The London Interdisciplinary School student research report for
Climate Action Against Disinformation (CAAD)

THE LONDON INTERDISCIPLINARY SCHOOL

Polluted information ecosystems in the pursuit of unpolluted air

ULEZ discourse, climate misinformation, and building resilient climate policy communications

June 2025

Table of Contents

ULEZ context

What?

ULEZ is an area within London where non-compliant vehicle drivers, including residents, are required to pay a £12.50 daily charge. However, as of February 2024, 96.2% of vehicles driving in the zone meet emission standards and are exempt from payment.
In August 2023, ULEZ was expanded to cover all London boroughs.

Why?

The ULEZ policy was introduced in response to air pollution in London, which was estimated to be responsible for 4,000 premature deaths annually in 2019.

Who?

Boris Johnson initially proposed the policy in 2013, suggesting it be implemented in 2020, despite this being outside his tenure as Mayor of London. In April 2019, ULEZ was implemented by Sadiq Khan, London's current mayor.

Impact:

Its implementation has seen PM2.5 car emissions in outer London decrease by 22% and NO2 emissions drop by 21%. Whilst in central London, NO2 levels have dropped by 53%, and 24% in Inner London. Other positive knock-on effects include a significant increase in active travel to school amongst children in the zone.

Reception:

The ULEZ expansion was met with resistance from motorists and citizens, particularly those living in Greater London. Notably, a vigilante group, the Blade Runners, destoyed 1,760 ULEZ cameras, encouraged by communities online.

ULEZ played a significant role in the 2024 mayoral elections, where six of the 11 candidates pledged to repeal it. It was also deemed the reason Labour lost its seat in the Uxbridge and South Ruislip by-election. The expansion was even challenged as unlawful at the High Court before ultimately being overruled as legal. Sadiq Khan has faced very serious security threats as a result of the policy, receiving a bullet in the post and an Osman warning at the height of the protests. Caravans with Swastikas were even chained to Khan's house in response to the ULEZ policy.

In tandem with genuine concerns about the cost of living, the backlash was fueled by online climate misinformation, amplified by certain legacy media outlets (The Telegraph being a prominent one). ULEZ has become a notable case within the UK climate misinformation debate, with tangible repercussions.

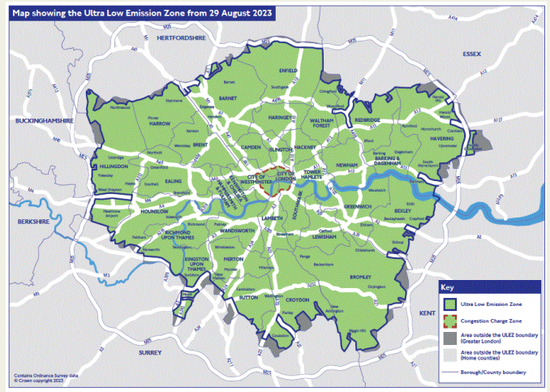


Fig 1. ULEZ zone map (Source: TFL)

1.1

Introduction

Misinformation refers to the spread of false, inaccurate, or misleading information, whereas disinformation involves the deliberate dissemination of false information with the intention to deceive. In clouding our sense of the truth, both mis and disinformation damage our collective intellectual well-being. Climate misinformation, in particular, is particularly pernicious, sowing doubt and undermining established science, which in turn slows support for climate policy. Recent evolutions of climate misinformation have turned from outright climate change denial to scepticism of climate solutions. In the UK, the ULEZ policy is a tangible example of this, where, alongside genuine economic concern, climate misinformation has impeded public support for the policy.

Social media platforms have played a significant role in facilitating the spread of ULEZ-related misinformation as well as galvanising action against the policy. Several investigations on Facebook found anti-ULEZ groups spread climate denial and conspiracy, endorsed violence, seeded unproven links between increased control and ULEZ and posted overtly Islamophobic and racist messages. Telegram has also been noted to have played a significant role in anti-ULEZ organising. Telegram is a relatively underground platform with a reputation for lax content moderation and relative anonymity. As a result, the ISD has described it as 'a safe space for extremists to coordinate activity and instigate violence.' That said, Telegram users often represent the extreme minority, and given that almost twice as many Londoners were in favour of the expansion of ULEZ, ULEZ discourse there does not paint a complete picture. Reddit, the self-proclaimed 'front page of the internet', has significant amounts of ULEZ discourse and is characterised as a forum for debate, providing a good contrast.

As such, an undergraduate academic study was conducted to analyse the following:

1. The nature of ULEZ discourse across Reddit and Telegram,
2. The climate misinformation within it,
3. who spreads climate misinformation and how,
4. And the role images play in perpetuating climate misinformation.

This report compiles the most pertinent insights from the study, along with an analysis of how AI imagery is being used to disseminate climate misinformation. It also provides guidance for developing resilient climate policy communications.

