c4=7npndc0n&c5=4f33r13&c11=134&c12=19cc022b-a313-9caf-67d9-182fc81be84a&c16=ttd&ns_ad_vevent=v_start&ns_ad_pcd=&ns_st_pu=paramountstreaming&ns__t=1757451521&ns__p=925e1330-152f-428e-bbd3-c7d6a9739392&ns_ap_device=Mobile&cs_vp_sv=1&rn=591017&ccrlite=1&ccr=1&gdpr=0&gdpr_consent=&ax_uuid="

URL:
"https://enduser.adsrvr.org/enduser/video/?ve=creativeView&imp=925e1330-152f-428e-bbd3-c7d6a9739392&ag=4f33r13&crid=7npndc0n&cf=9378862&fq=0&t=1&td_s=paramountstreaming&rcats=&mste=&mfld=4&mssi=&mfsi=&sv=freewheel&uhow=64&agsa=&wp=38.000000&rgz=20149&dt=Mobile&osf=Android&os=Android150&br=Chrome&svpid=520311&rlangs=01&mlang=&did=PARA-1626308&rcxt=InApp&tmpc=24.53000000000003&vrtd=14,15&osi=&osv=&daid=19cc022b-a313-9caf-67d9-182fc81be84a&dnr=0&vpb=MidRoll&crrelr=&npt=&cc=1~KLUv_WNa1XJFMABdCABjED5sATwWDQFELIE8lkAePwCVH4AowoDdwwA7P8BKYQAUV8i6fwCdKwxz_4AhXgCeFwDFB4D0A-TBybYn8rgEBrj6AHTQWplDR3RR8WoerfX6jECAIaIICNtBP8y4wC1NfguS37r7lZBs7eyWnd9Kwm4FYbdysFqoWC1QrBamB1qQDlDSQqSllVcCbUVXmZmLLrW0ry-xolraFwsDWju89z4rjc-y-iwoIs68lDaMsHJk6egJe6xcH5YiLSyrx4LisZKwQCgsMEdPmOX-n6qeD5L33fkPqffzfnvn2br3nVsOXBlYQXRLpl4M4RnkpgDYEQRFOhoHjFgG4AT8lVZE3kTbt7b8nA5Jfgg.&dur=1~KLUv_SMFoCgkUIUBAOAKTkNjcl9EaWdpdGFsX0xpbmVhclRWIhkI_WNyBfwbLjQQY3WGHOqIZiVxKBAZDA..&durs=1jDz7X&bdc=131&mdl=4&ict=Unknown&said=e4f9f-175745152146249697 7-PARA-1626308-5&auct=3&mgnr=news&cxdur=60.01-75&cxlvs=1&csg=EgAaACIAKAEyBXR2LXBnOgRuZXdzQP____8HSMwcUgRuZXdzWgVUVi1QR2IA&sfe=1af81501&vp=0"

URL:
"https://enduser.adsrvr.org/enduser/video/?ve=start&imp=925e1330-152f-428e-bbd3-c7d6a9739392&ag=4f33r13&crid=7npndc0n&cf=9378862&fq=0&t=1&td_s=paramountstreaming&rcats=&mste=&mfld=4&mssi=&mfsi=&sv=freewheel&uhow=64&agsa=&wp=38.000000&rgz=20149&dt=Mobile&osf=Android&os=Android150&br=Chrome&svpid=520311&rlangs=01&mlang=&did=PARA-1626308&rcxt=InApp&tmpc=24.53000000000003&vrtd=14,15&osi=&osv=&daid=19cc022b-a313-9caf-67d9-182fc81be84a&dnr=0&vpb=MidRoll&crrelr=&npt=&cc=1~KLUv_WNa1XJFMABdCABjED5sATwWDQFELIE8lkAePwCVH4AowoDdwwA7P8BKYQAUV8i6fwCdKwxz_4AhXgCeFwDFB4D0A-TBybYn8rgEBrj6AHTQWplDR3RR8WoerfX6jECAIaIICNtBP8y4wC1NfguS37r7lZBs7eyWnd9Kwm4FYbdysFqoWC1QrBamB1qQDlDSQqSllVcCbUVXmZmLLrW0ry-xolraFwsDWju89z4rjc-y-iwoIs68lDaMsHJk6egJe6xcH5YiLSyrx4LisZKwQCgsMEdPmOX-n6qeD5L33fkPqffzfnvn2br3nVsOXBlYQXRLpl4M4RnkpgDYEQRFOhoHjFgG4AT8lVZE3kTbt7b8nA5Jfgg.&dur=1~KLUv_SMFoCgkUIUBAOAKTkNjcl9EaWdpdGFsX0xpbmVhclRWIhkI_WNyBfwbLjQQY3WGHOqIZiVxKBAZDA..&durs=1jDz7X&bdc=131&mdl=4&ict=Unknown&said=e4f9f-175745152146249697 7-PARA-1626308-5&auct=3&mgnr=news&cxdur=60.01-75&cxlvs=1&csg=EgAaACIAKAEyBXR2LXBnOgRuZXdzQP____8HSMwcUgRuZXdzWgVUVi1QR2IA&sfe=1af81501&vp=0&ast=[ASSET URI]"

