

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of:

Closed Captioning of Video  
Programming

Telecommunications for the Deaf and  
Hard of Hearing, Inc. Petition for  
Rulemaking

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CG Docket No. 05-231  
RM-11848

Telecommunications for the Deaf and  
Hard of Hearing, Inc. et al. Petition for  
Declaratory Ruling and/or Ruling  
Making on Live Closed Captioning  
Quality Metrics and the Use of  
Automatic Speech Recognition  
Technologies

**Comments on Telecommunications for the Deaf and Hard of Hearing, Inc. et al.  
Petition for Declaratory Ruling and/or Ruling Making on Live Closed Captioning Quality  
Metrics and the Use of Automatic Speech Recognition Technologies**

**Submitted via Electronic Filing, October 15, 2019**

**by**

**Twenty-First Century Captioning Disability and Rehabilitation Research Project  
(Captioning DRRP)**

## **Summary**

In this filing, we provide an in-depth qualitative analysis of a recent survey conducted by the Hearing Loss Association of America (HLAA) on local news captioning. The analysis encompassed a total of 534 open-ended textual user comments (out of over 900 responses) and shows that users explicitly call out numerous problems related to caption qualities, and their experiences with caption providers. Completeness problems were the top concern, followed by timing, and only then accuracy. Weather and emergencies were called out as particular areas of concern, as well. Consumer perceptions of caption providers, stations, and broadcasters overall were more negative than positive.

Additionally, we provide some evidence from a recent study on the role of punctuation in captioning that suggests that future caption quality standards and metrics may need to take punctuation into consideration. Experimental results showed that while human captions with punctuation scored best, ASR captions with punctuation are preferred over ASR captions without punctuation, and ASR captions with punctuation also are preferred over human captions without punctuation.

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## **1. Introduction**

The Twenty-First Century Captioning Disability and Rehabilitation Research Project (Captioning DRRP) is a joint project of the Technology Access Program at Gallaudet University, the Center for Accessibility and Inclusion Research at the Rochester Institute of Technology, and AppTek. The DRRP is funded by the U.S. Department of Health and Human Services, Administration for Community Living, National Institute on Disability, Independent Living and Rehabilitation Research, to carry out a program of research focused on captioning quality metrics, usability and technology for people who are deaf or hard of hearing.

The Telecommunications for the Deaf and Hard of Hearing, Inc. Petition for Rulemaking (“the Petition”) previously provided quantitative data on the survey responses of the Hearing Loss Association of America Survey on Local Television News Captioning (“the HLAA Survey”)<sup>1</sup>, and promised a follow up with an analysis and publication of the survey’s open-ended textual responses. In these comments we fulfill this promise by providing a detailed follow-up analysis – Section 2. Additionally, we touch on some findings on punctuation from recent research, which suggest that punctuation may need to be considered in any metrics for caption quality – Section 3.

## **2. HLAA Survey Follow-Up Analysis**

In May-June 2019, HLAA conducted an informal survey of more than 900 of its members, the summary of which was attached to the Petition. The quantitative summary of this

<sup>1</sup> See the attachment to the Telecommunications for the Deaf and Hard of Hearing, Inc. Petition for Rulemaking, CG Docket 05-231, July 31, 2019.

survey revealed numerous problems with the captioning of live programs, as also mentioned in the Petition<sup>2</sup>. The quantitatively assessed problems include:

- Missing captions for sports and weather
- Overall accuracy and quality problems
- Missing speaker identification
- Captions out of sync
- Missing captions of background noises
- Programs incompletely captioned
- Placement issues

The survey also collected free-form open-ended textual comments, which were optional. Out of 935 survey responses, more than half of the respondents took the opportunity to provide such comments, for a total of 534. These comments provide a unique window into what caption quality problems truly matter the most to the survey respondents, and also highlight issues of interest that may have been overlooked during the design of the survey questions.

The Captioning DRRP applied qualitative analysis techniques<sup>3</sup> to develop common themes in the survey and quantify them. These themes are listed in full in the Appendix to these comments. In the following we describe the most significant themes along with a representative collection of user comments highlighting each such theme. In the following, user comments are denoted in *italics in a bulleted indented list*. In some instances, they have been edited lightly for grammar and clarity; we do not highlight these edits.

<sup>2</sup> Telecommunications for the Deaf and Hard of Hearing, Inc. Petition for Rulemaking, CG Docket 05-231, July 31, 2019, pp. 10-12.