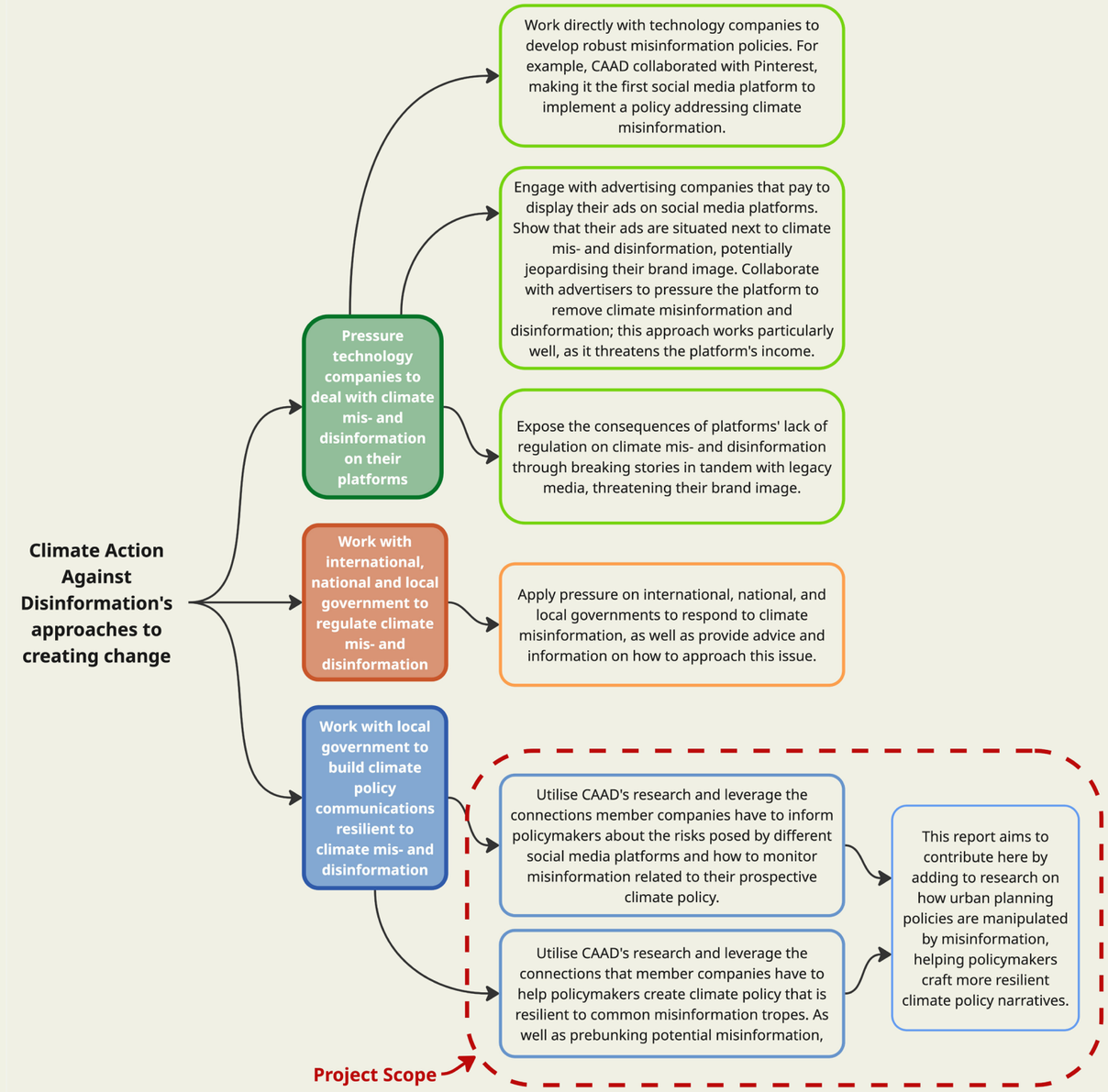
Summary of findings

- ULEZ discourse on Reddit tended to focus on the policy and adjacent topics, whereas, on Telegram, it was situated within a more conspiratorial ecosystem. Interestingly, across both platforms, a shared resentment towards increased surveillance due to ULEZ cameras emerged as the third top theme on Reddit and the second top theme on Telegram,
- Climate misinformation was more prevalent on Telegram than on Reddit, accounting for 1.2% and 0.8% of the discourse, respectively. Despite this, general climate discourse was more prevalent on Reddit, as reflected in the topic modelling results, where 'air quality, emissions, and climate change' was the second most prominent theme.
- Five broad climate misinformation claims were prevalent throughout ULEZ discourse, although they tended to be more pronounced on Telegram. They include a link between climate policy and restrictions on freedom, claiming that climate solutions won't work, responding to climate discourse with an unrelated rebuttal ('whataboutism'), presenting multiple issues alongside climate misinformation (issue-stacking), institutional distrust, and discrediting climate science and the movement.
- Images played a very significant role in climate misinformation on Telegram but a negligible role on Reddit. Among the images on Telegram, several were AI-generated, indicating that AI tools are being misused to generate climate misinformation.
- Regarding who spreads climate misinformation, 2.1% of those using Reddit to post about the ULEZ contributed to climate misinformation, while 10.2% of those using Telegram to post about the ULEZ did, a nearly fivefold difference.

1.2

Audience & pathway to impact

This report is designed for Climate Action Against Disinformation (CAAD), a global coalition of over 50 international organisations working to stop climate disinformation. CAAD both raises awareness of climate disinformation and advocates social media organisations, advertising companies, and policymakers to curb its spread online. Below, a (non-exhaustive) diagram documents CAAD's approaches to addressing climate misinformation and disinformation and where this report aims to support its work.



A thematic overview of ULEZ discourse between platforms

Using topic modelling, a valuable Natural Language Processing (NLP) technique for surfacing key themes within a corpus of text, I examined the broader ULEZ discourse across Telegram and Reddit. The results showed that Reddit discourse tended to be more intuitive and pragmatic, focusing mainly on the ULEZ policy or adjacent topics. In contrast, ULEZ discourse on Telegram was situated in a more conspiratorial and contrarian ecosystem. Bizarrely, only two of the top 10 themes were ULEZ-related; of the top 10 Reddit themes, all were related to ULEZ. Though of interest, the thematic overlap between platforms included a **shared resentment towards increased surveillance from ULEZ cameras**. Detailed platform-specific breakdowns are below:

Reddit

The top themes in Reddit ULEZ discourse included general UK politics (10%), air quality, climate, and emissions (9.94%), anti-surveillance and ULEZ camera frustration (9.18%), electric vehicles (EVs) (6.61%), and fuel and petrol vehicles (5.77%). Themes largely reflected a more pragmatic, policy-centred conversation, affirming Reddit's self-proclaimed role as the 'front page of the Internet.' Notably, many of the themes were characterised by debate and mixed opinion discourse, supporting scholars' hypothesis that Reddit's design, centred around subreddits as opposed to follower counts and reliant on user moderation, counters the dominant trend of homophily, the tendency for users to seek out like-minded users, on other social media platforms.

Negatively framed discourse tended to depict the ULEZ policy as a tax on low-income people (3.02%) or emphasise the urban-rural inequity in the policy (4.87%), arguing that those living outside London were disproportionately penalised. Others expressed frustration at the heavy administrative load of disproportionate ULEZ penalties (4.47%).

Telegram

Telegram discourse on the ULEZ policy tended to be more conspiratorial, anti-establishment, and ideologically charged, suggesting that ULEZ discourse is entangled within a community who do not trust institutions. The top theme, accounting for 11.6% of discourse, was anti-COVID-19 vaccination language and misinformation. Similar to Reddit, the second largest topic was anti-surveillance and ULEZ camera resistance (9.02%); however, unlike Reddit, this included endorsements of violence, encouraging Blade Runners to destroy cameras. Further top topics included letter writing and sending discourse (6.57%) and general anti-ULEZ discourse (5.25%), which, although ULEZ-related, was exclusively negative and occasionally conspiratorial.

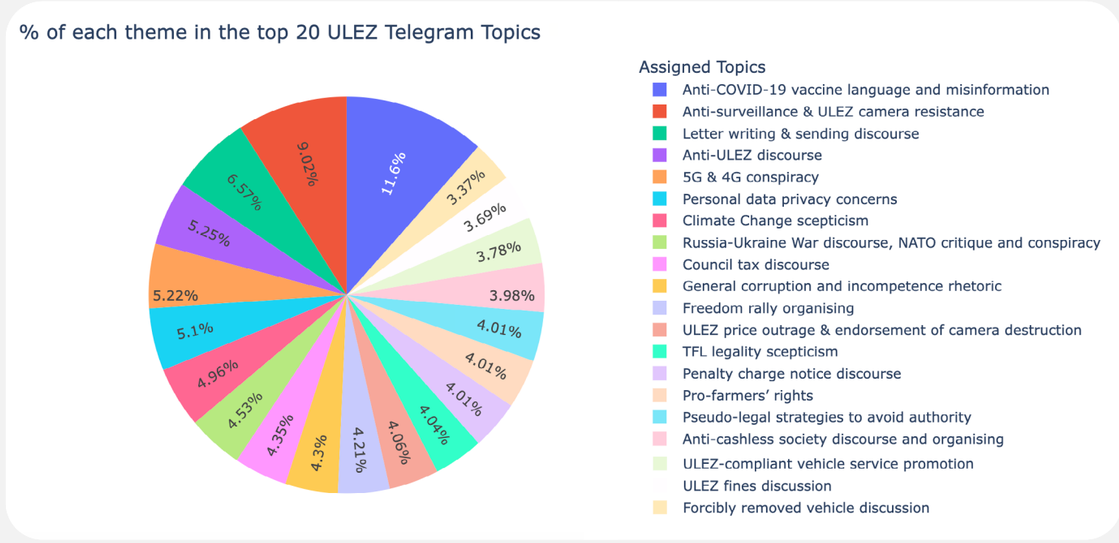
Throughout the other top 20 themes, conspiracies featured heavily, including 5G & 4G conspiracies (5.22%) and climate change scepticism (4.96%),. Moreover, fringe organising was reflected in several themes, namely: freedom rally organising (4.21%), pseudo-legal strategies to evade authority (4.01%), and anti-cashless society discourse (3.98%). Such themes illustrate how local issues, such as ULEZ, are positioned within a global context of misinformation and anti-establishment rhetoric, ultimately marking Telegram as a radical and extreme information ecosystem.

