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Electronic News Media as a Tool of Crisis Communication: Visual Coverage Patterns during the 2024 Kazakhstan Floods

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Abstract

This study examines how English-language online news and information outlets used visual material in covering the April 2024 floods in Kazakhstan. A quantitative content analysis of 73 illustrated articles from 10 outlets (1 April–31 May 2024) coded 18 article-level variables on format, depicted subjects, emotional intensity, captioning, attribution and indicators of potential ethical concern; the figures therefore describe illustrated coverage, not all flood reporting. Photographs appeared in 98.6% of articles and video in 23.3%. Outlets differed most in format: no Astana Times article (n = 40) carried article video, a gallery or drone footage, whereas RFE/RL (n = 18) and Al Jazeera (n = 7) used these formats and user-generated content more often. Differences in the subjects shown and in emotional intensity were not statistically significant, although these comparisons had limited power. Maps (13.7%) and infographics (one article) were uncommon in every phase and did not increase in the Recovery phase. In exploratory phase comparisons, only a decline in the depiction of rescue workers held with outlet constant, and it did not survive correction for multiple testing. No AI-generated imagery was detected. Drawing on phase models of crisis communication and on cognitive load theory, we offer considerations for newsroom planning during natural disasters.

Keywords: online news, crisis communication, visual content analysis, Kazakhstan floods, digital journalism, visual framing, drone imagery, flood maps

1. Introduction

1.1 The Problem

In April 2024 Kazakhstan went through its worst spring flooding in more than 80 years. Rapid snowmelt in the Ural, Tobol and Ishim basins was made worse by the breach of a dam at Orsk, in Russia's Orenburg region, on 5 April, and water spread across much of the north and west of the country. States of emergency were declared in ten regions. At the height of the crisis more than 118,000 people had been evacuated, and six deaths were confirmed on the Kazakhstani side. President Kassym-Jomart Tokayev described the floods as the largest natural disaster the country had faced in eight decades.

Online news outlets, meaning professionally edited news and information publications read in browsers and apps, are now a main source of crisis information (Pew Research Center, 2023). They can publish photographs, video, drone footage, maps and infographics as events unfold, and each format shapes how readers judge risk, severity and the competence of the authorities (Chouliaraki, 2006; Pantti, 2013). Visual framing of disasters has been studied in British news (Günay, Yenen Aytekin, & Melek, 2025) and in humanitarian organisations' social media (Lee, Lim, & Shi, 2024), but few studies have coded the visual content of English-language outlets reporting on natural disasters in Central Asia.

1.2 Importance of the Problem

The 2024 floods are a useful case: a rapid-onset hydrological disaster in a post-Soviet country, covered at the same time by outlets with very different locations, editorial orientations and budgets. Content analyses of crisis communication have concentrated on social media or on Western disasters, leaving Central Asian events largely unexamined (Liu, Jin, Briones, & Kuch, 2012; Murthy & Longwell, 2013). Kazakhstan's regions also differ considerably in digital infrastructure and in what it delivers (Akilzhanova, Zhanseitov, Belgibayeva, Kuttybayeva, & Alimbayeva, 2025), and most flooded areas lay far from the national newsrooms in Astana and Almaty. The media system gives the state considerable influence over

what circulates (Anceschi, 2015), and during the unrest of January 2022 state-aligned and independent outlets told markedly different stories (Kap & Slamgazhy, 2026). A natural disaster offers a less politically charged test of whether similar differences appear in visual coverage.

Images shape how audiences perceive risk and respond, often more strongly than text (Messaris & Abraham, 2001), so how outlets choose formats, subjects and emotional intensity across the phases of a crisis matters both for theory and for the editors and emergency agencies who will plan for the next disaster. To our knowledge, no previous study has systematically coded the visual coverage of a Central Asian natural disaster across a varied set of English-language online outlets.

