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Party Equalization or Normalization Through Visual Generative AI in the 2025 German Federal Election

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Abstract

This study examines whether visual generative artificial intelligence (VGenAI) serves as an equalizing force for minor parties or reinforces existing power asymmetries in political communication. Drawing on equalization and normalization theory, we investigate party differences in VGenAI adoption, content strategies, and user engagement during the 2025 German federal election. Using a semi-automated AI detection method combining automated classification with manual validation, we analyzed Facebook and Instagram posts from 37 German parties, identifying nearly 1,000 VGenAI images and videos published by approximately 400 party accounts during the four weeks preceding election day. Findings reveal evidence for both theoretical perspectives—equalization and normalization—across analyzed dimensions. Regarding adoption, minor parties used VGenAI at higher rates than major parties, supporting the equalization hypothesis, which states that low-cost technologies enable resource-constrained actors to produce professional campaign visuals. Content strategy analysis reveals a transparency divide, with mainstream major parties disclosing AI origins more frequently than minor parties or the right-wing Alternative for Germany (AfD). The AfD distinguished itself as the only major party to make extensive use of photorealistic imagery, citizen depictions, criminal portrayals, and negative tone, consistent with populist communication strategies. However, engagement analysis supports normalization: While VGenAI content is associated with higher user engagement than non-AI posts, this advantage accrues equally to major and minor parties rather than providing resource-constrained actors with competitive benefits. VGenAI thus appears to be associated with broader access to professional visual production while leaving engagement asymmetries intact. These findings advance understanding of how emerging communication technologies interact with party system structures and have implications for regulatory approaches to synthetic political content.

Keywords
artificial intelligence; election campaigns; equalization; German 2025 federal election; normalization; party competition; social media; user engagement; visual communication

1. Introduction

The 2025 German federal election has been characterized as the country's first "AI election," with observers noting how political actors increasingly deploy visual generative artificial intelligence (VGenAI) to create campaign images and videos (Muñoz & Laumann, 2024; Simon & Altay, 2025). This designation reflects a shift in the technological infrastructure of campaigning, where the diffusion of generative AI has moved from theoretical possibility to operational reality. VGenAI models such as DALL-E, Midjourney, or Grok have the potential of transforming strategic campaign communication by enabling the automated production of professional visuals in large quantities with minimal human, monetary, and time resources (Battista, 2024; Kruschinski, Jost, et al., 2025). Social networking platforms serve as distribution channels, allowing the dissemination of VGenAI content to potential voters through both organic posts and paid advertising (Bossetta, 2018; Kruschinski & Bene, 2022).

The 2025 election takes place against the backdrop of a "snap election" scenario, a context defined by compressed timelines, urgent mobilization requirements, and significant resource constraints. These structural conditions create fertile ground for VGenAI adoption, as the technology promises to decouple high-quality visual production from the traditional exigencies of time, money, and human labor. The potential of VGenAI to revolutionize strategic communication is widely acknowledged, offering the ability to mass-produce professional-grade visuals tailored to specific demographic segments with precision (Darius & Römmele, 2023; Hackenburg & Margetts, 2024).

The rapid diffusion of VGenAI in political contexts has triggered public discussions about its risks and opportunities. While proponents emphasize its potential for efficiency, personalization, and democratization between well-funded and resource-limited political actors, critics warn of deception, manipulation, and erosion of trust in democratic processes (Dan, 2025; Jungherr, 2024). These discussions have spurred regulatory initiatives, most notably the EU's AI Act, which introduces the first comprehensive legal framework for the supply and use of AI based on risk levels, with AI used to influence electoral behavior classified as high-risk (European Parliament, 2024; Jungherr, 2024).

Yet, while the normative and regulatory discourse around VGenAI has accelerated, empirical knowledge about its use in election campaigns remains scarce. Much of the existing literature addresses public attitudes towards VGenAI, analyzes perception and effects, or discusses the hypothetical risks of synthetic content through case studies (Dan, 2025; Kruschinski, Jost, et al., 2025; Simon & Altay, 2025). There is little empirical evidence of whether, how, and to what extent VGenAI technologies are being used for campaign communication on social media by political campaigns and whether such use provides electoral advantages to different types of parties. Recent content-analytic case studies (e.g., Geise et al., 2025) on Instagram usage by major German parties provide valuable first insights but do not systematically compare major and minor parties or examine engagement outcomes and reach for VGenAI campaign messages.

This study addresses these gaps by examining VGenAI use through the theoretical lens of the equalization and normalization debate, which has long characterized scholarship on digital political communication (Fischer & Gilardi, 2023; Gibson & McAllister, 2015). We investigate whether VGenAI serves as an equalizing technology that enables resource-constrained minor parties to compete against established parties, or whether traditional power asymmetries persist in the digital sphere. Specifically, we examine: How does the use of VGenAI differ by major and minor parties with regard to its prevalence (RQ1) and the content strategies (RQ2)? And does the use of VGenAI lead to more engagement for major or minor parties (RQ3)?

To answer these questions, we conducted a content analysis of nearly 1,000 VGenAI images and videos which were posted on Facebook and Instagram by almost 400 political party accounts, including candidates, and federal and local party branches, during the four weeks leading up to election day of the 2025 German federal election. We identified VGenAI images and videos using a semi-automatic detection approach where an initial automated classification was followed by manual validation by trained coders who annotated the content for communication strategies. We employ multilevel regression models to examine how party-level characteristics shape VGenAI adoption and its relationship to user engagement and visibility metrics.

This study makes three contributions. First, it provides empirical evidence on VGenAI adoption patterns across the spectrum of German parties, extending beyond the major party focus of prior work. Second, it offers one of the first analyses of whether VGenAI content generates differential engagement and visibility for different party types. Third, it advances theoretical understanding of how emerging communication technologies interact with party system structures and resource inequalities.

2. The Challenges and Potentials of VGenAI for Election Campaign Communication

Visual generative AI (VGenAI) refers to a type of generative AI capable of creating new images or videos from different inputs, mostly text prompts but also existing images, audio, or code (Sanseviero et al., 2025). Unlike traditional computer graphics or photo editing software, VGenAI models "imagine" new content by learning the latent statistical patterns and structural relationships within training datasets encompassing billions of images. These models learn the patterns and structures of their training imagery and use this knowledge to produce new visuals that are coherent, stylistically appropriate, and often indistinguishable from human-produced material. This is achieved through advanced machine learning architectures such as generative adversarial networks (GANs) and diffusion models, combined with transformer architectures for text-to-image and text-to-video generation (Sanseviero et al., 2025).

Examples of VGenAI models at the moment of writing include GPT Image, Midjourney, Nano Banana, and Grok Imagine, each offering different capabilities (Mollick, 2025). GPT Image, integrated into the ChatGPT ecosystem, facilitates autoregressive reasoning-based image generation with safety guardrails designed to prevent deepfakes of public figures. Midjourney is known for its artistic style and high configurability, enabling campaigns to maintain visual brand identity across multiple assets and styles (Phoenix & Taylor, 2024). Nano Banana, Google's Gemini-based image model, is known for maintaining character consistency across edits and for targeted image editing through natural-language prompts while preventing the realistic generation of public figures. Grok Imagine, integrated directly into the X platform, offers real-time generation with fewer content restrictions, making it a potent tool for rapid-response visual commentary but also for non-consensual and politically charged synthetic imagery (Mollick, 2025). Video generation

models such as Google Veo/Omni, Higgsfield, or Kling AI extend generative capabilities to the creation of video clips.

The integration of VGenAI into political campaigning offers advantages for strategic visual campaign communication, particularly on social networking platforms as visual-dominant environments (Bossetta, 2018; Farkas, 2023). The benefit is the reduction in resources required to produce high-quality visual content. Traditional campaign imagery requires photographers, graphic designers, location scouting, and post-production time. VGenAI collapses this workflow into minutes or seconds, enabling campaigns to operate at the speed of the news cycle (Kruschinski, Jost, et al., 2025). This efficiency allows even smaller or less well-funded actors to participate competitively in digital campaigning.