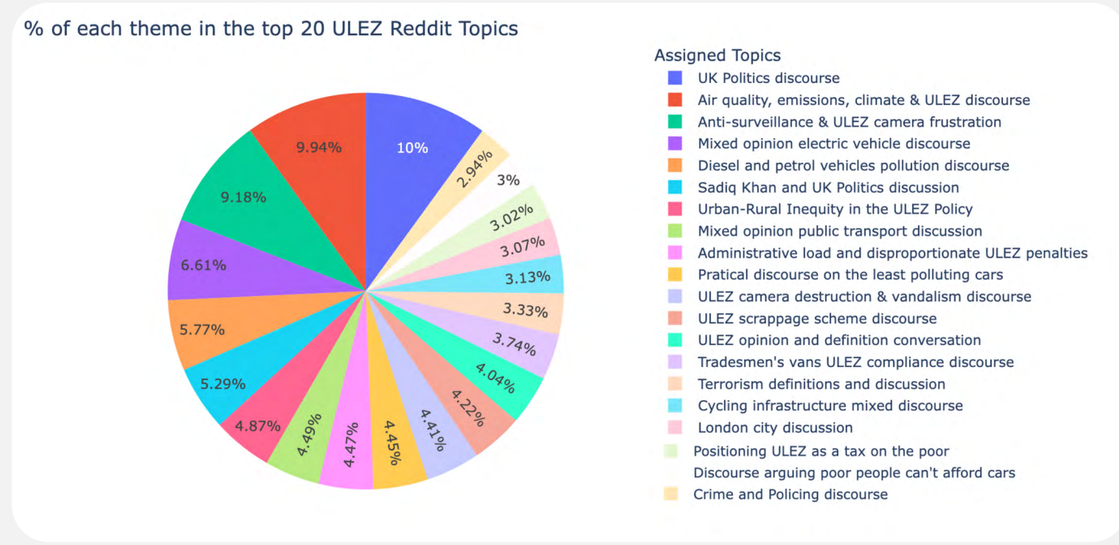
Similarly to Reddit, several themes discuss the financial burden of ULEZ, including penalty charge notice discourse (4.01%) and ULEZ fines discussion (3.69%). Suggesting a common thread of anti-ULEZ sentiment is the high prices often shouldered by lower-income individuals living in Greater London. However, where Reddit articulated frustration, Telegram endorses violence, with the theme of ULEZ price outrage and endorsement of camera destruction comprising 4.06% of the discourse.

2.0

A thematic overview of ULEZ discourse between platforms

Below are two graphs displaying the top 20 themes and the respective percentage of the conversation they make up (within the top 20 themes) in ULEZ discourse on Telegram and Reddit.





3.0 Methodolgy

The methodology for detecting climate misinformation within Reddit and Telegram messages utilised semantic similarity, a natural language processing (NLP) technique capable of analysing the similarity between two texts.

To apply it, a database of climate misinformation examples was first created, where examples were adapted from an online source, Sceptical Science. This well-respected site collates and unpacks the most prominent examples of climate misinformation. Following this, I tested several semantic similarity packages to identify the one best suited to detect climate misinformation among a sample of test sentences, some of which contained climate misinformation, other general climate discourse, and some were random.

Next, I applied the best-performing model to small batches of data from Reddit and Telegram, which helped me refine the original database.

Following this, I proceeded to calculate the semantic similarity between the Reddit and Telegram messages and my climate misinformation database. The higher the score, the more similar the message to an example of climate misinformation, and those with scores over 0.55 were labelled as misinformation.

Finally, 200 messages from each platform were manually reviewed to check whether they'd been correctly labelled. The model performed very well with a precision score of 0.94 and a f1-score of 0.90, ensuring confidence in drawing results from this part of the analysis.

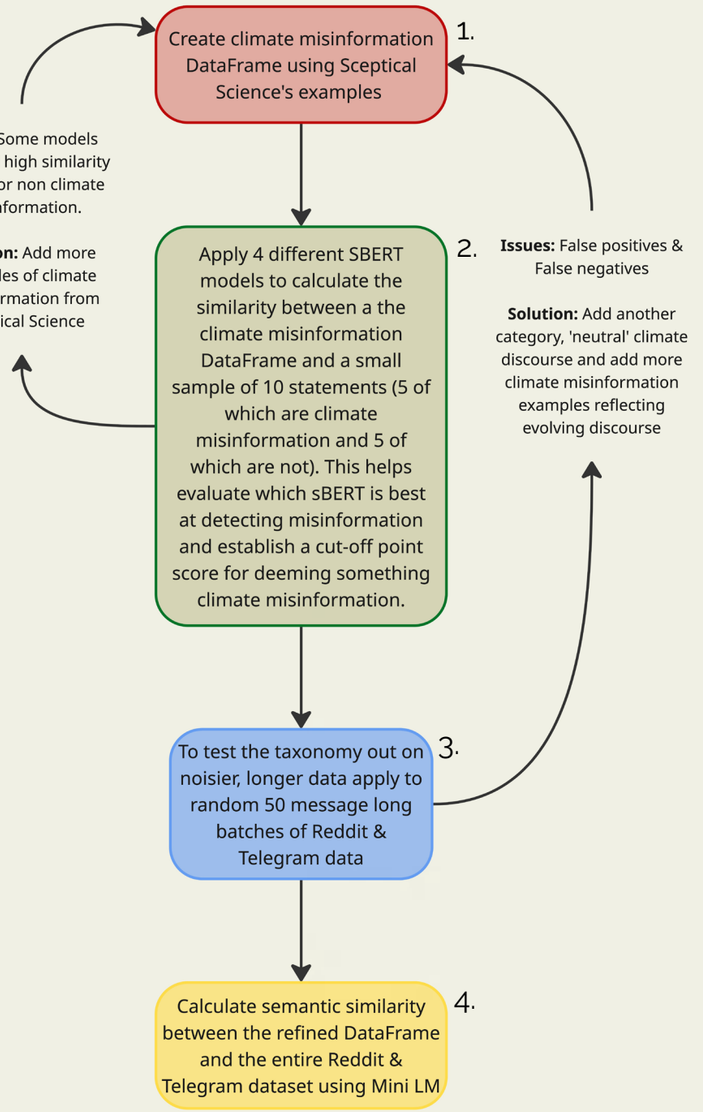
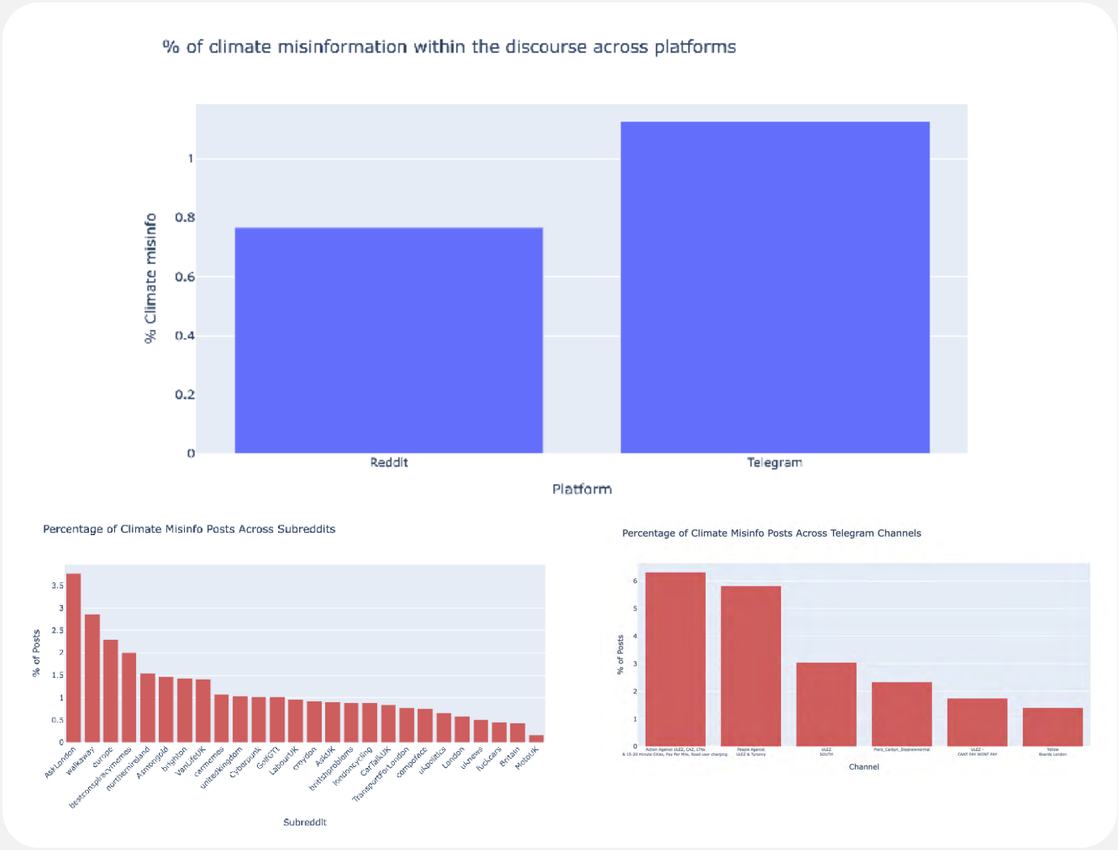