URL:
"https://ads.stickyadstv.com/user-matching?id=185&_fw_gdpr=&_fw_gdpr_consent="

URL:
"https://ads.stickyadstv.com/auto-user-sync?_fw_gdpr=&_fw_gdpr_consent="
"https://user-sync.fwmrm.net/ad/u?mode=auto-user-sync&_fw_gdpr=&_fw_gdpr_consent="

URL:
"https://dpm.demdex.net/ibs:dpid=796&dpuuid=044134d8-7d6b-451d-9ddd-eaf5cff85abe_af2f9a0b2a8e92b8"

URL:
"https://beacon.krxd.net/usermatch.gif?partner=freewheel&partner_uid=044134d8-7d6b-451d-9ddd-eaf5cff85abe_af2f9a0b2a8e92b8"

URL:
"https://idsync.rlcdn.com/709633.gif?partner_uid=044134d8-7d6b-451d-9ddd-eaf5cff85abe_af2f9a0b2a8e92b8"

URL:
"https://k.pluto.tv/?category=ad&creativeId=68765a578d2f38d16e909e6d&fwCreativeId=212007937&adId=53782914.140088012971776&action=impression&event_source=android_other&indexInAdpod=0&isClientDNT=false&duration=30&cmAudienceID=&label=stitcher&source=fw&abmFlag=false&abmAd=false&content_page_url=http%3A%2F%2Fpluto.tv&pod_Type=ad&streamType=live&timeline_id=68b04c100652cfdb6557554d&index_timeline=258&episode_id=676331b03eea500013586fbc&clip_id=656f3ddd57fe4a0008850a79&partnerCode=CBSN+Locals&ch_id=60f75919718aed0007250d7a&app_name=Pluto.tv&app_domain=Pluto.tv&player_width=1920&player_height=1080&_fw_player_width=1920&_fw_player_height=1080&from_stitcher=true&device_ua=Dalvik%2F2.1.0+%28Linux%3B+U%3B+Android+15%3B+Pi+4+Build%2FBP1A.250505.005%29&ip_address=54.242.183.157&deviceId=044134d8-7d6b-451d-9ddd-eaf5cff85abe_af2f9a0b2a8e92b8&deviceVersion=15_35&appVersion=5.57.0-leanback&deviceType=android&deviceMake=Raspberry&deviceModel=Pi+4&embedPartner=&stitcherReqId=4334ff16-e00e-9132-8085-8290a4b62983&deviceUserAgent=Dalvik%2F2.1.0+%28Linux%3B+U%3B+Android+15%3B+Pi+4+Build%2FBP1A.250505.005%29&ipAddress=54.242.183.157&origDeviceType=android%2CRaspberry%2Cctv&origIPAddress=54.242.183.157&sessionId=086a768c-8dbf-11f0-9df2-4ad27b0ecf33&cluster=prd&us_privacy=1YNN&abTestId=0&transaction_id=2b49269b-937d-4ace-87a0-c74ebe068c61&root_url=https%3A%2F%2Fv.adsrvr.org%2Fvjwdtje%2Fnubgx34%2Fs6tgnodc%2F7npndc0n_1_52.mp4&is_primary=true&preroll=false&region=us&country=US&event_id=aa61fd4b-e1ac-4c17-b891-5c5f36bdc5c6"