Additionally, VGenAI supports visual personalization, enabling campaigns to tailor imagery to the characteristics, preferences, or emotions of specific voter segments (Darius & Römmele, 2023; Geise, 2025). Through prompt engineering, campaigns can generate variations of a core message with different settings to appeal to audiences. By adjusting style, symbolism, and narrative cues, campaigns can create visuals that maximize resonance and relevance for different demographics (Hackenburg & Margetts, 2024). The democratization potential is significant: By lowering technical and financial barriers to entry, the technology theoretically allows resource-constrained actors to compete visually with well-funded incumbents.

Despite these advantages, VGenAI also presents risks to political communication and democratic trust. Foremost is the threat of disinformation and manipulation: Photorealistic VGenAI content can create the impression of showing real objects, people, or events, enabling campaigns to enhance "visual evidence" or spread falsehoods (Battista, 2024; Dan, 2025; Kruschinski, Jost, et al., 2025). These visuals are often indistinguishable from authentic content, making it difficult for voters to detect manipulation or falsification (Kruschinski, Jost, et al., 2025; Lu & Yuan, 2024). This capability can be weaponized to fabricate evidence of scandals, illicit meetings, or embarrassing behavior. Even if debunked, such images can leave lasting impressions due to cognitive biases (Dan, 2025).

The proliferation of high-quality synthetic media creates an effect known as the "liar's dividend" (Chesney & Citron, 2019). As the public becomes aware that any image could be fake, political actors can deny the authenticity of genuine evidence, dismissing real photos or videos as AI-generated. This skepticism erodes the epistemological foundation of public debate. There is also the risk of reinforcing stereotypes and biases because VGenAI models draw on prejudiced training data (Gillespie, 2024). Additionally, the mass production of emotionally charged, targeted visuals may fuel polarization and fragment the public sphere (Dobber et al., 2021; Jungherr, 2024). If authenticity in visual political communication is lost, trust in political actors and institutions may erode, threatening democratic legitimacy (Battista, 2024; Geise, 2025; Jungherr, 2024).

3. Equalization or Normalization Through VGenAI

The debate over whether digital technologies equalize or normalize political competition has been central to scholarship on political communication for over two decades (Fischer & Gilardi, 2023; Gibson & McAllister, 2015). According to the equalization hypothesis, new media levels the electoral playing field by providing smaller political parties with tools to compete more equally with established parties. The lower costs of online communication, the ability to bypass traditional media gatekeepers, and the potential for viral

content distribution are argued to reduce the resource advantages of major parties (Ward et al., 2003). The normalization hypothesis, however, suggests the opposite: Major parties continue to dominate the online space, just as they do offline, by transferring their existing resource advantages, professional expertise, and organizational capacities to new platforms (Fischer & Gilardi, 2023).

VGenAI represents an important case for examining this tension. On the one hand, VGenAI tools are accessible and user-friendly, potentially democratizing the production of professional campaign visuals. Platforms like ChatGPT or Google Gemini, which integrate these VGenAI models, allow the generation of campaign content, often rivaling the output of professional agencies (Kruschinski, Jost, et al., 2025). The marginal cost of generating a high-quality image is almost zero, offering minor parties a "leapfrog" capability. On the other hand, well-resourced parties may still maintain advantages through their ability to invest in more sophisticated tools, specialized staff, prompt engineering training, legal compliance reviews, and strategic integration of VGenAI into broader campaign infrastructures (Dommett et al., 2023). The following sections derive research questions by examining theoretical expectations and existing empirical evidence for party differences in VGenAI adoption and its effects on engagement and visibility.

3.1. Party Differences in VGenAI Adoption

From a rational choice perspective, political organizations select from available communication instruments that promise the greatest benefit under election-specific conditions while weighing associated costs (Krewel, 2017). For VGenAI, this cost–benefit calculation is shaped by several party-level factors. First, financial and personnel resources remain pivotal in shaping campaigns' adoption of new technologies (Dommett et al., 2023). Well-resourced parties such as the Christian Democratic Union (CDU/CSU), the Social Democrats (SPD), or The Greens can invest in infrastructure, specialized staff, or external expertise, allowing them to embed VGenAI into broader campaign strategies. However, VGenAI may lower barriers for less-resourced parties by enabling professional visual content production without requiring expensive agencies or specialized personnel.

Second, party institutionalization shapes VGenAI adoption, too (Darius & Römmele, 2023; Dommett et al., 2023). Established parties like CDU/CSU or SPD are often bound by centralized procedures and risk-averse cultures that create path dependencies constraining innovation (Krewel, 2017). The decision to adopt VGenAI is demanding due to its capacity to generate masses of personalized "visual evidence" which carries reputational risks if misuse is detected, potentially undermining trust and authenticity (Dan, 2025; Kruschinski, Jost, et al., 2025). In contrast, less institutionalized parties, particularly those founded during the rise of social media, have organizational flexibility and fewer traditional constraints, allowing decentralized experimentation with new technologies to establish visibility and compete for attention.

Third, self-regulation mechanisms, such as voluntary election codices or fairness agreements, set normative boundaries for campaign technology use (Kruschinski, Jost, et al., 2025; "Parteien beschließen Fairnessabkommen," 2024). In the 2025 German federal election, several institutionalized parties signed an AI fairness agreement and publicly committed to labeling VGenAI content and avoiding synthetic impersonations ("Parteien beschließen Fairnessabkommen," 2024). These commitments may limit the options available to signatory parties, while non-signatory parties face fewer reputational or normative constraints in using VGenAI.

Empirical evidence on VGenAI adoption in election campaigns remains limited. Geise et al. (2025) analyzed Instagram posts from major German parties during the 2025 campaign and found that the Alternative for Germany (AfD) used synthetic visuals significantly more than other parties, with VGenAI prevalence at approximately 3.8% of posts. Further, their findings suggest that VGenAI adoption may follow an equalization pattern, with minor parties more willing to experiment with the technology. However, systematic comparison across the full party spectrum remains lacking. We therefore ask:

RQ1: How does the use of VGenAI differ by major and minor parties with regard to its prevalence?

Beyond adoption rates, major and minor parties may also differ in how they deploy VGenAI content strategically. The outlined theoretical considerations suggest that party characteristics shape not only whether parties use VGenAI but also how they use it. Regarding transparency, major parties bound by self-regulatory commitments such as the AI fairness agreement may be more inclined to label VGenAI content to maintain credibility and avoid reputational damage (Kruschinski, Jost, et al., 2025; "Parteien beschließen Fairnessabkommen," 2024), while minor and non-signatory parties face fewer normative constraints to disclose synthetic origins and may therefore omit labeling to maximize persuasive impact. Concerning format, although images deliver campaign messages instantly and are shareable for rapid dissemination and strategic functions such as framing or priming (Farkas, 2023; Schill, 2012), videos offer greater narrative depth and emotional immersion through motion and sound (Haßler et al., 2023, 2024). With respect to visual realism, VGenAI offers campaigns a spectrum of styles from photorealistic depictions to illustrations, or comic-like montages (Phoenix & Taylor, 2024). Minor parties operating outside mainstream media attention may deploy photorealistic VGenAI to produce "visual evidence" for their claims about social conditions, outgroups, or political opponents, exploiting the credibility and evidentiary weight of realistic imagery without risking detection or accountability (Geise, 2025; Kruschinski, Jost, et al., 2025). Major parties face heightened scrutiny from journalists, fact-checkers, and political opponents, making deceptive photorealism a reputational liability; they may favor non-realistic styles such as cartoons or illustrations that signal creative intent rather than documentary truth, allowing them to communicate symbolism, satire, or critique while reducing the likelihood of misinformation accusations (de-Lima-Santos et al., 2024).