Diagram adapted from the academic study

3.1 Climate misinformation across platforms

Semantic similarity, an NLP technique capable of establishing the similarity in meaning between two words, sentences and small paragraphs, was applied to detect climate misinformation within ULEZ discourse across Reddit and Telegram. Revealing Telegram discourse harboured more climate misinformation, accounting for 1.2% of ULEZ discourse, while climate misinformation on Reddit accounted for 0.8% of ULEZ discourse. These results were used to establish the percentage of climate misinformation hosted within different subreddits and Telegram groups (as shown below).



Of interest, general climate discourse was much more prevalent on Reddit, as shown by thematic analysis, which revealed the 2nd most prominent theme was air pollution, emissions and climate change discourse (9.94%). A theme which was mirrored in the TF-IDF analysis. TF-IDF is a statistical NLP technique which evaluates the relevance of specific words within large volumes of text. The results showed that climate-specific words accounted for 7% of the 100 most relevant words on Reddit while making up only 2% of the words on Telegram. Similarly, on Reddit, 9% of the most relevant pairs of words were climate-specific, while only 4% of Telegram words were. Among that 4% on Telegram was '**climate con**', reflecting a broader climate-sceptic attitude on the platform.

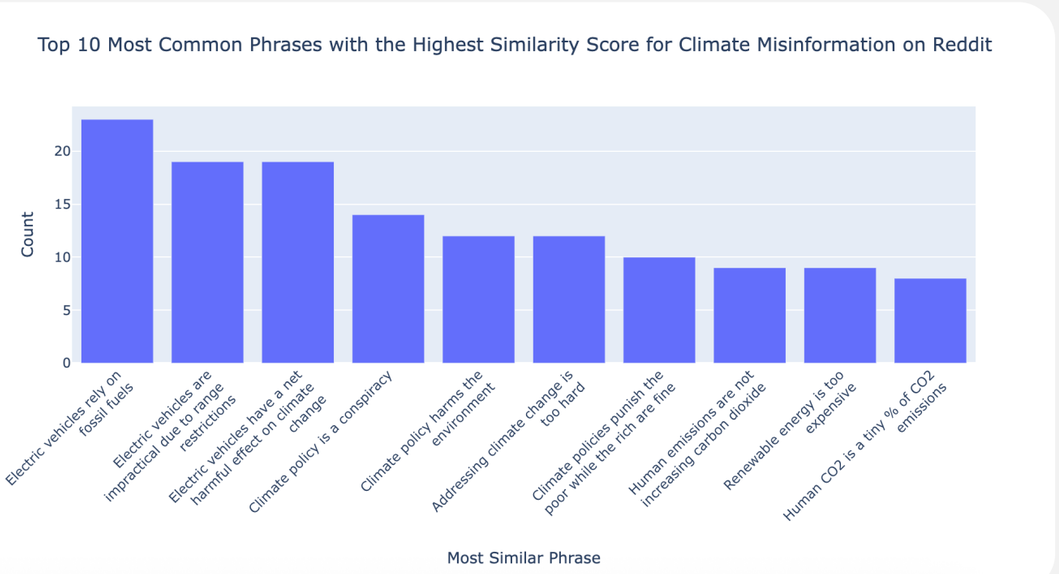
In sum, while climate discourse on Telegram is less frequent, climate misinformation is more common, suggesting the platform facilitates climate denial. On Reddit, in contrast, while climate misinformation is still present, it sits against a larger backdrop of climate discourse, much of which is neutral or constructive, which ultimately suggests Reddit functions as a forum for discussion and debate.

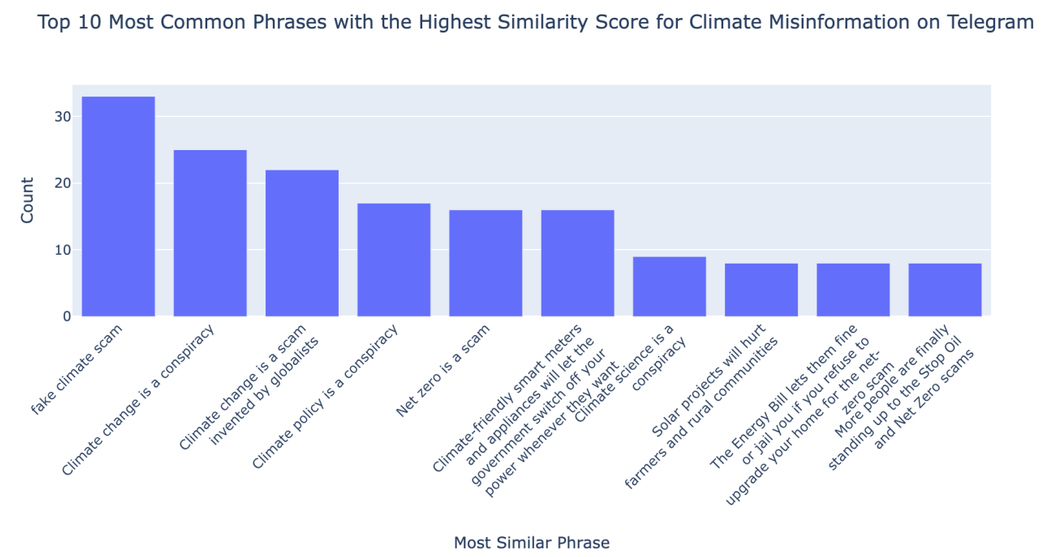
3.1

Climate misinformation across platforms

The semantic similarity results also provided an interesting 'big data' insight into what rhetorical types of climate misinformation were most prominent across platforms. I labelled whether a sentence was misinformation or not based on its highest similarity score with a sentence from a bespoke database of climate misinformation examples adapted from Sceptical Science. This meant I was able to analyse which example climate misinformation sentences were most commonly matched to text on Reddit or Telegram.