EXAMPLE 2: FULL URL SEQUENCE
FILE: ctv_traffic_20251011_103159.json
ENTRY: #214

URL:
https://7f077.v.fwmrm.net/ad/l/1?s=e533a&n=520311%3B520311%3B82125%3B191701%3B376521%3B379619%3B381963%3B384777%3B386329%3B505334%3B510839%3B511664%3B512028%3B512029%3B515123%3B515188%3B515189%3B516273%3B516274%3B516448%3B169843%3B511939%3B511940%3B512166%3B512167%3B512188%3B515211%3B515219%3B516328%3B516374%3B516584%3B516830%3B516834%3B516869%3B517097%3B517365%3B517370%3B517375%3B517411%3B517420%3B517424%3B518308%3B519114%3B519276%3B519346%3B519353%3B519611%3B519629%3B520024%3B520177%3B520606%3B523319%3B524565%3B524796%3B524880%3B524990%3B525748%3B527997%3B528776%3B528945%3B529012%3B529256%3B529333%3B529939%3B530362%3B530966%3B531823%3B532203%3B535045%3B537323&t=1760193619142297916&f=201326592&r=520311%3B512166&adid=53782914&reid=56999528&arid=65536&auid=&cn=defaultImpression&et=i&_cc=53782914,56999528,m325676;0;0.,,1760193620,1&tpos=0&async=0&iw=&uxnw=520311&uxss=sg922798&uxct=4&metr=1031&init=1&vcid2=044134d8-7d6b-451d-9ddd-eaf5cff85abe_af2f9a0b2a8e92b8&asid=291448750&ssid=17834780&dealid=314871

URL:
https://ny1-bid.adsrvr.org/bid/feedback/freewheel?t=1&iid=6817354e-a708-42d2-bcfc-92d27f55edf2&crid=p5065wqz&wp=38.000000&aid=0&wpc=USD&sfe=1b21ec54&puid=05b4e194-27a6-53d3-a4a1-1d4185f2e48a&bdc=22&tdid=&pid=vjwdtje&ag=4f33r13&adv=nubgx34&sig=1W95o3QAEfPubisTAh7TaDR52nvfQCsiQIpGaiw-EFPI.&bp=38&cf=9378862&fq=0&td_s=paramountstreaming&rcats=&mste=&mfld=4&mssi=&mfsi=&uhow=154&agsa=&rgz=20149&svbttd=1&dt=Mobile&osf=Android&os=Android150&br=Chrome&rlangs=01&mlang=&svpid=520311&did=PARA-1626308&rcxt=InApp&lat=39.046900&lon=-77.490300&tmpc=10.200000000000045&daid=05b4e194-27a6-53d3-a4a1-1d4185f2e48a&vp=0&osi=&osv=&sft=2&bx=120&mdl=4&vpb=MidRoll&cc=1~KLUv_WNa1XJFPAC9CAAjEUHeAJ43cOcNWNkCeL8CdywaAohYAnksgTx-ACo_AFGEAbuHAXZ-gJXCACiukHX_ADpX6MH9A4Z4AXheABQfANIPkAcn257I4xIY4OoD0EFrZQ4d0UXFq3m01uszAgGGiCIg7O15lcoFbmnyW5D81t2vhGRrZ7fs_FYSdisIu5WD1ULFaoFitTA90IJ0IIkWIi2tvBJoK7rKzFx0qaV9fYkV1dK-WBjQ2uG991lpfJbVZ0ERcealtGGElSNLR0_YY-X6sBRpYVk9FhSPlYQFQmGBOXrCLPf_VPV8kLzvzn9IvZ_32zvP1r3v3HLgysAKEtVpBQ5BdKzeFAAT1MV9KphRYBmAAwT8lVZE3kTbt7b8nA5Jfgg.&dur=1~KLUv_SMFoCgkUIUBAOAKTkNjcl9EaWdpdGFsX0xpbmVhclRWIhkI_WNyBfwbLjQQY3WGHOqIZiVxKBAZDA..&durs=1jDz7X&crrelr=&vc=0&said=e533a-1760193619142297916-PARA-1626308-5&ict=Unknown&auct=3&mgnr=news&cxdur=60.01-75&cxlvs=1&im=1&mc=104a7f63-b75b-47ff-86ff-fa4eac2350c1&ev=Gx5gPB0wgo0uwo9vHIfJ2A..&csg=EgAaACIAKAEyBXR2LXBnOgRuZXdzQP____8HSMwcUgRuZXdzWgVUVi1QR2IA&abr=