Personalization may also diverge between party types. VGenAI enables campaigns to create visuals of political actors, including politicians, citizens, minorities, or adversarial figures, humanizing candidates through relatable scenarios while also supporting the visualization of "idealized" citizens or social groups to signal inclusivity or solidarity (Farkas & Bene, 2021; Geise, 2025). However, the same technology can be misused for exclusionary, dog-whistle, or stereotypical depictions (Battista, 2024; Dan, 2025). In migration reporting, actors are often framed either as minorities in need of assistance or as criminals posing a threat to public safety (Bleich et al., 2015), and far-right visual communication strategies construct boundaries between a trusted in-group and threatening "others" (Awad et al., 2022; Mudde, 2007). VGenAI amplifies this capacity by enabling photorealistic depictions of criminal or stigmatized actors. While major parties may balance candidate-centered imagery with policy communication, research indicates that populist and challenger parties demonstrate a higher propensity to concentrate on leader imagery and to depict idealized or stigmatized social groups (Bast, 2024; Farkas et al., 2022). Minor parties, particularly those with populist orientations, may therefore use VGenAI to generate both personalized leader content and synthetic depictions of outgroups without the ethical constraints that bind major parties.

Finally, regarding the tonality of content, VGenAI enables campaigns to evoke enthusiasm, hope, fear, or anger through manipulation of facial expression, lighting, color, and composition (Hackenburg & Margetts, 2024). In negative campaigning, VGenAI enables the production of attack visuals that depict opponents in unflattering ways or associate rivals with stigmatized figures, amplifying distrust and provoking outrage (Kruschinski, Jost, et al., 2025). While parties generally rely more on positive than negative social media posts (Baranowski et al., 2023; Kruschinski, Haßler, et al., 2025), empirical results suggest that challenger, populist, or extreme parties are more likely to deploy negative messaging than incumbents (Baranowski et al., 2023; Farkas, 2023; Nai, 2020). Minor parties, positioned outside government and seeking to mobilize discontent, may therefore deploy VGenAI more frequently for attack content, whereas major parties with reputational concerns may maintain a predominantly positive tone.

These considerations lead to a second research question concerning content strategy differences in VGenAI deployment:

> RQ2: How do major and minor parties differ in their VGenAI content strategies regarding (a) labeling and transparency, (b) realistic versus non-realistic visual styles, (c) personalization versus issue orientation, and (d) positive versus negative tonality?

3.2. VGenAI and User Engagement

User engagement on social media platforms represents an important metric for campaign success, as engagement signals both audience reception and algorithmic amplification potential (Bene et al., 2022). Engagement encompasses different forms of user interaction, including reactions, comments, and shares, each reflecting different levels of cognitive and behavioral investment with content (Jost et al., 2020). The question of whether VGenAI content is associated with differential engagement patterns is central to understanding its strategic value for different types of parties.

From an equalization perspective, VGenAI may enable minor parties to produce content that is associated with engagement comparable to or exceeding that of major parties. Visual content is processed more rapidly by recipients and may elicit attention and emotions more effectively than text (Geise, 2025), suggesting that high-quality VGenAI visuals could help minor parties capture audience attention regardless of their resource constraints. However, following the normalization perspective, major parties' advantages in follower bases, brand recognition, and algorithmic visibility might persist even when using VGenAI. Prior research finds that party size and incumbency status are good predictors of social media engagement (Haßler et al., 2023). Major parties benefit from larger and more active follower networks that generate baseline engagement regardless of content characteristics. Platform algorithms may favor established accounts with histories of high engagement, creating cumulative advantages that new technology adoption cannot easily overcome. Conversely, there is risk of backlash if users penalize content perceived as "fake" or "inauthentic," or if distrust is elicited by the "uncanny valley" effect, that is, the discomfort triggered when synthetic figures appear almost but not quite human (Kruschinski, Jost, et al., 2025). We therefore ask:

> RQ3: Does the use of VGenAI lead to more engagement for major or minor parties?

The AfD warrants special analytical attention as a distinct category within the German party system (Heinze, 2023). It occupies a unique structural position as a populist radical-right party that holds formal major party status through substantial parliamentary representation but remains institutionally isolated through a "cordon sanitaire" applied by all established parties (Heinze, 2021, 2023). Its communication strategies differ from other major parties, including high social media engagement and populist visual framing patterns (Geise et al., 2025; Haßler et al., 2023; Jost et al., 2020). Treating the AfD as a separate analytical category in our research design prevents masking theoretically meaningful variation that would be obscured by grouping it with other major parties or by undifferentiated minor party classifications.

4. Data Collection and Methods

4.1. Data Collection

Data collection was conducted across Facebook and Instagram, which are the two most used social media platforms in Germany (Behre et al., 2025). Drawing on the application programming interface (API) of Bright Data (https://brightdata.com), we compiled a dataset covering all organic posts (N = 68,994; see Supplementary File Section A.1 for breakdown per party) published from more than 5,000 political party accounts in the four weeks leading up to election Sunday (24.01.2025–23.02.2025). Bright Data's API delivers structured JSON access to publicly available content while complying with the General Data Protection Regulation (GDPR); we validated reliability against the Meta Content Library API on five accounts and found no differences in post counts or content (see Supplementary File Sections A.2–A.5 for full details of the validation and data collection infrastructure). The dataset included the official social media pages of national and local party branches, individual candidates, and affiliated actors such as youth organizations or regional representations. Our analysis includes 37 German parties spanning the full spectrum of the party system, from eight major established parties to 29 minor parties (see Supplementary File Section A.1 for detailed information on party characteristics). We define major parties as those represented by at least five members in the Bundestag or a state parliament, comprising the SPD, The Greens, The Liberals (FDP), CDU/CSU, The Left, AfD, the left-wing nationalistic Bündnis Sahra Wagenknecht, and center-right Freie Wähler. These hold between 2,600 and 495,000 members, received between 4.3% and 22.6% of the 2025 second vote, and reported campaign budgets between €6m and €28m. All other parties are understood as minor parties that contested the election, ranging ideologically from far-left to far-right, holding between 56 and 54,292 members, and each receiving under 1.5% of the 2025 second vote.

4.2. Semi-Automated VGenAI Detection

To identify VGenAI content, we developed a two-step semi-automated detection process. In the first step, all images and video stills from the collected posts were automatically classified using the commercial AI image detection model provided by Sightengine (https://sightengine.com). This model ranks the probability of an input image to be AI-generated based on the analyses of visual content, i.e., pixel-level information such as texture anomalies, color patterns, and compositional logic, rather than relying on metadata (Li et al., 2024). Thus, it does not condition on party identity, visual content categories, or political content but bases decisions instead on technical image properties (e.g., post-processing, compression, specific generator types). Sightengine is trained on real images and AI-generated outputs from VGenAI models including Midjourney, Stable Diffusion, DALL-E, Adobe Firefly, Grok, and others. For each image, the Sightengine API returns a

probability score between 0 and 1 indicating the likelihood of AI generation (see Supplementary File Section B for the technical description of the architecture, API parameters, and preprocessing).