The results reinforced existing findings: climate misinformation on Reddit tends to sow doubt about the efficacy of solutions, focusing particularly on EVs. In contrast, on Telegram, the existence of climate change itself is doubted, with many examples labelling it a scam or conspiracy.





3.2

Climate misinformation tropes

Using the results of semantic similarity analysis, I reviewed the top 500 most highly-scored messages for climate misinformation on each platform. By examining the group name or subreddit, I was able to locate the original message, which provided the necessary context for interpretation, including what it responds to and whether it was shared with an image or video. Interestingly, climate misinformation on Telegram was exclusively textual, while on Reddit, it often appeared in a multimodal format, incorporating text, images, and videos. Although I cannot share specific examples of messages containing climate misinformation due to academic ethics, I summarize recurring themes and provide examples of climate misinformation imagery.

Key:
RED - Observed three or more times
ORANGE - Observed one-three times
GREEN - Not seen

	Specific claim	*Reddit*	*Telegram*	*Detail*
Discrediting the climate movement	CO_2 is good for the environment as it's needed for photosynthesis	Strong	Not present	On Telegram, posts often exploited science about photosynthesis to deny CO_2's impact on the climate, instead arguing 'more CO_2 makes plants grow quicker', 'CO_2 is the gas of life' or 'all life is carbon-based'. They referenced CO_2 cycles, appealing to 'natural' processes to assert an anti-environmental claim, simplifying complex scientific concepts and thereby undermining the urgency of the issue.
	Experts say climate change isn't real	Strong	Not present	On Telegram, several posts deny climate change by referencing what 'experts' say. Notably, posts cited Piers Corbyn, David Bellamy, and Neil Oliver as experts who dispute the reality of climate change.
	It's fine, humans are in balance with nature	Strong	Mild	On Telegram, posts depicted the relationship between man and nature as balanced and harmonic. Notably, images shared included a handshake between a man and a branch, a plant growing in a person's footprint and a young child sleeping on a leaf. On Reddit, some comments denied the urgency of climate change, stating that there's no reason to take climate action as we'll run out of oil and gas anyway.
	Academic research has a pre-conceieved agenda	Mild	Not present	On Telegram, posts discredited academic work as biased, arguing that the results had been pre-conceived and manipulated to fit their agenda. In particular, a graph shared emphasised distorted results, where deaths from heat were inflated while deaths from cold were not.
'Whataboutism'	What about other countries emissions?	Strong	Strong	Across both Reddit and Telegram, several posts referenced the percentage of greenhouse gases the UK emits in relation to global emissions. Arguing there's no point in taking climate action as other countries, particularly China, emit more than us. These comments ignored historical emissions.
	What about chemtrails?	Strong	Not present	On Telegram, several posts attempted to discredit climate change by making unrelated accusations about condensation trails left by aeroplanes, arguing that they're the overlooked evidence of geoengineering-related atmospheric manipulation.
	What about Khan's connection to Epstein?	Mild	Not present	One Telegram post attempted to discredit Sadiq Khan and the ULEZ policy by cryptic references to his relationship with John Podesta, as well as Podesta's affiliation with Epstein. Here, the post attempted to accuse Khan of involvement in paedophilia to delegitimise his climate action.

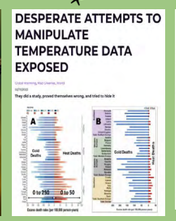
Claiming climate solutions will not work	Climate solutions are actually worse for the environment	Strong	Mild	Across Reddit, numerous comments argued that EVs may be worse for the environment than fuel cars, citing increased tyre particulate pollution from their weight and the environmental costs of mining materials for their batteries. On Telegram, posts claimed EVs are more polluting, export emissions elsewhere and merely serve as status symbols. One post even quoted a debunked study stating that EVs are 1,850 times more polluting than fuel vehicles, though the study compared gas car tailpipe emissions to tyre pollution and did not include EVs. Some also claimed that wind power negatively impacts the environment by harming wildlife. While another argued LEZ emissions are worse for pollution.
	Climate solutions are too expensive	Strong	Strong	On Reddit, several comments condemned the policy for being too expensive - much of which was not misinformation. However, some shared false information about the price of EVs. In contrast, on Telegram, graphs showing that charging EVs is more expensive than fuel cars or replacing EV batteries is prohibitively expensive were shared. Another post linked increasing energy prices to renewables, claiming they revolutionised costs upwards for the benefit of large corporations while impoverishing Britain.
	Climate solutions destroy culture	Mild	Not present	One Telegram post emphasised the affective and symbolic value of cars prohibited by the ULEZ policy, positioning them as culturally important and even heirlooms. Another depicted the ULEZ policy as destroying the British countryside.
	Climate solutions are a safety hazard	Strong	Not present	Numerous Telegram posts depicted electric vehicles on fire. Specifically, reference to the outbreak of fire in the North Sea on K line, a car carrier, where 500 EVs burnt, was made. Notably, a heavily doctored image, likely AI-generated, of a car on fire by a school was shared.
Linking climate policies to restrictions in freedom	Climate solutions increase surveillance	Strong	Mild	On Telegram and Reddit, several posts expressed frustration with the increased number of cameras due to the ULEZ policy (some of which was not misinformation). However, Telegram posts took this sentiment further, arguing privacy is at threat and even stating that ULEZ cameras are actually spy cameras.
	Sustainable urban planning policies prevent citizens from leaving their 'zone'	Strong	Not present	On Telegram, several posts stated that sustainable urban planning policies would prevent citizens from leaving a specified area. Specifically, posts often depicted children as victims, leading small lives and segregated from friends. This references and extends existing conspiracies around the 15-minute city, which argue that residents' freedom to movement will be curtailed. And limits on how often they'll be able to leave the house will be imposed, carried out through increased surveillance.
	Climate technology will be used to control you	Strong	Not present	On Telegram, several posts linked new climate solutions to increased control. Notably, some argued the government and corporations would be capable of controlling your energy usage through smart meters. While others argued EVs would be used to control drivers, though exactly how and why was ambiguous. Others argued sustainable urban planning policies were not about the environment but about control.
	Climate lockdowns are coming	Strong	Not present	On Telegram, the fictional threat of climate lockdown was prominent. The renowned climate denial think tank, the Heartland Institute, originally seeded the narrative. By implying climate measures would take away some fundamental freedoms, like travel, as the pandemic did, It exploits the vulnerability of a collectively traumatic event, COVID lockdowns, to deter people from climate action/policy more broadly.
	Adherence to climate policy will be used for social credit	Strong	Not present	On Telegram, several posts stated whether individuals adhere to climate policy or not would be used for social credit. This implied that climate policies were swaying towards authoritarianism.