1.3 Relevant Scholarship

1.3.1 Crisis Communication and the Digital News Environment

Crisis communication research distinguishes organisational crisis communication, concerned with institutional reputation (Coombs, 2007), from public crisis communication, which informs citizens during emergencies (Jin, Liu, & Austin, 2014; Reynolds & Seeger, 2005). Online news has compressed the timing of the latter, making images that convey severity before the written copy is ready especially valuable (Chouliaraki, 2006; Maillot, 2019; Muslim, 2025). Images make meaning through a grammar of their own (Kress & van Leeuwen, 2006): in a crisis, this includes where people are placed in the frame, whether destruction or rescue is foregrounded, and whether a visualisation locates the disaster. Crisis photographs also circulate in affective economies in which editors balance emotional engagement against ethical limits on showing suffering (Pantti, 2013).

1.3.2 Framing Theory and Crisis Coverage

Framing selects some aspects of a perceived reality and makes them more salient (Entman, 1993). Crisis journalism commonly uses human interest, responsibility and economic consequences frames (Semetko & Valkenburg, 2000), which later work applied to digital settings (Liu et al., 2012). Images can strengthen a frame: a lead photograph of a family in tears activates the human interest frame more strongly than equivalent text, and an aerial view of a flooded town evokes economic consequences through scale (Messaris & Abraham, 2001). Disaster images often omit where and why an event happened, keeping distant disasters remote (Günay et al., 2025), and victim and relief images dominate aid organisations' visual output (Lee et al., 2024).

1.3.3 Cognitive Load and the Informational Function of Visual Content

Cognitive load theory holds that working memory is limited and that the way information is presented affects how much of that capacity processing consumes (Mayer, 2009; Sweller, 1988). Readers following a crisis may therefore find complex verbal information hard to absorb, and maps and infographics can present the extent of flooding, evacuation routes or aid points compactly. Design matters, however: many public flood maps fail basic quality criteria (Henstra, Minano, & Thistlethwaite, 2019), and three-dimensional perspective does not by itself improve risk judgements (Kuster, Ruginski, & Fabrikant, 2023). Whether news coverage supplies such formats is a fair question to ask of crisis reporting, although a content analysis can describe their presence but cannot test their effect on readers.

1.3.4 Drone Imagery and Visual Ethics in Online Crisis Reporting

Real-time publishing, user-generated content (UGC) and drones have enlarged the stock of images available to editors and raised questions of consent, accuracy and retraumatisation (Manning, 2005; Pantti, 2013). Drone imagery draws its authority from aggregation, making large-scale spatial patterns visible at a glance (Hamilton, 2020), and attribution can serve as a proxy for source accountability (Lester, 2013). Generative AI adds a further concern for visual journalism (Matich, Thomson, & Thomas, 2025; Shah & Patel, 2025), and we know of no content analysis that has coded AI-generated visuals in natural-disaster coverage.

1.4 Research Questions and Research Design

The literature reviewed above leads to four research questions.

RQ1: Which visual formats did English-language online news outlets use to cover the 2024 Kazakhstan floods, and how did their use differ between outlets?

RQ2: Which subjects did these outlets depict, and with what level of emotional intensity?

RQ3: How consistently did outlets caption and attribute visual material, and how often did that material show observable indicators of potential ethical concern?

RQ4: How did visual coverage patterns differ across the Early, Peak and Recovery phases of the crisis?

RQ4 is the central question. The crisis and emergency risk communication model (Reynolds & Seeger, 2005) implies that information needs move from alerts towards practical guidance as a crisis passes into recovery, and cognitive load theory suggests that maps and infographics suit such guidance. We therefore expected spatial and data-based visuals to become

more common in the Recovery phase and treat this as the primary phase test; other phase comparisons are exploratory. Audience needs and comprehension were not measured, so the theory frames the expectation but is not tested. Because one outlet dominates the sample, phase differences are tested with outlet held constant. The design supports comparison of visual profiles, not claims about audience effects or editorial intentions.