The Sightengine model's performance reveals both strengths and limitations. On the one hand, the model's reliability has been validated in a benchmarking study of over 40 VGenAI image detection tools (Li et al., 2024). It ranked among the most accurate commercial solutions across several detection tasks, with up to 98% of random positive–negative pairs (ROC-AUC 98%), assigning a higher score to the positive case than to the negative, which indicates very strong rank-ordering. Sightengine showed high generalization capacity across different image types and stylistic variations. On the other hand, we evaluated Sightengine's performance on a held-out validation set of 2,115 images (563 AI-generated, 27% base rate), showing adequate performance: At our chosen threshold (0.5), about two flagged images had to be reviewed for every true VGenAI image recovered, and roughly 30% of true cases went undetected. A more permissive threshold (0.1) lowered the miss rate to about 18% but nearly doubled the review burden. We kept the permissive threshold because manual coding was still tractable (see Supplementary File Section B.5 for full performance metrics and threshold comparisons). In sum, the model prioritizes precision over recall, meaning it rarely labels real images as VGenAI but misses some, introducing a risk of undercounting VGenAI use in our dataset and potentially biasing findings toward more conservative estimates of adoption rates. This discrepancy may reflect differences in test datasets and the specific detection challenges posed by real political campaign visuals. These often include slogans, logos, or other elements in the foreground of the VGenAI content, possibly influencing the Sightengine model's performance. However, for our research purposes of analyzing a large-scale dataset where manual coding of all posts would be prohibitively resource-intensive, the Sightengine detection model functions as a first-stage filter that minimizes false positives while enabling human verification of flagged content. Thus, our findings should be interpreted as lower-bound estimates rather than definitive measurements of VGenAI prevalence.

In a second step, visuals that received an AI probability score of 0.1 or higher from the Sightengine model were passed on to trained human coders. They confirmed or rejected the model's classification by coding whether the visual content was clearly AI-generated, likely AI-generated, or human-made. For the coding decisions, contextual information could be considered, including accompanying text, user comments, platform-provided labels, or Google image searches (see Supplementary File Section C.2 for coding instructions of manual AI detection). All 945 confirmed AI-generated posts were further coded for transparency, and communication strategies along the following five dimensions with binary coding as present (1) or absent (0), with multiple codings permitted per post (see Supplementary File Section C.1 for detailed coding instructions): First, VGenAI content was reviewed for transparency indicators, including the presence of disclaimers within the image/video (e.g., notes, model disclaimers, or Coalition for Content Provenance and Authenticity [C2PA] labels), in the accompanying post text (e.g., "This image was created with Midjourney"; "AI was used"), or platform-added disclaimers (e.g., "AI Info"; "Made with AI"; "Synthetic content"). Second, coders identified the visual styles, distinguishing between realistic depictions that give the impression of showing real objects, people, or events (photorealistic or real-seeming content) versus non-realistic styles such as comics, drawings, cartoons, illustrations, or graphics that clearly do not attempt to simulate reality (see Figure 1 for examples). Third, for personalization we coded all actors shown in the visuals, distinguishing between national or international party elites, generic citizens representing the broader electorate, minority groups, actors framed as illegals/criminals, and other political or non-political public figures. Coding decisions for non-political actors accounted for how the sender frames each actor; for

example, migrants may be framed as “minorities who need help” or as “criminals who need to be deported” (see Figure 1, both rows, second last image). The criminal versus minority framing reflects established categories in migration reporting (Bleich et al., 2015) and far-right visual othering strategies that construct boundaries between in-groups and threatening “others” (Awad et al., 2022; Mudde, 2007). Fourth, positive and negative tonality was coded based on the impression conveyed by all post elements (texts, images, and videos) as perceived by an average reader, capturing whether the post expressed positive or negative statements, emotions, or visual framings about problems, topics, or political actors (see Figure 1 for examples). Finally, topics were coded to capture the substantive focus of VGenAI content. The central theme of each post was determined based on the primary subject matter, which could include specific policy issues or political or social debates. Topic categories included economy and finance (e.g., taxes, inflation, trade policy, agricultural policy), labor and social issues (e.g., healthcare, family policy, employment), domestic policy and security, immigration, environmental and energy policy, and European Union affairs, among others.

All coding was conducted by four coders trained on the coding scheme and training protocol, where stepwise coder testing allowed to resolve questions and discrepancies through discussion and, where necessary, adjudicated by a supervising researcher. Inter-coder reliability was assessed on a random subsample of 52 posts, confirming consistent application of the coding scheme across the coder team (Holsti’s CR $\geq$ 0.88; Krippendorff’s $\alpha \geq 0.67$ across all categories; see Supplementary File Section C.1 for category-level reliability values). Especially important was the high agreement for the detection of VGenAI content (Holsti’s CR = 0.98; Krippendorff’s $\alpha = 0.97$) so that the “human-in-the-loop” detection approach ensured a high degree of transparency and reliability while maintaining scalability for large-scale monitoring.

Figure 1. Examples of content categories in VGenAI posts.

4.3. Measures

4.3.1. Party Classification

To examine differences in VGenAI adoption and engagement between major and minor parties (RQ1, RQ2, RQ3), we classify parties based on parliamentary representation. Major party status is a binary indicator coded 1 for parties represented by at least five members in the Bundestag or a state parliament and 0 otherwise (see Supplementary File Section A.1). This threshold corresponds to the minimum size for formal recognition as a parliamentary group (*Fraktion*) in most German state parliaments, conferring procedural rights, staff resources, and speaking time (Ismayr, 2012). *Ideology* is operationalized as a categorical variable with six categories: far-left, left, center-left, center-right, right, and far-right. Because, to our knowledge, no comprehensive expert ratings or classifications exist for all parties in the sample, particularly for minor parties, we derived ideology scores from the descriptive labels reported in the column "Political position/ideology" in Supplementary File Section A.1. For example, parties' political position/ideology described as "social democracy" were coded as center-left, "democratic socialism" as left, "Christian democracy, conservatism" as center-right, and "völkisch nationalism, right-wing populism" as far-right.

4.3.2. Content Strategy Variables

To analyze content strategy differences (RQ2), we constructed five variables from the coded content categories:

1. *Transparency* is a binary variable indicating whether any labeling was present across the three coded disclosure locations; posts with at least one disclosure indicator in the image/video, post text, or platform label were coded as labeled (1), all others as unlabeled (0).
2. *Format* distinguishes static images from video content (image = 0, video = 1).
3. *Visual realism* indicates whether the visual content gives the impression of showing real objects, people, or events (realistic = 1) or clearly does not attempt to simulate reality, such as graphics, drawings, cartoons, or illustrations (non-realistic = 0).
4. *Personalization* is coded as present (1) when any person was depicted in the visual, concentrating on national politicians, generic citizens, and actors framed as illegals/criminals. Further, posts depicting any of the issues available to code were classified as issue-oriented.
5. *Tonality* was derived from the separate positive and negative tendency codings.

4.3.3. User Engagement

To examine user engagement, we measure the total number of user interactions with a post (RQ3). We operationalize user engagement as total interactions (likes, reactions, comments, and shares on Facebook; likes and comments on Instagram). This aggregated measure is standard in comparative political social media research (Bene et al., 2022; Kruschinski & Bene, 2022). We adopt this approach because the equalization–normalization framework concerns overall visibility rather than specific interaction types. Disaggregating by interaction type would reduce statistical power given the limited number of VGenAI posts for most parties and raise multiple testing concerns. We acknowledge that comments may capture qualitatively different dimensions of political deliberation and note this as a direction for future research.

4.3.4. Days to Election

Days to election is a continuous variable that captures the temporal distance between the posting date and election day.

4.4. Analytical Strategy

We employ multilevel regression models to account for the nested structure of posts within parties. For RQ1, we use descriptive analysis and logistic regression to examine party-level predictors of VGenAI adoption. For RQ2 and RQ3, we estimate multilevel models with random intercepts for parties, predicting engagement and views from VGenAI status, party characteristics, and their interactions. To test whether the effects of VGenAI differ by party type, we include an interaction term between AI-generated content and minor party status.

5. Results

Before addressing the research questions, we provide descriptive results about the share of VGenAI posts among the total number of posts (see Figure 2). Only about 1.4% of all organic posts contained AI-generated visuals (≈945 of 68,994). Among the major parties, the figure was comparatively lower, at 1.1% (≈764 of 67,018), whereas minor parties used VGenAI far more frequently, reaching around 9.2% (≈181 of 1,976). Within the group of established parties, the AfD stands out as the only significant adopter, with around 7% of its social media posts featuring VGenAI images and videos. By contrast, FDP used VGenAI in only about 1% of its posts, The Left in less than 1%, and CDU/CSU, The Greens, and SPD each in only about 0.3%. Bündnis Sahra Wagenknecht's use was essentially negligible, with a single post including VGenAI. This means that, with the sole exception of the AfD, the major parties treated VGenAI as a marginal or experimental addition to their visual social media communication.