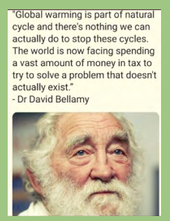
Issue-stacking	Climate change scepticism presented alongside economic & geopolitical issues	Strong	Mild	On Telegram, several posts presented climate change alongside numerous other economic and geopolitical issues. Farmers' rights, anti-digital banking, free Palestine and pro-cash movements featured prominently alongside climate denial. Including such a range of issues may perhaps broaden appeal to a wider audience. Typically, these were shared on pamphlets made by Piers Corbyn, Jeremy Corbyn's anti-establishment, climate-denying brother. In spanning so many topics, they created a narrative of defiance against government authority and arguably an entire worldview. On Reddit, climate misinformation was sometimes presented next to economic concerns like the cost of living crisis, some of which was misleading in its framing.
	Climate change scepticism presented alongside conspiracies	Strong	Not present	Similarly, on Telegram, numerous posts presented climate denial alongside conspiracy theories, including anti-COVID-vaccination and 4 and 5G scepticism. As mentioned above, these were also created by Piers Corbyn, adding to a narrative of defiance against government authority.
Institutional distrust	World leaders & business people acting on climate are corrupt, hypocrites	Strong	Not present	On Telegram, numerous posts suggest that world leaders who take action on climate change are hypocrites, the argument being despite claiming people must reduce their carbon footprint they travel in extravagant and highly carbon-intensive ways. Implying that either they do not care about carbon emissions or they believe they are exempt from their own rules. Some Telegram posts even stated world leaders and businesspeople are profiting from climate disasters while the rest of the world suffers the consequences. These themes also tie into a general anti-WEF, anti-UN and anti-WHO sentiment throughout Telegram, though the reasons are somewhat vague and obscure.
	Mainstream media climate reporting is biased	Strong	Not present	On Telegram, numerous posts argue mainstream media's climate reporting is biased, portraying organisations like the Washington Post and the BBC as alarmist and intentionally neglecting to report on cooler periods.
	Climate change is artificially created for hidden agendas	Strong	Not present	On Telegram, several posts also suggest climate change is fabricated for the benefit of certain people. In particular, posts claim that past weather data has been deleted to 'cover their tracks'. Further, others suggest that billionaires fund politicians and 'extreme net zero', implying they have vested interests in climate policy.
	Climate policies are a money making schemes	Strong	Mild	Several comments on Reddit and Telegram portray the ULEZ policy as an exclusively money-making scheme rather than a climate and health policy.

Examples of climate misinformation on Telegram

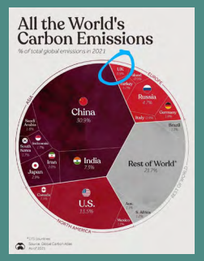
Example images seen on Telegram illustrating the aforementioned climate misinformation tropes are curated below. While I try to put the images in their most appropriate category, many images sit between or within multiple categories. As previously mentioned, academic ethics prohibit citing captions as examples; therefore, the images are disaggregated from their captions. However, where necessary for interpretation, a brief overview of the caption is provided at the end. Furthermore, as no image-based climate misinformation was found on Reddit (and comments are not allowed to be included), the following section focuses exclusively on Telegram.

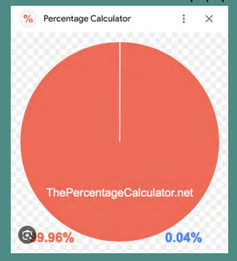
'Discrediting the climate science movement' example images



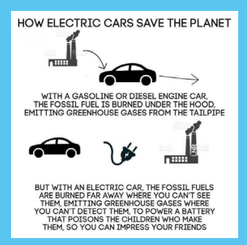


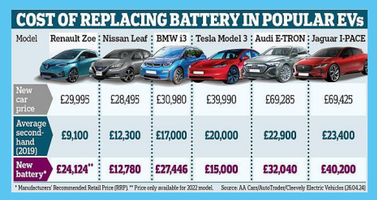
Examples of 'whataboutism' images





'Climate solutions won't work' example images





Examples of climate misinformation on Telegram

Linking climate policies to restrictions to freedom example images

Examples of 'issue-stacking' images

Institutional distrust example images

Additional context on images:

** This image references an academic study where the authors inflated the scale of the x-axis on the right-hand side (heat-related deaths), presumably to make it clearer to understand. However, the caption uses it to attempt to delegitimise academics as biased.*

*** The caption on these images claims Sadiq Khan and John Podesta (pictured) are involved in a pedophilic network of elites who are also spearheading climate action, supposedly a threat fabricated by this same group.*

**** The caption on this image states that CO2 makes up 0.04% of the atmosphere, a tiny amount, and therefore, climate action is unnecessary.*

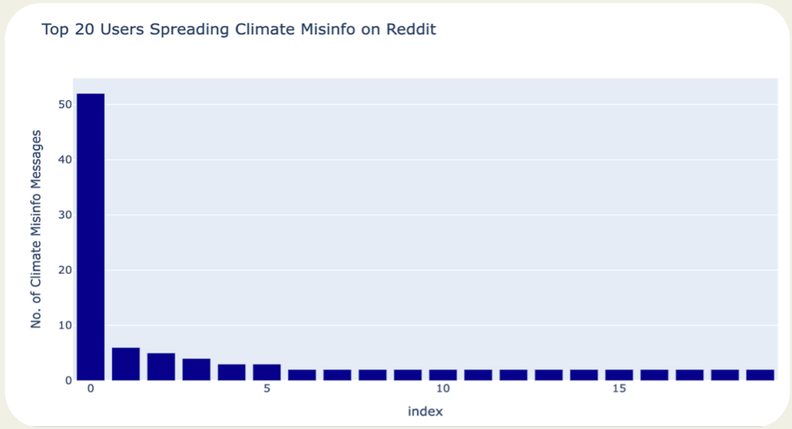
***** The caption accompanying this image denies the existence of climate change, linking climate denial to the rights of farmers.*

Climate misinformation spreaders

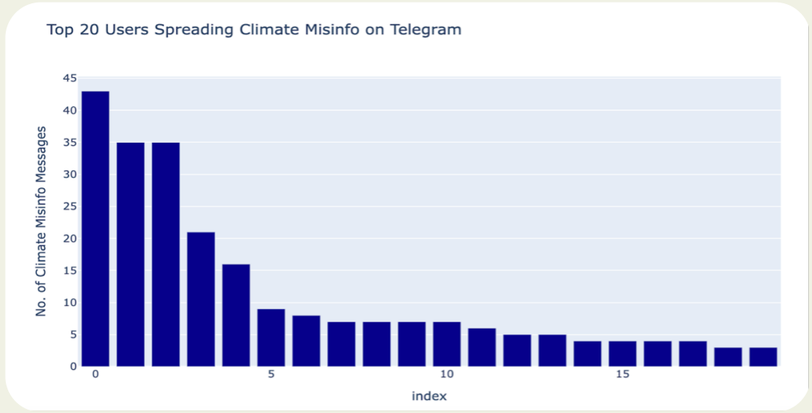
3.4

Who and how spreads climate misinformation is critical. Whether spread by a few highly active and influential users or emerging organically across a community directly impacts how best to tackle it.

Using the semantic similarity results, I analysed how frequently individual users posted misinformation, building a clearer picture of the distinct platform dynamics. On Reddit, 248 users spread climate misinformation out of 11,792 who posted about ULEZ: **2.1% of those using Reddit to post about ULEZ contributed to climate misinformation**. The largest spreader on Reddit contributed to 15.62% of climate misinformation on the platform, sharing 52 comments that contained climate misinformation. At the same time, the remaining 247 spreaders on Reddit disseminated the rest, with each user spreading between one and six cases of climate misinformation. Ultimately implying that despite one superspreader, the bulk of climate misinformation on Reddit emerges from numerous users, who are among a minority within the larger ULEZ conversation.



In contrast, on Telegram, 96 users spread climate misinformation, and 943 users posted about ULEZ on the platform. This means that **10.2% of those using Telegram to post about the ULEZ contributed to climate misinformation**, a nearly fivefold difference from Reddit. In contrast, the top six climate misinformation spreaders on Telegram contributed to 34.56% of climate misinformation on the platform. While the remaining 90 spreaders on Telegram spread the rest, sharing anywhere between one to eight cases of climate misinformation per user. This implies that several highly active and influential users contribute to a notable amount of climate misinformation; however, the majority of misinformation emerges from the remaining 90 users.