2. Method

2.1 Research Design and Sample

We used quantitative content analysis (Krippendorff, 2004; Neuendorf, 2017). The unit of analysis was the article: any edited item published on a selected outlet's website between 1 April and 31 May 2024 that contained at least one visual element. Articles without visuals were excluded at screening, so prevalence figures refer to illustrated articles only. The sample comprises a national newspaper (The Astana Times), broadcasters' websites (RFE/RL, Al Jazeera, Euronews, DW and CBS News), regional news and analysis sites (Eurasianet and CABAR.asia), a scientific information source (NASA Earth Observatory) and an investigative organisation (Bellingcat), hence the broader term electronic news media. The last two are reported among the other outlets.

Outlets had to (1) publish in English, (2) have covered the Kazakhstan floods and (3) have article pages accessible at the time of coding, live or through the Internet Archive. We searched Google News and each candidate outlet's site search for items published between 1 April and 31 May 2024, using "Kazakhstan" combined with "flood", "floods" or "flooding", and "Orsk" or "Orenburg" combined with "flood", keeping results that referred to Kazakhstan. Two researchers read every retrieved item and kept those that reported on the floods in Kazakhstan and contained at least one visual element, resolving disagreements by discussion; items covering the event only from a Russian domestic angle were excluded. The searches were run in January and February 2026. The article list, search protocol and exclusions are given in Appendix B.

Because the searches were run almost two years after publication, deleted pages, altered URLs and broken embeds may have limited what could be included or coded; at final verification in November 2026, one RFE/RL URL redirected to an unrelated page. Video and social media embeds are the elements most likely to be lost, so their prevalence may be underestimated.

The coding file contained 91 records. We removed 16 duplicates and one Russian-language article (Euronews.ru) and merged two names for CABAR.asia. During revision we re-verified every URL and publication date against the live pages. This identified one further duplicate RFE/RL article, which was removed, and 13 incorrect publication dates, two of which moved an article between phases. All Recovery-phase articles were re-checked against the live pages, which led to three corrections, and one incompletely coded Peak-phase RFE/RL article was recoded. The final sample contains 73 articles from 10 outlets (Table 1); all corrections are listed in Appendix B.

Table 1. Sample composition by outlet and crisis phase

Outlet	Country	Early	Peak	Recovery	Total
The Astana Times	Kazakhstan	15	16	9	40
RFE/RL	USA	6	9	3	18
Al Jazeera	Qatar	5	2	0	7
Euronews	Belgium	1	1	0	2
DW	Germany	0	1	0	1
CBS News	USA	0	1	0	1
NASA Earth Observatory	USA	0	1	0	1
Bellingcat	Netherlands	0	1	0	1
Eurasianet	USA	0	0	1	1
CABAR.asia	Kyrgyzstan	0	0	1	1
Total		**27**	**32**	**14**	**73**

Note. Values are numbers of unique articles. Early = 1–10 April; Peak = 11–20 April; Recovery = 21 April–31 May 2024. Phases are assigned from publication dates verified against the live pages in November 2026.

The Astana Times supplied 40 articles (54.8%), RFE/RL 18 and Al Jazeera 7; the remaining eight came from seven outlets grouped as other outlets. Because The Astana Times dominates the aggregate figures, results are reported by outlet group. The outlet mix also changed over time: Al Jazeera published nothing in the Recovery phase, and The Astana Times wrote nine of the fourteen Recovery articles.

2.2 Operationalisation of Crisis Phases

Following Reynolds and Seeger (2005), we defined three phases and checked them against an independent chronology. The Early phase (1–10 April, n = 27) covers the onset of flooding, the Orsk dam breach on 5 April and rapidly growing

evacuations. The Peak phase (11–20 April, $n = 32$) covers the largest evacuations and rescue operations; by 17 April the flood peak had passed on most rivers in Kostanay region and on most internal rivers of West and North Kazakhstan, while the Zhaiyk crest was forecast to reach Uralsk on 16–20 April (Kazhydromet, 2024). In the Recovery phase (21 April–31 May, $n = 14$), national coverage turned mainly to returns home, damage assessment, compensation and aid. The label is a simplification: a second wave was forecast at Petropavl on 22–27 April, a flood wave was expected in Atyrau region on 28–29 April (Kazhydromet, 2024), and the Zhaiyk remained above its critical level there in mid-May (Kazakhstan Today, 2024). Recovery therefore denotes the late, predominantly post-peak period of national coverage. Because the phases are unequal in length (10, 10 and 41 days) and only one article falls in May, the phase tests were repeated under alternative boundaries.