Smaller parties, however, displayed a markedly different pattern. The Partei des Fortschritts (PdF) integrated VGenAI in more than half of its posts, at about 56%. National Democratic Party of Germany/The Homeland (NPD/Die Heimat) followed closely with around 52%. Other small actors also relied heavily on AI-generated visuals: Bergpartei posted them in about a third of its output, Bayernpartei in nearly 28%, V-Partei[3] in roughly 15%, and the Piratenpartei in around 12%. For these actors, VGenAI was not a rare experiment but a central stylistic resource. Most other smaller parties however did not utilize VGenAI content at all.

Of the 945 VGenAI posts, only 11.2% included an AI disclaimer in the image/video, and 1.9% in the post text. Regarding visual style, 70.4% depicted photorealistic content, 22.8% were clearly non-realistic (graphics, drawings, cartoons, or illustrations), and 6.9% combined both. The most frequent topics were immigration/migration (34.1%), voting appeals (23.5%), economy/finance (21.7%), labor/social policy (19.3%), and environment/energy (19.0%). Persons appeared in 80.2% of posts, with citizens as the most depicted actor (57.0%), followed by minorities (7.5%), Friedrich Merz (6.2%), and actors framed as criminals (4.1%). A majority of posts contained positive tonality (71.4%), primarily praising the publishing party itself, while 58.1% contained negative tonality, with attacks targeting CDU/CSU (17.6%), the federal government (14.0%), and Grüne (9.6%). Posts frequently combined positive and negative elements.

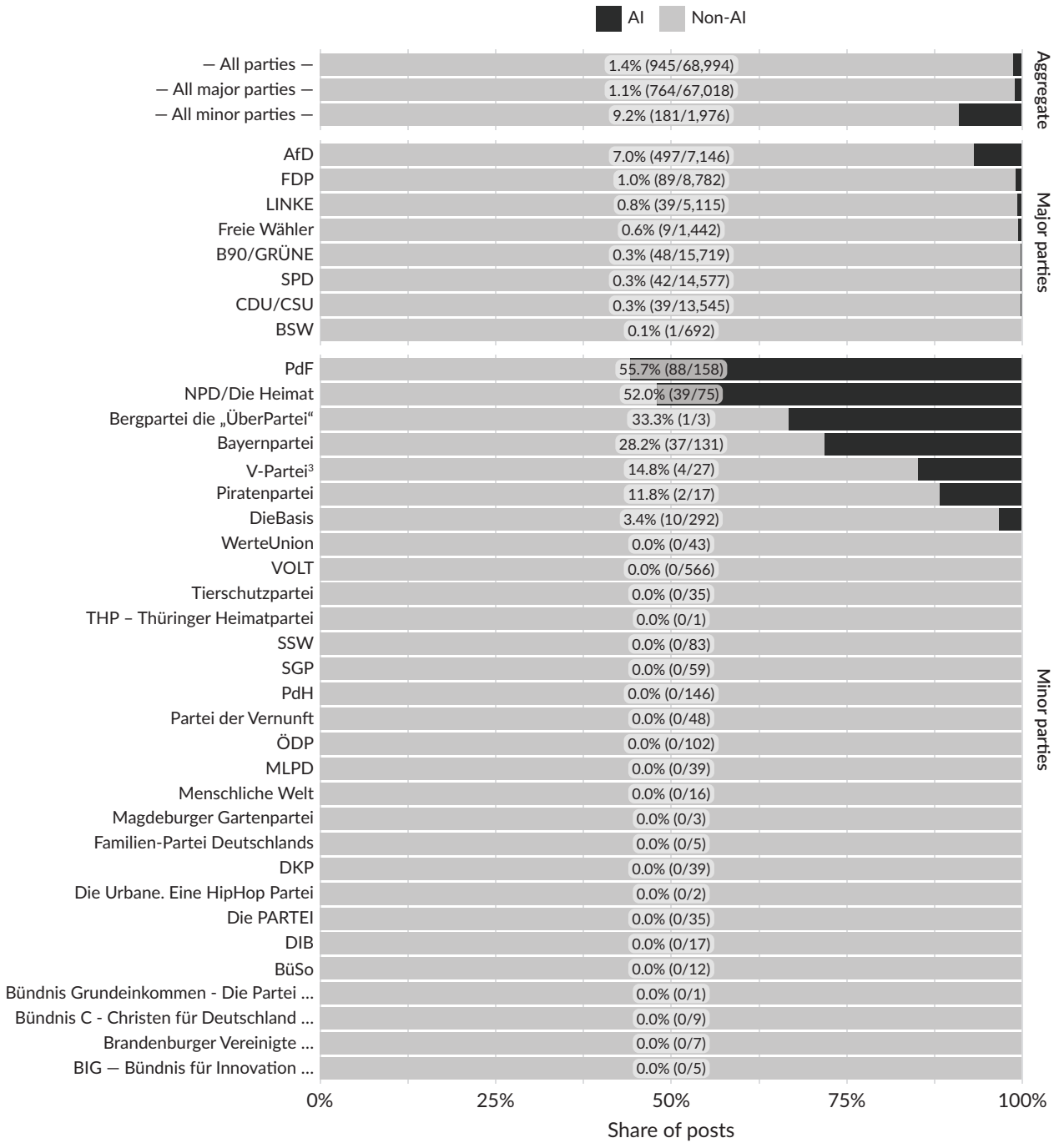

Figure 2. Share of VGenAI posts per party.

To address RQ1, we calculated group-level probabilities of VGenAI use by aggregating all posts of the four party groups (Major without AfD, Major, Minor, AfD only). For each group, we computed the proportion of posts containing VGenAI together with binomial confidence intervals. We then derived differences relative to the overall proportion of VGenAI posts across all parties. This procedure provides interpretable percentage-point deviations from the reference level of synthetic image and video use.

Across all posts, VGenAI use is low for the major party groups and substantially higher for minor parties and the AfD (see Figure 3, blue). Major parties excluding the AfD show the lowest probability of VGenAI use (0.4%; $\Delta = -0.9$ percentage points vs. all parties, $p < .001$). The broader major-party category reaches a slightly higher level (1.1%; $\Delta = -0.2$ points, $p < .001$), indicating only limited adoption among established actors. Minor parties show markedly higher use (9.2%; $\Delta = +7.8$ points, $p < .001$), making them the most active group in generating synthetic visuals. The AfD displays an elevated probability as well (7.0%; $\Delta = +5.6$ points, $p < .001$).

Taken together, these findings reveal a clear pattern: Minor parties and the AfD employ VGenAI substantially more frequently than major parties, with minor or challenger parties making more intensive use of AI-based visual tools, whereas major parties, particularly the mainstream non-AfD segment, use such tools only sparingly.

To address RQ2, we compared how major and minor parties differed in their content strategies when using VGenAI. For all AI-generated posts, we calculated the group-level probability that a given content feature occurred and contrasted each estimate with the overall prevalence among all parties. The resulting percentage-point deviations from the campaign-wide reference indicate whether specific party families disproportionately relied on particular stylistic, thematic, or tonal choices when deploying VGenAI images and videos (see Figure 3).