Climate misinformation platform risks

3.5

Below the table documents the different risks of climate misinformation associated with each platform based on my research. See the key for risk level.

Key:
RED - high risk
ORANGE - medium risk
GREEN - low risk

Risk | Platform	*Reddit*	*Telegram*
Reach	11,792 users posted or commented on Reddit threads with 'ULEZ' in the captions	943 users posted within ULEZ-related Telegram channels.
Accessibility	ULEZ content on Reddit is relatively easy to access, often appearing in Google search results. ULEZ threads were also visible across 50 subreddits, spanning numerous communities and increasing reach.	It's unlikely that people will come across ULEZ content on Telegram in the same way they may on Reddit, as it's not searchable on Google, making it challenging to access unless one intends to.
Frequency of climate misinformtion	0.8% of ULEZ discourse was climate misinformation.	1.2% of ULEZ discourse was climate misinformation.
Strength of Climate	Having reviewed the top 500 highest-scoring messages for climate misinformation on Reddit, it is somewhat strong, particularly in discrediting electric vehicles as poor climate solutions and disregarding the ULEZ policy as a money-making scheme. This level of climate misinformation is insidious, as it may create doubt in the feasibility of climate solutions for people who do believe in climate change, ultimately slowing public support for climate policy.	Having reviewed the top 500 highest-scoring messages for climate misinformation on Telegram, the strength of misinformation is very high. The language is often vitriolic, characterised by a profound disregard for the truth. This is highly dangerous due to the extreme nature of the language and the ideas it conveys. However, it is safer in the sense that, outside of this extreme context, those who believe in climate change are likely to doubt it.
Content moderation	Content moderation on Reddit relies on volunteer Reddit moderators to manage discourse within specific subreddits on the platform. Reddit notes that moderators should 'develop subreddit rules and norms to create and nurture [their] communities.' Each different subreddit has its own community rules created and enforced by volunteers. Relying on community-based moderation poses several risks for the spread of misinformation, including inconsistent or biased enforcement, misinformation spreading at rates that moderators can't handle, and the abuse of moderator power, among others. That said, the risk of misinformation is subreddit-specific; r/science successfully banned climate denial from their subreddit.	Telegram removes and blocks users or channels violating its terms of service. However, climate misinformation, or misinformation more broadly, is not prohibited on the platform, so Telegram has no reason to remove it. The only things prohibited are promoting violence on public channels, posting illegal porn on public channels and engaging in activities most countries deem unlawful, namely child abuse, selling illegal goods/services (drugs, firearms, forged documents), etc.
Range of opinion and viewpoints	Topic modelling and visual analysis underscore that ULEZ discourse on Reddit is characterised by mixed opinion discourse, deliberation, and debate.	Topic modelling and visual analysis underscore ULEZ discourse on Telegram is characterised by homogeneous opinions, where users largely reinforce others' beliefs.

AI & climate misinformation

Recent evolutions in Artificial Intelligence have exponentially increased the ease, cost and speed of producing climate misinformation. AI tools capable of creating textual, visual and audio misinformation are increasingly prolific while simultaneously able to produce progressively more 'real' appearing imagery, video and audio and more sophisticated 'text'. Rapid developments in AI also make detecting it increasingly challenging. Against this backdrop, determining reality from falsehood poses serious challenges, to the extent that, in 2024, the World Economic Forum declared AI-generated misinformation the world's second greatest threat, after climate change. Notable cases of AI-generated climate misinformation include AI imagery shared in the wake of Hurricane Helene by Republican Amy Kremer. As well as an image of a dead whale washed ashore by a wind farm, shared by The Texas Public Policy Institute, a leading climate denial think tank that argued wind energy was killing whales.

Within Telegram ULEZ channels, several likely AI-generated images were found using human judgement and the AI-image detector: wasitai. The images depict burning EVs and corrupt world leaders profiting from climate change, among other themes. These were often absurd, some evidently not attempting to depict reality in any meaningful way. That said, the images echoed Kremer's perverse conception of the value of AI-generated images, who, when notified the image she shared was false, stated: "I don't know where this photo came from, and honestly, it doesn't matter...it is emblematic of the trauma and pain people are living through." This represents shameless disregard of the truth and a concerning outlook in which symbolic truth is treated as important, if not more so, than factual truth. Ultimately, for Kremer and others, it doesn't matter if something is true; if it represents something they believe is true, that's enough.

Note on AI climate misinformation content:
Due to the increasingly sophisticated AI-generated media, some AI-generated imagery and all text has likely gone undetected.

Examples of AI-generated climate misinformation imagery on Telegram:

This image depicts celebratory world leaders and businesspeople surrounded by piles of money. On the wall is a graph of temperature increasing, while outside, a storm is breaking out, with thunder, lightning, and large fires roaring. It implies that world leaders and businesspeople are profiting from climate change.

Source: Telegram channel - Action Against ULEZ, CAZ, LTNs & 15-20 minute Cities, Pay Per Mile, Road user charging.

This image depicts a collage featuring an AI-generated car on fire with several signs layered onto the image. A newspaper headline from the Express warns that 'Electric cars can explode' and 'the public must be warned'.

Source: Telegram channel - ULEZ CAN'T PAY WON'T PAY

This image suggests that the mainstream consensus on CO_2 is highly flawed.

Source: Telegram channel - ULEZ CAN'T PAY WON'T PAY

When read alongside the caption, this image suggests that electric cars pose a danger to users and the public.

Source: Telegram channel - Action Against ULEZ, CAZ, LTNs & 15-20 minute Cities, Pay Per Mile, Road user charging.

So what for AI organisations?

AI-generated content is sowing doubt about the reality of climate change and the efficacy of climate solutions, among other false narratives. Ultimately, this undermines scientific consensus, seeds confusion about the effectiveness of climate solutions, and slows climate action. AI companies must take action to prevent the misuse of their platforms for spreading misinformation by taking the following steps:

one

Prohibit the creation of misinformation through prompt restriction

Proactively prevent the generation of misinformation by replying to prompts asking for climate misinformation content with information on established climate science (while some restrictions already exist, it remains relatively easy to create climate misinformation).

two

Watermark content

Embed watermarks or metadata into images, video, or audio generated so viewers are immediately aware they're looking at AI-generated content.

three

Be transparent

Disclose how AI models are trained and what datasets are used to do so.

four

Invest in AI detection tools

Collaborate with climate misinformation organisations and other AI companies to develop AI detection tools.

five

Ethical development

Consider and mitigate the risk of misinformation when developing models by involving climate scientists and misinformation specialists in the model evaluation process.

So what for policymakers?

Building resilient climate policy communications

Based on this research, several pervasive narratives attempt to delegitimise the ULEZ policy. As such, this section identifies them and provides guidance for future policymakers considering the implementation of similar schemes. The aim is to build climate policy communications which are more resilient to established mis and disinformation tropes.

Insight: Climate misinformation often claims that electric vehicles have a more negative environmental impact.

Insight: The ULEZ policy is often characterised as penalising lower-income individuals.

Insight: The ULEZ policy is often portrayed as a threat to personal freedom.

Insight: The ULEZ policy is depicted as a "war on motorists."

POLICY CONCEPTION

Engage residents: Involve local residents in policy discussions before they take effect.

Acknowledge individual cases: While lower-income people are less likely to own a car, some will rely on older, polluting cars with less financial flexibility to change. Acknowledge these scenarios and ensure targetted support schemes are available.

Tell human-centred stories: Go beyond sharing statistics to document the voices of residents benefitting from the policy, for instance, children with asthma who are now able to walk to school. Personal, local stories can help increase understanding and trust in the policy.