2.3 Coding Instrument

The 18 variables were coded at article level; the full codebook is given in Appendix A. Crisis phase was derived from the publication date. Eight binary items recorded the presence of at least one photograph, video, gallery, infographic, map, drone footage, UGC or AI-generated image; the number, size and placement of visuals were not recorded. Only video belonging to the article was counted. Drone footage was coded from a drone credit or, where there was none, from the visual character of an aerial image, and the producer of the imagery was not recorded. AI-generated imagery was coded when an image was labelled as such or showed clear generative artefacts, so a zero count means that none was detected. Four binary items recorded victims, rescue workers, infrastructure damage and children; children were coded when a person appeared to be under about 14, a threshold that captures people who are clearly children rather than adolescents, whose age cannot be estimated reliably from images. Emotional intensity (Low, Medium or High) rated the overall emotional charge of the article's dominant visual element. Caption presence refers to the lead visual and source attribution to at least one visible credit, so neither shows that every visual was captioned or credited. A final item flagged observable indicators of potential ethical concern: an identifiable person in visible distress, graphic content, or a close-up of a child in distress. Because consent and editorial justification cannot be established from published content, a flag records observable features only, not an ethical breach.

2.4 Intercoder Reliability

Two trained coders independently coded a subsample of 14 articles (19% of the sample) after two hours of training. Mean Cohen's kappa (Cohen, 1960) across the estimable variables was $\kappa = 0.82$, almost perfect agreement by Landis and Koch's (1977) criteria, ranging from $\kappa = 0.72$ for emotional intensity to $\kappa = 0.97$ for photograph presence. For variables without variation in the subsample (AI-generated image and AI disclosure), percentage agreement was 100%. With 14 articles, a single disagreement on a rare variable changes kappa considerably, so the reliability of the interpretative variables (emotional intensity, drone footage, child depiction and the ethical-concern indicator) is less secure than the mean suggests. Emotional intensity, the only variable below 0.75, went through consensus review, and its results are treated with particular caution.

2.5 Analytical Approach

Because many cells are small (Agresti, 2002), all p values were obtained by Monte Carlo permutation (10,000 permutations, seed 20240405; $p = (r + 1)/10{,}001$, with ties counted as at least as extreme; Monte Carlo standard error at most .005). Outlet comparisons used the Pearson chi-square statistic for the three main outlets ($n = 65$), with outlet labels permuted across articles. For phases we report the chi-square test and a linear-trend test (Early = 0, Peak = 1, Recovery = 2) whose statistic is the absolute sum of phase scores multiplied by the outcome's deviations from its stratum mean. In the stratified version, phase labels were permuted within each individual outlet, so that changes in the outlet mix cannot produce an apparent trend. The single primary test was the stratified trend in maps or infographics, which corresponds to RQ4; the eleven trend tests in Table 5 are exploratory and Holm-adjusted. We repeated the stratified tests under five alternative boundary sets and two two-period splits, report key outlet differences with 95% Newcombe–Wilson confidence intervals, and give effect sizes as Cramér's V. Analyses used Python 3.11 (pandas, NumPy and SciPy); the script is supplied with the supplementary material.

3. Results

3.1 Visual Element Types across Outlets

Photographs appeared in 98.6% of articles ($n = 72$) and video in 23.3% ($n = 17$) (Table 2). No Astana Times article carried article video, against 44.4% of RFE/RL articles and every Al Jazeera article ($\chi^2(2) = 39.96$, $p < .001$, $V = 0.78$). Galleries showed the same pattern: none at The Astana Times, 38.9% at RFE/RL and 42.9% at Al Jazeera ($\chi^2(2) = 18.97$, $p < .001$, $V = 0.54$). Drone footage appeared in 9.6% of articles ($n = 7$), four of them at RFE/RL (22.2%) and none at The Astana Times ($\chi^2(2) = 9.11$, $p = .013$, $V = 0.37$). UGC appeared in 11.0%, most often at Al Jazeera (57.1%; $\chi^2(2) = 16.92$, $p < .001$, $V = 0.51$). Maps were uncommon (13.7%, $n = 10$), and no outlet difference was detected ($p = .21$), although no RFE/RL article carried one. One article contained an infographic, and no AI-generated imagery was detected.