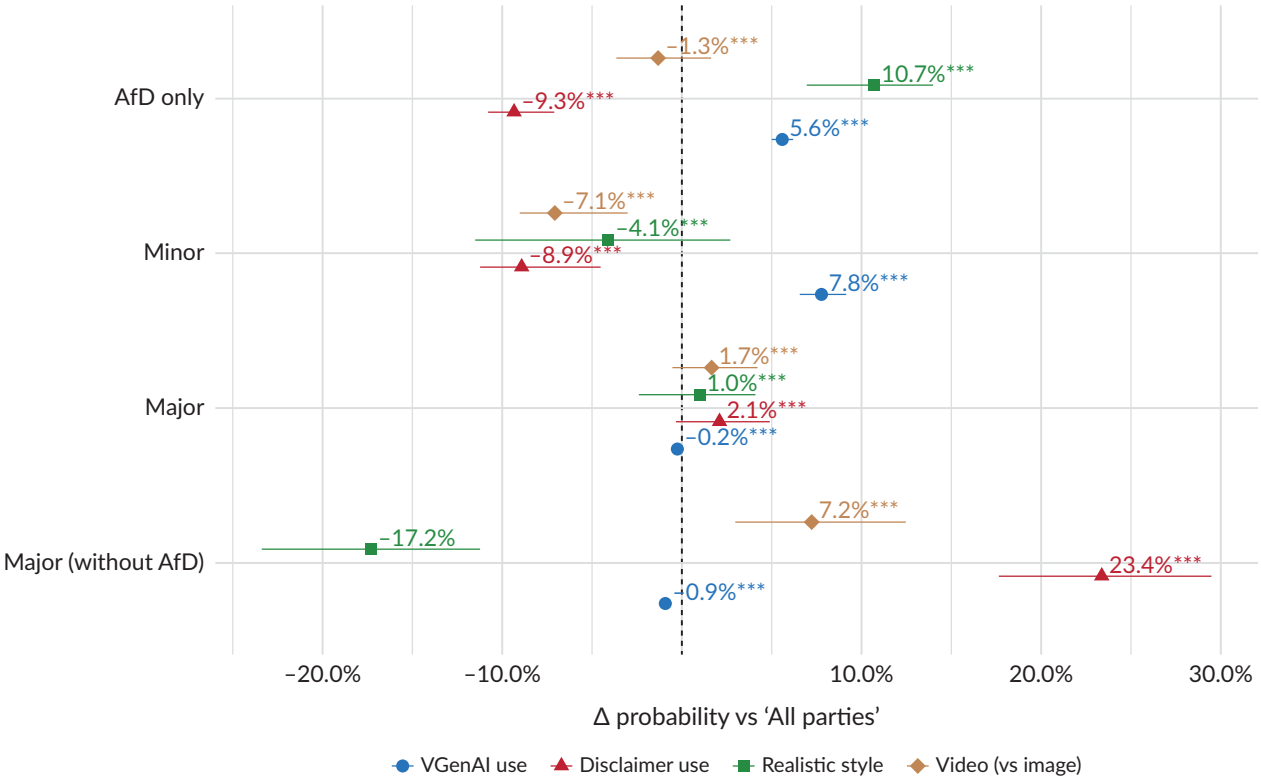

Figure 3. Group-level probabilities of VGenAI use in general, and disclaimer use, realistic style, and video use in VGenAI content. Notes: *** $p < .001$, ** $p < .01$, * $p < .05$; markers show percentage-point deviations from the overall proportion of VGenAI use across all parties, with 95% binomial confidence intervals; deviations without an asterisk are not statistically significant.

Clear differences emerge in transparency practices (see Figure 3 red). Major parties excluding the AfD used disclaimers most frequently, with 36.7% of their AI-generated visuals carrying a transparency marker, which corresponds to a strong positive deviation from the all-party reference level ($\Delta = +23.4$ points, $p < .001$). The broader major-party category also reported slightly elevated disclosure rates (15.4%; $\Delta = +2.1$ points, $p < .001$). In contrast, minor parties (4.4%; $\Delta = -8.9$ points, $p < .001$) and the AfD (4.0%; $\Delta = -9.3$ points, $p < .001$) rarely labeled synthetic visuals. This pattern indicates a transparency divide, with established mainstream parties disclosing AI use more consistently than both challenger parties and the AfD.

Parties also differed in the visual style of their AI-generated content (see Figure 3 green). The AfD made the most extensive use of realistic imagery, with 81.1% of its synthetic visuals appearing realistic and a positive deviation from the all-party average ($\Delta = +10.7$ points, $p < .001$). Regarding format choice (see Figure 3 orange), major parties excluding the AfD used AI-generated videos more often than other groups (17.6%; $\Delta = +7.2$ points, $p < .001$), whereas minor parties relied overwhelmingly on images (3.3%; $\Delta = -7.1$ points, $p < .001$). These results suggest that the visual presentation of VGenAI is not uniform across parties: The AfD tends toward realistic renderings, whereas mainstream actors differ in their preference for formats but rely more heavily than minor parties on video-based content.

Further, issue orientation was widespread across all groups, with only minor deviations (see Figure 4 lilac). Minor parties showed the highest likelihood of mentioning policy issues in their AI posts (82.9%; $\Delta = +4.5$ points, $p < .001$), followed by the AfD with a value close to the overall reference (78.1%; $\Delta = -0.3$ points, $p < .001$). Major parties—also without the AfD—displayed slightly lower probabilities, although both deviations remained small in substantive terms. In contrast, personalization patterns were more distinctive (see Figure 4 brown). Major parties, both including and excluding the AfD, most frequently depicted national politicians in AI-generated visuals (24.1 resp. 25.1%; $\Delta \approx +1.6$ resp. $+2.7$ points, $p < .001$), whereas minor parties used political personalization considerably less often (15.5%; $\Delta = -7.0$ points, $p < .001$). Depictions of citizens revealed another divergence with the AfD showing citizens most frequently (63.0%; $\Delta = +5.9$ points, $p < .001$), exceeding major-parties. The portrayal of criminals supplied yet another distinguishing feature. The AfD employed such depictions far more often than any other group (6.8%; $\Delta = +2.7$ points, $p < .001$), whereas major parties excluding the AfD almost never did so (0.4%; $\Delta = -3.8$ points, $p < .001$), and minor parties also fell below the system-wide average ($\Delta = -1.9$ points, $p < .001$).

Tone further differentiated the party groups (see Figure 4 green and dark red). Major parties excluding the AfD and minor parties expressed positive tonality in their VGenAI content most frequently (82.4 resp. 84.0%; $\Delta = +11$ resp. $+12.5$ points, $p < .001$). The AfD, by contrast, showed positive tone in only 61.0% of its AI-generated posts, falling markedly below the overall level ($\Delta = -10.5$ points, $p < .001$). Negative tone showed the reverse result. The AfD relied on negative tonal cues the most (69.4%; $\Delta = +11.3$ points, $p < .001$), while major parties excluding the AfD were the least likely to use them (38.6%; $\Delta = -19.5$ points, $p < .001$). Minor parties displayed negative tone at roughly the overall rate, producing no statistically significant deviation from the campaign average.