URL:
https://sb.scorecardresearch.com/p?c1=3&c2=18896682&c3=v0i5wbq&c4=p5065wqz&c5=4f33r13&c11=134&c12=05b4e194-27a6-53d3-a4a1-1d4185f2e48a&c16=ttd&ns_ad_vevent=v_start&ns_ad_pcd=&ns_st_pu=paramountstreaming&ns__t=1760193620&ns__p=6817354e-a708-42d2-bcfc-92d27f55edf2&ns_ap_device=Mobile&cs_vp_sv=1&rn=720915&ccrlite=1&ccr=1&gdpr=0&gdpr_consent=&ax_uuid=

URL:
https://enduser.adsrvr.org/enduser/video/?ve=creativeView&imp=6817354e-a708-42d2-bcfc-92d27f55edf2&ag=4f33r13&crid=p5065wqz&cf=9378862&fq=0&t=1&td_s=paramountstreaming&rcats=&mste=&mfld=4&mssi=&mfsi=&sv=freewheel&uhow=154&agsa=&wp=38.000000&rgz=20149&dt=Mobile&osf=Android&os=Android150&br=Chrome&svpid=520311&rlangs=01&mlang=&did=PARA-1626308&rcxt=InApp&tmpc=10.200000000000045&vrtd=14,15&osi=&osv=&daid=05b4e194-27a6-53d3-a4a1-1d4185f2e48a&dnr=0&vpb=MidRoll&crrelr=&npt=&cc=1~KLUv_WNa1XJFPAC9CAAjEUHeAJ43cOcNWNkCeL8CdywaAohYAnksgTx-ACo_AFGEAbuHAXZ-gJXCACiukHX_ADpX6MH9A4Z4AXheABQfANIPkAcn257I4xIY4OoD0EFrZQ4d0UXFq3m01uszAgGGiCIg7O15lcoFbmnyW5D81t2vhGRrZ7fs_FYSdisIu5WD1ULFaoFitTA90IJ0IIkWIi2tvBJoK7rKzFx0qaV9fYkV1dK-WBjQ2uG991lpfJbVZ0ERcealtGGElSNLR0_YY-X6sBRpYVk9FhSPlYQFQmGBOXrCLPf_VPV8kLzvzn9IvZ_32zvP1r3v3HLgysAKEtVpBQ5BdKzeFAAT1MV9KphRYBmAAwT8lVZE3kTbt7b8nA5Jfgg.&dur=1~KLUv_SMFoCgkUIUBAOAKTkNjcl9EaWdpdGFsX0xpbmVhclRWIhkI_WNyBfwbLjQQY3WGHOqIZiVxKBAZDA..&durs=1jDz7X&bdc=22&mdl=4&ict=Unknown&said=e533a-1760193619142297916-PARA-1626308-5&auct=3&mgnr=news&cxdur=60.01-75&cxlvs=1&csg=EgAaACIAKAEyBXR2LXBnOgRuZXdzQP____8HSMwcUgRuZXdzWgVUVi1QR2IA&sfe=1b21ec54&vp=0