Table 2. Visual element types by outlet group

Outlet	n	Photo	Video	Gallery	Drone	Map	Infographic	UGC	AI image
The Astana Times	40	40 (100)	0 (0)	0 (0)	0 (0)	6 (15)	1 (3)	1 (3)	0 (0)
RFE/RL	18	18 (100)	8 (44)	7 (39)	4 (22)	0 (0)	0 (0)	3 (17)	0 (0)
Al Jazeera	7	7 (100)	7 (100)	3 (43)	1 (14)	1 (14)	0 (0)	4 (57)	0 (0)
Other outlets	8	7 (88)	2 (25)	0 (0)	2 (25)	3 (38)	0 (0)	0 (0)	0 (0)
Total	**73**	**72 (99)**	**17 (23)**	**10 (14)**	**7 (10)**	**10 (14)**	**1 (1)**	**8 (11)**	**0 (0)**

Note. Values are n (%) of articles in each group with at least one element of the type. Other outlets = Euronews (2), DW, CBS News, NASA Earth Observatory, Bellingcat, Eurasianet and CABAR.asia (1 each). UGC = user-generated content.

3.2 Subject Representation

Victims appeared in 71.2% of articles (n = 52), infrastructure damage in 67.1% (n = 49) and rescue workers in 46.6% (n = 34) (Table 3). No significant outlet differences were detected for victims (65.0% at The Astana Times, 77.8% at RFE/RL and 100% at Al Jazeera; $\chi^2(2) = 4.02$, $p = .12$), rescue workers ($p = .70$) or damage ($p = .64$). With seven Al Jazeera and 18 RFE/RL articles, these results do not show that the outlets were alike: Al Jazeera showed victims in 35.0 percentage points more of its articles than The Astana Times (95% CI −2.7 to 50.5). Children were the exception. Al Jazeera showed them in six of its seven articles (85.7%), against 11.1% at RFE/RL and 7.5% at The Astana Times ($\chi^2(2) = 26.52$, $p < .001$, $V = 0.64$).

Table 3. Subject representation by outlet group

Outlet	n	Victims	Rescue workers	Infrastructure damage	Children
The Astana Times	40	26 (65)	20 (50)	24 (60)	3 (8)
RFE/RL	18	14 (78)	11 (61)	13 (72)	2 (11)
Al Jazeera	7	7 (100)	3 (43)	5 (71)	6 (86)
Other outlets	8	5 (63)	0 (0)	7 (88)	0 (0)
Total	**73**	**52 (71)**	**34 (47)**	**49 (67)**	**11 (15)**

Note. Values are n (%) of articles in each group. Children = apparent child depiction. Other outlets as in Table 2.

3.3 Emotional Intensity, Attribution and Indicators of Ethical Concern

We rated 45.2% of articles (n = 33) as high in emotional intensity (Table 4): 61.1% at RFE/RL, 42.9% at Al Jazeera and 37.5% at The Astana Times. The outlet difference was not significant ($\chi^2(4) = 3.19$, $p = .54$, $V = 0.16$), but the RFE/RL–Astana Times gap in high-intensity articles was 23.6 percentage points (95% CI −3.7 to 46.5), so a substantial difference cannot be ruled out. A caption on the lead visual was present in 97.3% of articles and at least one visible credit in 94.5%. Every Astana Times article met both criteria, against 94.4% and 83.3% of RFE/RL articles (captions $\chi^2(2) = 2.65$, $p = .38$; credits $\chi^2(2) = 8.21$, $p = .047$, $V = 0.36$). Indicators of potential ethical concern were flagged in two articles (2.7%), both at Al Jazeera ($p = .009$), too few for firm conclusions.