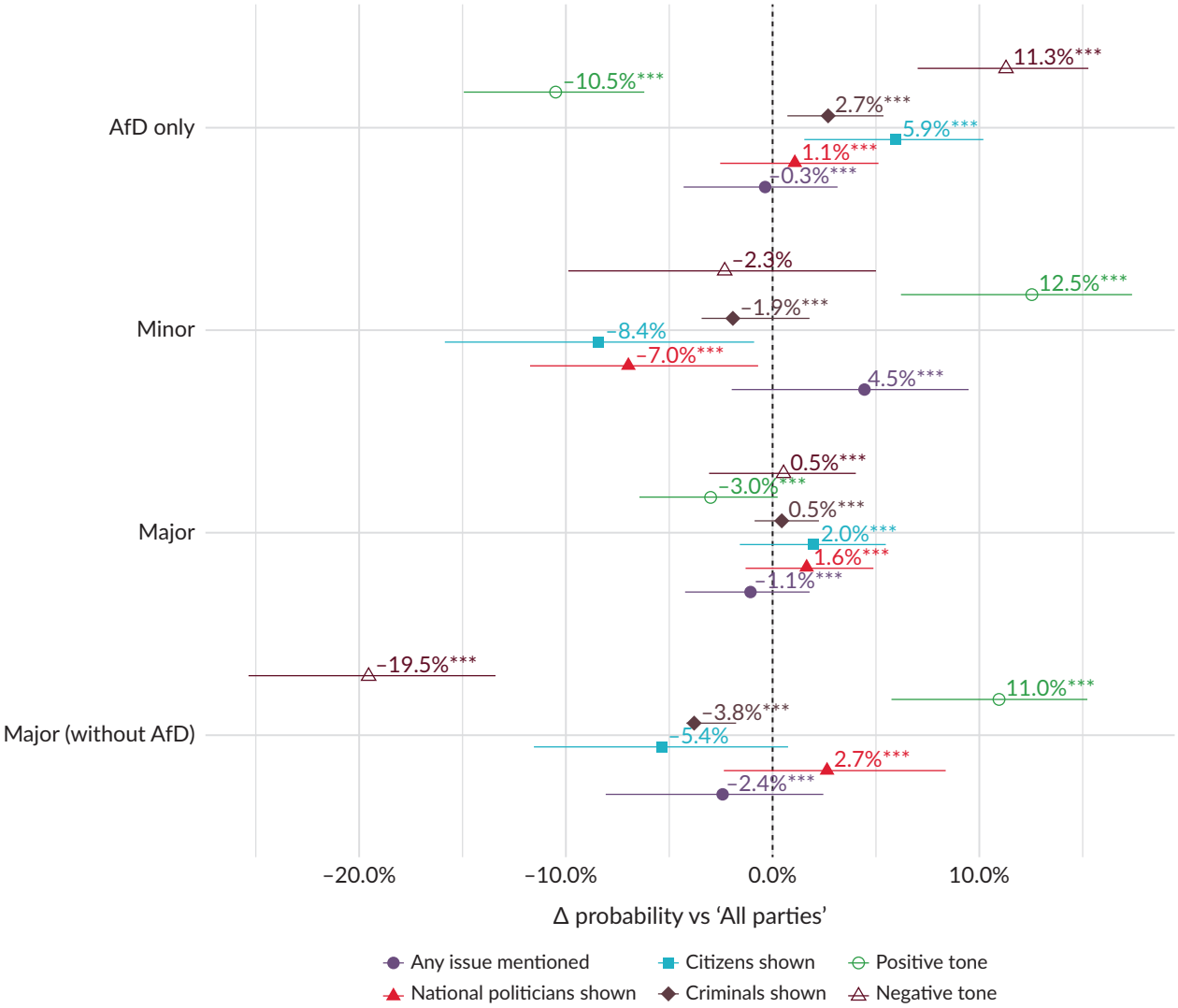

Figure 4. Group-level probabilities of issues and persons mentioned, as well as positive and negative tone used in VGenAI content. Notes: *** $p < .001$, ** $p < .01$, * $p < .05$; markers show percentage-point deviations from the overall proportion across all parties, with 95% binomial confidence intervals; deviations without an asterisk are not statistically significant.

To examine whether VGenAI content is associated with differential engagement for major versus minor parties (RQ3), we estimated a multilevel negative binomial regression predicting user engagement from AI-generated content, party characteristics, and their interaction, with random intercepts for parties (see Figure 5). The model reveals several noteworthy patterns. AI-generated content is associated with significantly higher engagement than non-AI content (IRR = 1.34, 95% CI [1.15, 1.56], $p < .001$), indicating that VGenAI posts receive approximately 34% more user interactions than non-AI posts. However, the interaction between AI-generated content and minor party status is not statistically significant (IRR = 1.01, 95% CI [0.62, 1.65], $p = .96$), suggesting that the engagement advantage from VGenAI does not differ meaningfully between major and minor parties. Minor parties show lower engagement overall, though this effect does not reach conventional significance levels (IRR = 0.52, 95% CI [0.17, 1.56], $p = .24$). Platform differences are substantial. Posts on Facebook receive markedly less engagement than those on Instagram (IRR = 0.25, 95% CI [0.24, 0.26], $p < .001$), reflecting approximately 75% lower interaction rates. Temporal

dynamics also matter: Engagement increases as election day approaches (IRR = 1.09, 95% CI [1.07, 1.11], $p < .001$). Ideological positioning emerges as a powerful predictor. Far-right parties generate substantially higher engagement than the center-left reference category (IRR = 6.97, 95% CI [1.45, 33.54], $p < .05$), consistent with prior findings on populist parties' social media performance. Other ideological positions do not differ significantly from the reference level. Taken together, these findings provide mixed evidence for the equalization hypothesis. While VGenAI content does generate an engagement premium, this advantage accrues equally to both major and minor parties rather than providing resource-constrained actors with a distinctive competitive edge. The absence of a significant interaction effect suggests that VGenAI does not equalize competition by disproportionately benefiting minor parties. Instead, VGenAI is associated with engagement gains distributed uniformly across the party spectrum, leaving pre-existing structural advantages intact, a pattern consistent with normalization.

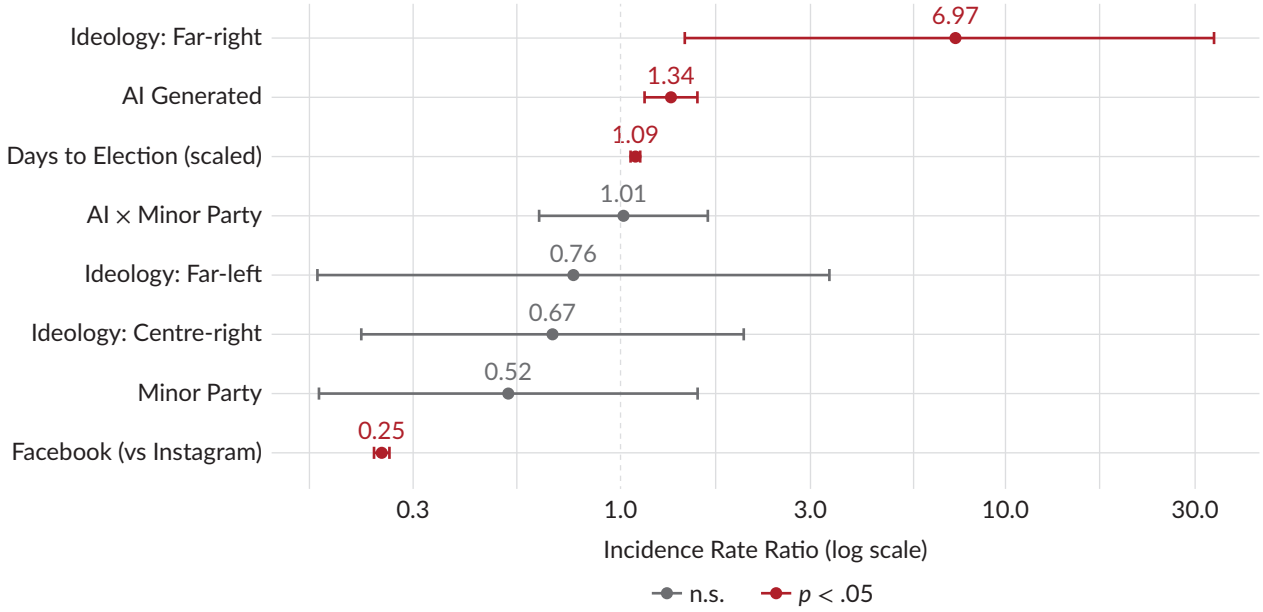

Figure 5. Multilevel negative binomial regression (IRR with 95% CI) predicting user engagement from AI-generated content, party characteristics, and their interaction. Notes: Random intercepts for party; reference categories—non-AI content, major party, Instagram, and center-left ideology.