URL:
https://enduser.adsrvr.org/enduser/video/?ve=start&imp=6817354e-a708-42d2-bcfc-92d27f55edf2&ag=4f33r13&crid=p5065wqz&cf=9378862&fq=0&t=1&td_s=paramountstr

eaming&rcats=&mste=&mfld=4&mssi=&mfsi=&sv=freewheel&uhow=154&agsa=&wp=38.000000&rgz=20149&dt=Mobile&osf=Android&os=Android150&br=Chrome&svpid=520311&rlangs=01&mlang=&did=PARA-1626308&rcxt=InApp&tmpc=10.200000000000045&vrtd=14,15&osi=&osv=&daid=05b4e194-27a6-53d3-a4a1-1d4185f2e48a&dnr=0&vpb=MidRoll&crrelr=&npt=&cc=1~KLUv_WNa1XJFPAC9CAAjEUHeAJ43cOcNWNkCeL8CdywaAohYAnksgTx-ACo_AFGEAbuHAXZ-gJXCACiukHX_ADpX6MH9A4Z4AXheABQfANIPkAcn257I4xIY4OoD0EFrZQ4d0UXFq3m01uszAgGGiCIg7O15lcoFbmnyW5D81t2vhGRrZ7fs_FYSdisIu5WD1ULFaoFitTA90IJ0IIkWIi2tvBJoK7rKzFx0qaV9fYkV1dK-WBjQ2uG991lpfJbVZ0ERcealtGGElSNLR0_YY-X6sBRpYVk9FhSPlYQFQmGBOXrCLPf_VPV8kLzvzn9IvZ_32zvP1r3v3HLgysAKEtVpBQ5BdKzeFAAT1MV9KphRYBmAAwT8lVZE3kTbt7b8nA5Jfgg.&dur=1~KLUv_SMFoCgkUIUBAOAKTkNjcl9EaWdpdGFsX0xpbmVhclRWIhkI_WNyBfwbLjQQY3WGHOqIZiVxKBAZDA..&durs=1jDz7X&bdc=22&mdl=4&ict=Unknown&said=e533a-1760193619142297916-PARA-1626308-5&auct=3&mgnr=news&cxdur=60.01-75&cxlvs=1&csg=EgAaACIAKAEyBXR2LXBnOgRuZXdzQP____8HSMwcUgRuZXdzWgVUVi1QR2IA&sfe=1b21ec54&vp=0&ast=

URL:

https://k.pluto.tv/?category=ad&creativeId=68deac913971b41126be0819&fwCreativeId=10309861&adId=53782914.140009339118336&action=impression&event_source=android_other&indexInAdpod=1&isClientDNT=false&duration=30&cmAudienceID=&label=stitcher&source=fw&content_page_url=http%3A%2F%2Fpluto.tv&pod_Type=ad&streamType=live&timeline_id=68e3cc12393a03f3e3d9848c&index_timeline=366&episode_id=67655c63381eea0013b46db8&clip_id=656f3ddd57fe4a0008850a79&partnerCode=CBSN+Locals&ch_id=60f75919718aed0007250d7a&app_name=Pluto.tv&app_domain=Pluto.tv&player_width=1920&player_height=1080&_fw_player_width=1920&_fw_player_height=1080&from_stitcher=true&device_ua=Dalvik%2F2.1.0+%28Linux%3B+U%3B+Android+15%3B+Pi+4+Build%2FBP1A.250505.005%29&ip_address=54.242.183.157&deviceId=044134d8-7d6b-451d-9ddd-eaf5cff85abe_af2f9a0b2a8e92b8&deviceVersion=15_35&appVersion=5.57.0-leanback&deviceType=android&deviceMake=Raspberry&deviceModel=Pi+4&embedPartner=&stitcherReqId=357baf8a-ddc5-9453-9e40-ee38a142a73f&deviceUserAgent=Dalvik%2F2.1.0+%28Linux%3B+U%3B+Android+15%3B+Pi+4+Build%2FBP1A.250505.005%29&ipAddress=54.242.183.157&origDeviceType=android%2CRaspberry%2Cctv&origIPAddress=54.242.183.157&sessionId=f7ef36b5-a6af-11f0-ae7d-8e0e85534410&cluster=prd&us_privacy=1YNN&transaction_id=c82d7fa4-64d2-44e7-8c2d-a9d8075c442a&root_url=https%3A%2F%2Fv.adsrvr.org%2Fvjwdtje%2Fnubgx34%2F7nvfojdb%2Fp5065wqz_1_52.mp4&is_primary=true&preroll=false&region=us&country=US&event_id=55e57446-106d-4c2b-ba82-435ac94a915f