Table 4. Emotional intensity, attribution and indicators of ethical concern by outlet group

Outlet	n	EI low	EI medium	EI high	Caption	Source attribution	Ethical-concern indicator
The Astana Times	40	10 (25)	15 (38)	15 (38)	40 (100)	40 (100)	0 (0)
RFE/RL	18	3 (17)	4 (22)	11 (61)	17 (94)	15 (83)	0 (0)
Al Jazeera	7	1 (14)	3 (43)	3 (43)	7 (100)	7 (100)	2 (29)
Other outlets	8	2 (25)	2 (25)	4 (50)	7 (88)	7 (88)	0 (0)
Total	**73**	**16 (22)**	**24 (33)**	**33 (45)**	**71 (97)**	**69 (95)**	**2 (3)**

Note. Values are n (%) of articles in each group. EI = emotional intensity. Caption = caption on the lead visual; source attribution = at least one visible credit. Ethical-concern indicator = observable features only; it does not establish absent consent or unjustified publication. Other outlets as in Table 2.

3.4 Change across Crisis Phases

Table 5 shows a narrowing pattern. Video fell from 33.3% of Early articles to 21.9% in the Peak phase and 7.1% in Recovery, and galleries and drone footage were absent in Recovery. Rescue workers appeared in 66.7% of Early articles but in 37.5% of Peak and 28.6% of Recovery articles, while infrastructure damage rose from 59.3% to 75.0% and was 64.3% in Recovery. UGC was frequent only in the Early phase (25.9%). High emotional intensity rose from 48.1% to 53.1% and fell to 21.4% in Recovery, where most articles were rated Medium (57.1%).

Most of these differences did not survive formal testing. The primary test found no trend in maps or infographics ($p = .46$; 18.5%, 15.6% and 7.1% across the phases), contrary to the RQ4 expectation. The decline in UGC was significant overall ($\chi^2(2) = 10.35$, $p = .006$, $V = 0.38$) but not within outlets ($p = .18$), reflecting Al Jazeera's early, UGC-heavy coverage and its later absence. Neither the fall in video (unstratified $p = .090$; within outlets $p = .53$) nor the shift in emotional intensity ($\chi^2(4) = 6.22$, $p = .19$) was significant.

Only the decline in rescue-worker depiction remained significant within outlets (stratified trend $p = .017$), and the result is fragile. It does not survive Holm correction (adjusted $p = .19$). It holds under two of the five alternative boundary sets and under a split at 17 April, but not under boundary sets that end the Peak phase on 21 April or later or under a split at 20 April. Within The Astana Times alone, the trend (73.3%, 31.3% and 44.4%) was not significant ($p = .15$). The map-or-infographic result was null under every boundary set (Appendix B).

Table 5. Visual and subject variables by crisis phase

Phase	n	Photo	Video	Gallery	Drone	UGC	Map	Victims	Rescue	Infra.	Children	EI high
Early (1–10 Apr)	27	26 (96)	9 (33)	4 (15)	2 (7)	7 (26)	4 (15)	20 (74)	18 (67)	16 (59)	4 (15)	13 (48)
Peak (11–20 Apr)	32	32 (100)	7 (22)	6 (19)	5 (16)	0 (0)	5 (16)	23 (72)	12 (38)	24 (75)	6 (19)	17 (53)
Recovery (21 Apr–31 May)	14	14 (100)	1 (7)	0 (0)	0 (0)	1 (7)	1 (7)	9 (64)	4 (29)	9 (64)	1 (7)	3 (21)
Total	73	72 (99)	17 (23)	10 (14)	7 (10)	8 (11)	10 (14)	52 (71)	34 (47)	49 (67)	11 (15)	33 (45)
Trend p[a]		1.00	.53	.76	1.00	.18	.80	1.00	.017	.86	.24	.16

Note. Values are n (%) within each phase. Infra. = infrastructure damage; EI = emotional intensity; UGC = user-generated content. Infographics are omitted (one Early article). [a] Monte Carlo permutation test of linear trend with phase labels permuted within outlets (10,000 permutations); exploratory and unadjusted (Holm-adjusted p for rescue workers = .19). Primary test (map or infographic present): $p = .46$.