6. Discussion and Conclusion

This study examined whether VGenAI serves as an equalizing technology for minor parties or reinforces existing power asymmetries in German electoral competition. Drawing on content analysis of Facebook and Instagram posts from 37 parties during the 2025 federal election campaign, we investigated party differences in VGenAI adoption and content strategies, as well as its effects on user engagement. Our findings yield different evidence for the equalization and normalization hypotheses across distinct dimensions of digital campaigning (Fischer & Gilardi, 2023; Gibson & McAllister, 2015; Ward et al., 2003).

Regarding VGenAI prevalence (RQ1), our findings provide support for the equalization hypothesis. Minor parties adopted VGenAI at higher rates than major parties, suggesting that VGenAI's low marginal production costs enable resource-constrained actors to generate professional campaign imagery that would otherwise require expensive agencies or specialized personnel (Darius & Römmele, 2023; Kruschinski, Jost,

et al., 2025). However, the elevated VGenAI use among the AfD—as already shown by Geise et al. (2025)—complicates a straightforward equalization interpretation. As a parliamentary party with substantial resources, the AfD's intensive deployment of synthetic visuals also reflects a strategic choice and not only resource constraints, suggesting that party ideology and norm orientation may shape technology adoption alongside material factors (Dommett et al., 2023).

The analysis of content strategies (RQ2) reveals that major and minor parties deploy synthetic visuals in different ways. A transparency divide emerged, with major parties excluding the AfD disclosing AI origins far more frequently than minor parties or the AfD. This reflects the constraining effect of self-regulatory commitments on mainstream major parties while highlighting how minor parties exploit the absence of normative pressure to maximize impact through undisclosed synthetic content (Kruschinski, Jost, et al., 2025). Visual realism choices followed party-specific logics: The AfD made extensive use of photorealistic imagery, consistent with our theoretical argument that parties less constrained by mainstream normative and reputational pressures may deploy "visual evidence" without substantial accountability risk (Geise, 2025; Kruschinski, Jost, et al., 2025). Major parties, facing heightened scrutiny, favored non-realistic styles that signal creative intent while avoiding misinformation accusations (de-Lima-Santos et al., 2024; Phoenix & Taylor, 2024). Personalization and tonal patterns revealed further strategic differentiation. The AfD concentrated on citizen depictions, uniquely employed visuals of criminals, and relied on negative tone, aligning with populist communication strategies that emphasize people-centrism while stigmatizing outgroups (Bast, 2024; Farkas et al., 2022; Jost et al., 2020). Minor parties showed lower personalization overall, suggesting their VGenAI use serves different communicative functions focused on issue advocacy rather than affective mobilization (Farkas & Bene, 2021).

The engagement analysis (RQ3) provides a further test of whether VGenAI alters competitive dynamics between party types. Here, our findings support the normalization hypothesis. While VGenAI content is associated with significant engagement compared to non-AI posts, this advantage accrues equally to major and minor parties. The absence of a differential effect indicates that synthetic visuals do not provide resource-constrained actors with distinctive competitive advantages in audience reach. VGenAI functions as a technology that boosts engagement uniformly across the party spectrum, leaving pre-existing structural advantages largely intact (Fischer & Gilardi, 2023; Gibson & McAllister, 2015; Ward et al., 2003). Major parties continue to benefit from larger follower bases, stronger brand recognition, and algorithmic visibility that translate into superior absolute engagement regardless of content characteristics (Haßler et al., 2023). The strong association between far-right ideology and engagement aligns with prior research on populist parties' social media performance (Bene et al., 2022; Jost et al., 2020) and suggests that ideological positioning may matter more for engagement than technology adoption.

Our findings have broader implications for understanding AI-driven disruption in electoral contexts. The equalization–normalization debate has historically been contested partly because contextual factors shape technology effects. Multi-party proportional representation systems such as Germany may amplify equalization dynamics compared to two-party systems where major parties maintain structural monopolies. The EU's AI Act creates a regulatory context absent elsewhere, potentially limiting the international applicability of our transparency findings. Platform-specific dynamics may differ substantially for TikTok, which has distinct user demographics and algorithmic mechanisms from Facebook and Instagram. Most fundamentally, VGenAI lowers production barriers without altering structural advantages in follower bases,

brand recognition, and media attention. This suggests that concerns about AI-driven democratic disruption may be overstated relative to transparency and authenticity concerns about who uses synthetic content and how.

Regarding alignment with the EU's AI Act, Article 50 mandates labeling of AI-generated content. Our findings document a gap between regulatory aspirations and actual practice. Voluntary self-regulatory measures for the 2025 campaign, including AI transparency commitments, voluntary election codices, and fairness agreements (Kruschinski, Jost, et al., 2025; "Parteien beschließen Fairnessabkommen," 2024) appear to have had differential effects: Mainstream parties showed higher labeling rates reflecting compliance motivation, while the AfD and minor parties showed minimal compliance. This variation aligns with our theoretical expectations regarding self-regulatory constraints on mainstream parties versus absence of normative pressure on challenger and extreme parties.

Several limitations qualify our findings. First, our VGenAI detection approach, while validated, likely undercounts actual VGenAI prevalence due to the emphasis on precision over recall in the automated classification stage, meaning our estimates should be interpreted as conservative lower-bound figures. The classifier may miss outputs from newly released generators not yet represented in its training data, and heavily edited images where AI-generated elements are composited with authentic photographs or overlaid with party logos and typographic elements may evade detection because such modifications alter the pixel-level features the classifier relies upon. This is consequential for political campaign visuals, which routinely incorporate such overlays. Performance may also vary across image types, which could introduce systematic bias if certain parties disproportionately use visual styles. The proprietary nature of the model further limits full transparency regarding its architecture and training data, constraining independent replicability. However, our semi-automated approach mitigates some of these limitations by combining the automated classifier with manual validation, ensuring high precision in the final classifications. Second, focusing exclusively on institutionalized political actors overlooks potentially more extensive VGenAI usage by non-institutionalized actors, activists, and coordinated networks who may shape electoral discourse in important ways. Third, most fundamentally, the observational, cross-sectional design does not permit causal inference regarding the relationship between VGenAI use and engagement outcomes. Unobserved confounders such as campaign spending, media attention, and content quality may co-occur with both VGenAI adoption and engagement patterns. The associations reported should therefore be interpreted as descriptive rather than causal. Fourth, platform-specific constraints in API access may introduce selection biases into the dataset. Fifth, the specific context of the 2025 German snap election, with its compressed campaign timeline and particular party constellation, may limit generalizability to other settings. Sixth, the analysis does not account for content categories or thematic features of posts. Prior research shows that message characteristics such as tone, emotionality, issue focus, and negativity influence engagement and views, meaning that unobserved content factors may confound the estimated association between VGenAI use and performance metrics.

Future research should incorporate content-level classifications to disentangle the effects of VGenAI from those of message characteristics known to shape audience responses. Extending analyses to other platforms, particularly TikTok where younger demographics concentrate, would further broaden the empirical base. Work that includes non-institutionalized actors is needed to understand the full ecosystem of synthetic political content. Comparative studies across regulatory environments will help identify how legal

frameworks shape VGenAI adoption and effects. As VGenAI capabilities advance toward increasingly indistinguishable synthetic content, systematic research on its political applications remains essential for safeguarding the informational foundations of democratic decision-making. In this regard, our research informed the development of CampAIgnTracker.de, a platform that makes all detected AI-generated campaign images and videos publicly accessible, thereby helping to bring transparency to digital campaigning in times of VGenAI.

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Conflict of Interests

The authors declare no conflict of interests.

Data Availability

For copyright and privacy reasons, the data cannot be published freely. Interested researchers are encouraged to contact the authors to request access to the data, which will be provided whenever feasible.

LLMs Disclosure

LLMs (Claude; Claude Code) were used for language polishing and reference formatting. All analytical decisions, coding, and interpretations are the authors' own.

Supplementary Material

Supplementary material for this article is available online in the format provided by the authors (unedited).

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