Anticipate narrative attacks by identifying likely misinformation tropes before the launch of climate policy.

Key issues to cover are: The correlation between income and air quality in the particular city a policy will be implemented (typically, lower-income people live in areas with the worst air quality)

Data on car ownership and income. Many anti-ULEZ narratives argue that the policy unfairly targets lower-income individuals because they cannot afford to upgrade vehicles or are more reliant on cars. However, in London, data shows that car ownership is closely linked to income level, with lower-income households far less likely to own a car.

Prebunk, don't just debunk: Prebunking involves providing an account of expected misinformation alongside a refutation which debunks it. It preemptively anticipates potential misinformation tropes, helping build resilience among viewers. This could be achieved by using local spokespeople, conducting a media campaign, or distributing leaflets.

FRAMING & COMMUNICATION

Clear communication: Ensure that policy materials and enforcement are clearly communicated in advance of implementation.

Consider framing the policy as a health issue: By framing the policy through the lens of ensuring citizens can access clean air, it may become more tangible and less abstract for some.

Communicate any scheme in place to financially support citizens in upgrading their cars (e.g., the scrappage scheme).

Provide a clear explanation of the benefits EVs have on the environment when compared to other cars. However, be honest; for instance, don't downplay the reality of mining for battery metals.

Monitor online platforms for misinformation: Keep an eye on Facebook, Telegram, and Reddit for misinformation related to your policy, ensuring the communications team is informed and can respond and adapt policy communications accordingly.

MONITOR & ITERATE

So what for policymakers?

Prebunking ...

What?

Prebunking is a proactive strategy to combat misinformation rooted in inoculation theory. Similar to a vaccine, prebunking exposes viewers to a small version of misinformation, along with a clear preemptive refutation, before they encounter misinformation. This inoculates viewers, ultimately helping them build resilience to future cases of misinformation. Prebunking is preemptive, making it distinct from corrective approaches like debunking, which, in reaction to misinformation, unpacks why it's untrue or misleading. It has been proven highly effective in helping build resilience to misinformation across a wide variety of people with varying political beliefs.

Who?

The primary audience is residents living within the area where the sustainable urban planning policy is to be implemented. Prebunking works best among those without strong beliefs on a topic; it's less effective on those with very established, hardened opinions, for instance, extreme climate deniers and conspiracists.

When?

Prebunking is most effective when the audience's position on a topic is dynamic and when misinformation narratives/techniques aren't yet fully understood. Once beliefs become solidified, the window for effective prebunking narrows. In the case of rolling out climate policy, prebunking would ideally occur before the rollout and before any substantial media coverage of the policy has been released. This is a crucial moment where misinformation narratives can be anticipated, so timely action is critical. Research also suggests that, similar to a vaccine, a booster 'shot' of prebunking, a second exposure about 10 days after the first intervention, will extend the protection.

Why?

To help people build resilience against likely climate misinformation tropes, ultimately ensuring that sustainable urban planning policies aren't derailed by misinformation-driven low public support.

How?

As mentioned, there are three key components to prebunking: a forewarning, a microdose of misinformation, and a preemptive refutation; some also include the logic behind why misinformation is spread. Further decisions include the medium; to date, prebunking work has focused on passive (infographics, videos, audio) and active (games) mediums. While the latter is more engaging, it requires more resources from the viewer, limiting its scalability, as well as being more costly to create. For policymakers building resilient climate policy communications, the former, passive mediums, are likely more suitable in most cases.

Moreover, some distinguish between issue versus technique-based prebunking. Issue prebunking focusing on the what, addressing broad misinformation narratives beyond specific claims. While technique-based prebunking focuses on the how, revealing prevalent techniques across several misinformation narratives, an approach likely to help build resilience to a wide range of misinformation (e.g., cherry-picked data or false dichotomies). For policymakers building resilient climate policy communications, focusing on issue-based prebunking is likely most effective, as messages can be tailored to established narratives which seek to undermine legitimate climate policy. The following page provides an example of issue-based prebunking relevant to sustainable urban planning policy.

Prebunking example

one

Fact

EVs are the cleanest option, even more so than the most efficient gas car. As our electric grids shift toward renewables, they'll continue to get cleaner.

two

Warning

False narratives are circulating that seek to undermine the efficacy of EVs.

three

Misinformation

When considering the environmental cost of producing EVs, including battery mining, they're more environmentally damaging than gas vehicles.

four

Logic

Those with financial interests in maintaining the status quo as opposed to transitioning to net zero present incomplete or decontextualised information, which sows doubt about the efficacy of climate solutions.

five

Preemptive Refute

While production emissions for EVs are higher than those of gas vehicles, this difference is quickly offset once in operation, where tailpipe emissions are zero.

Closing remarks

To conclude, this report has examined ULEZ discourse and climate misinformation within it across two social media platforms with distinct designs and reputations: Telegram and Reddit. Topic modelling revealed significant distinctions between platforms, where ULEZ discourse on Telegram tended to be set against a backdrop of conspiratorial thinking. In contrast, on Reddit, it was typically more intuitive, centring on the policy or adjacent themes. Notably, climate discourse was more prevalent on Reddit, as reflected in both topic modelling and TF-IDF. Yet, despite this, climate misinformation was more commonplace on Telegram, ranking as the seventh most prevalent theme. As for who spreads climate misinformation, on Reddit, only 2.1% of users do, while on Telegram, 10.2% do, an almost five-fold difference. On Reddit, aside from one superspreader, the bulk of climate misinformation originates from numerous users who are part of a minority within the larger ULEZ conversation. In comparison, on Telegram, climate misinformation originates from several highly active users, but similarly to Reddit, the majority of misinformation emerges from the remaining majority of users

Detailed qualitative research complemented the big data quantitative approach and revealed the specific rhetorical claims of climate misinformation. Notably, across both Telegram and Reddit, claims that climate solutions won't work, whether due to their cost or concerns that they're worse for the environment, were highly prominent. Reflecting a broader shift away from climate change denial to sowing scepticism about the efficacy of solutions, inso slowing action. Institutional distrust was also prevalent across both platforms, with a particular focus on depicting climate policy as a money-making scheme and those implementing it as corrupt

AI Declaration: Grammarly was used for grammar / spellcheck throughout this report

However, this was both much more prominent and stronger on Telegram. Moreover, on Telegram, climate policies were often painted as limiting freedom. This was less common on Reddit, but a shared resentment between platforms towards increased surveillance due to ULEZ cameras was prevalent. Discrediting the climate science movement either by manipulating science, quoting climate denial 'experts', seeding doubt about biased academia or depicting climate as balanced was particularly prevalent on Telegram. Finally, whataboutism, responding to climate discourse with an unrelated claim or counter-accusation, and issue-stacking, where seemingly unrelated issues are presented alongside climate misinformation, were also highly prevalent on Telegram.

These results reflect a sharp distinction in the perception of climate change between platforms; climate misinformation is rife on Telegram, with an audience who are largely sceptical of the existence of climate change. In contrast, Reddit's discourse is more balanced; however, users do still articulate their doubts about the efficacy of solutions and the credibility of those implementing them.

The threat of AI-generated climate misinformation imagery is being realised on Telegram, necessitating action from AI organisations to prevent it from worsening. Finally, for future policymakers seeking to implement sustainable urban planning policies in the UK, based on these findings, several preemptive measures can help ensure that climate policy communications are resilient. Some include engaging residents from policy conception, prebunking typical narrative attacks (such as the ULEZ will penalise poor people) and monitoring online platforms for misinformation to adapt communications accordingly.

“Everyone is entitled to [their] own opinion, but not to [their] own facts.”

- Senator Daniel Patrick Moynihan