4. Discussion

4.1 Photograph-Dominant, Video-Sparse Coverage

Photographs were far more common than video (98.6% against 23.3%), contrary to the assumption that video is now standard in online crisis coverage. The Astana Times, which carried no article video, accounts for much of this; Al Jazeera used video in every article and RFE/RL in almost half. These presence measures show that photography was nearly universal, not that articles relied on single photographs, and archival losses may understate video use. Outlets with editorial cultures carried over from print may still build crisis coverage around the photograph, consistent with its privileged affective status in crisis news (Pantti, 2013; see also Hadland, Campbell, & Lambert, 2015; Zhao, 2022), although our data cannot show why.

4.2 Drone Footage as a Sourcing Pattern

Drone footage appeared mostly at RFE/RL and never at The Astana Times. This is a sourcing pattern, not evidence of an outlet's equipment, permissions or investigative capacity: aerial images may come from staff, agencies, authorities or outside contributors, and their origin was not coded. At least one RFE/RL item presented its aerial footage as exclusive material from its Kazakh Service, but this cannot be generalised. What the pattern does show is a difference in what readers saw, since drone images reveal spatial patterns that ground-level photographs cannot (Hamilton, 2020). Whether it reflects wider inequalities in photojournalistic technology (Nithish & Shailashree, 2023; Yusof, Dolah, & Musa, 2024) remains a hypothesis.

4.3 Distance, Editorial Position and Visual Selection

The outlets differed more clearly in how they presented the floods than in what they showed. Non-significant differences in subjects and emotional intensity, with small samples and wide confidence intervals, indicate an absence of evidence rather than similarity. Al Jazeera combined video, UGC and frequent apparent child depiction, consistent with telling stories of displacement through families (Chouliaraki, 2006). RFE/RL used galleries and drone footage more often and had the most high-intensity articles, a profile consistent with its accountability mandate (Entman, 1993), although frames and editorial intentions were not coded.

The Astana Times relied heavily on official imagery: in the Recovery phase, photographs in seven of its nine articles were credited to government bodies such as the Emergency Ministry, the Akorda presidential office, regional akimats or foreign governments sending aid. This is an observable sourcing pattern, and its explanations remain untested hypotheses. One is proximity: a domestic outlet can draw on institutional photo supply. Another is editorial position: where the state has considerable media influence (Anceschi, 2015) and state-aligned outlets have favoured official narratives in earlier crises (Kap & Slamgazhy, 2026), official imagery may reflect institutional relationships as well as convenience.

Whatever its cause, the pattern has a likely visual consequence. Official photographs typically show the state acting: the

President meeting residents, officials chairing meetings, rescuers deployed and aid arriving. A visual record built from such images can present a disaster as a crisis under control, foregrounding the response rather than the questions of preparedness, forecasting and compensation that other outlets raised, for instance in RFE/RL reports on public anger in early April and on compensation protests in May. This is an interpretation of the sourcing pattern, not a coded finding; coding the actors and actions shown in official and non-official images across Kazakh- and Russian-language outlets would test it.

4.4 Scarce Explanatory Visuals throughout the Crisis

Maps appeared in only 13.7% of articles and infographics in one, and neither became more common later in the crisis. All fourteen Recovery articles carried photographs, one carried a map and one video, and none carried a gallery, drone footage or an infographic. With so few Recovery articles, the pattern is best described as a scarcity of explanatory visuals throughout the crisis rather than a change specific to recovery.

Cognitive load theory (Mayer, 2009; Sweller, 1988) suggests why this might matter: people in recovery need to know where aid is distributed, how to claim compensation and which areas remain dangerous, information that well-designed maps and graphics can present compactly (Henstra et al., 2019; Kuster et al., 2023), and much of the Recovery coverage concerned compensation and aid. We did not, however, measure readers' needs, comprehension or map quality, and maps do not suit every story, so the scarcity is a descriptive finding that raises a question for practice, not evidence of communication failure. The decline in rescue-worker depiction is consistent with coverage moving from response to damage as the emergency wound down, but it needs confirmation.

4.5 Attribution Standards and AI

A caption on the lead visual (97.3%) and at least one credit (94.5%) were present in almost all articles. These minimum standards do not show that every image was captioned or credited, and they are not directly comparable with earlier studies that used other measures (Lester, 2013). Full attribution at The Astana Times coexisted with reliance on official sources, so attribution and editorial independence are separate matters. No AI-generated images or AI disclosures were detected, consistent with 2024 norms and the guidelines of the International Federation of Journalists [IFJ] (2023), although visual detection is uncertain. As generative tools improve, these standards will face increasing pressure (Matich et al., 2025; Shah & Patel, 2025), and disclosure policies are likely to work only if photo editors and reporters are trained to apply them.

5. Conclusion

5.1 Summary of Findings

English-language electronic news media covering the 2024 Kazakhstan floods differed sharply in visual format; differences in the subjects shown were not detectable in this sample, which does not establish that the outlets were alike. Photography was nearly universal; video, galleries, drone footage and UGC were concentrated in the international outlets; and the main domestic outlet relied on photographs, many of them officially sourced. Maps and infographics were uncommon throughout and did not increase in the Recovery phase. The study applies a phase-based framework of crisis communication to visual reporting and uses cognitive load theory to frame questions that audience research would need to answer.

5.2 Considerations for Digital Newsrooms

The findings suggest five considerations for newsroom planning. They rest on descriptive evidence, and visual choices should depend on each article's purpose, relevance, accessibility and accuracy.

(1) Plan visuals by crisis phase, considering explanatory graphics for later articles on aid and compensation.

(2) Consider maps where location matters, such as flood extent, evacuation areas or aid points; only 13.7% of articles in this sample had one.

(3) Review images of identifiable children, which appeared in six of the seven Al Jazeera articles.

(4) Share aerial material through arrangements with agencies or other outlets.

(5) Adopt and publish AI disclosure policies, and train staff to apply them, before AI imagery becomes routine.

5.3 Limitations and Future Research

The study has several limitations. It covers English-language articles only, missing the Kazakh- and Russian-language media that most residents use, and so describes the coverage available to English-language and international readers. Only illustrated articles were included. The Astana Times accounts for 54.8% of the sample, which pulls the aggregate figures towards one domestic, state-aligned outlet. With 14 Recovery articles, unequal phases and a changing outlet mix, the phase comparisons have little power and are sensitive to the boundaries chosen; the outlet comparisons are also

underpowered, so non-significance does not imply equivalence. Coding was binary and article-level, recording presence but not the number, prominence or placement of images. Emotional intensity, drone origin, child age and the ethical-concern indicator involve inference, and the reliability subsample was small. Collecting articles two years after publication may have reduced the visible amount of video and UGC, and a content analysis cannot show audience reception or editorial motives. Future work should include Kazakh- and Russian-language outlets of different ownership, including regional ones, given regional differences in digital capacity (Akilzhanova et al., 2025), count images within articles, and test visual features experimentally against comprehension and behaviour.

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Authors' contributions

Gulnara Zholzhanova was responsible for study design and drafting the manuscript. Meruyert Burkitbayeva and Yerlan Omarov were responsible for data collection and coding. Kairat Sak carried out the statistical analysis. Bauyrzhan Omarov supervised the study and revised the manuscript. All authors read and approved the final manuscript.

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Data sharing statement

No additional data are available.

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Appendix A

The coding instrument (variables, permitted values and operational definitions) is provided in the supplementary material as sheet B6, together with the original coding guide used by the coders (sheet B5).

Appendix B

Supplementary material (Kazakhstan_Floods_2024_Supplementary.xlsx) contains: B1, the full list of the 73 analysed articles with outlet, URL, verified publication date, phase and all codes; B2, the search protocol and the candidate outlets considered; B3, the record of data cleaning and corrections, including the duplicate removed and the dates corrected during revision; B4, the results of the phase-boundary sensitivity analyses; B5, the original coding guide used by the coders; and B6, the coding instrument with the operational definitions applied in the analysis.