<sup>3</sup> Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101.

## **2.1. Theme: Completeness (242 mentions)**

By far the most common theme emerged around the completeness of captions. This topic was mentioned 240 times in some form. These mentions can be further divided into:

**Live/Ad-Lib content is not captioned (64 mentions).** Late-breaking or live news frequently are not captioned; banter and ad-libbing among the news anchors is also not captioned. Survey takers mentioned, for example:

- *biggest issue is with live showing where real time captioning is needed; often it is not there at all*
- *captions will stop when interviewing a reporter out in the field*
- *I have trouble understanding breaking news live without closed captions*
- *they don't always have Closed Captions available when we have bad weather that we need to be alerted to*
- *Non news related banter/chat is never captioned; I would like to follow that too*
- *Never caption the banter or side comments*
- *Please caption the weather and ad libs*
- *studio dialog between news celebrities is lost to captioning.*

**Captions cut off on a segment or commercial break (77 mentions).** This issue goes hand-in-hand with caption latency. Typically, captions are so delayed that they are still catching up with the speaker when there is a break to a commercial (most common) or a break to a new segment of the program (less commonly mentioned). At the moment of the break, the captions are cut off, even if they have not caught up with the speaker, and as a result information is missed by the viewer. Some examples by respondents include:

- *Commercials often cut into tail end of news*

- *Captions gets shut off mid-sentence prior to commercials*
- *When commercial comes up, it cut off captions. I missed the end saying. Very annoying!!!*
- *can't catch up before a commercial starts*
- *cc turns off when it goes to commercial so I miss the end of it. Darn!*
- *Even worse is it gets behind the speech and stops suddenly to start a new news story or commercial and they never caption important parts of some stories*
- *This happens on all stations all the time*
- *it's really confusing when the captions halt because the next story begins. Like missing the punchline of a joke – you sometimes don't know what happened – did they catch the guy? is the baby safe?*
- *ends of sentences are cut off by the change of scene, a commercial or other interruptions*

**Captions incomplete, missing, or stall (101 mentions).** These are unspecified problems with completeness that are not specifically related to live or ad-libbed content, or caption delays spanning segment breaks. Respondents mention that captions go missing or stall, such as:

- *captions are mostly missing large chunks of speech*
- *Sometimes captions are missing or delayed and vital information is lost*
- *captioning can't keep up so it 'quits' a line or two to catch up with the next topic*
- *If you watch KET, the Tuesday Night Hall meeting, it's never captioned*
- *some stations have captions and some none. Fox, which is WDAF, is not captioned at all. Rarely do they even have captions during an emergency*
- *It would be nice if captions were included here. We are years behind the times in Fairbanks, Alaska.*
- *Doesn't complete sentences*
- *Captions disappear randomly, especially on weekends, often for half the newscast or more.*

- *THERE IS NEVER ANY CAPTIONS, :(*
- *CC not synced or freezes up on with news stories. Very confusing and frustrating*
- *Often the letters in captions are scrambled or stopping typing across the TV screen. So, left wondering what that person said*
- *A lot of times it just stops and is stuck in one place even though they keep talking*
- *They start the captioning, then it seems to freeze*

## **2.2. Theme: Synchronicity and timing (153 mentions)**

Problems with the timing of captions emerged as the second-most common overarching theme, even ahead of accuracy. The vast majority of complaints related to unacceptably delayed captions, but there also was mention of speakers or captions being too fast, or scripted captions appearing ahead of time. These mentions were divided as follows:

**Captions lag behind speech (106 mentions).** This was the single most-commonly mentioned issue under any of the themes. For example:

- *It's always behind. Since topics change rapidly, the captions are for the previous story. I feel that I miss a lot of pertinent information because of the lag time.*
- *All news stations captions are five to six words behind and is very difficult to hear and read same time when words are delayed.*
- *I do not watch the news that often because the captions are so delayed.*
- *I avoid those stations that have a significant delay!*
- *I'm sometimes waiting for what seems like a long time to get the "punch line" that my husband is already reacting to.*
- *Lag between spoken words and captioning is terrible.*
- *The time lag is very, very frustrating.*



- *It is too difficult for me to use news captioning as it is inaccurate and far behind in translating what a speaker says. I think it is worse now than several years ago.*
- *The biggest problem is captions don't even begin to keep up with the spoken word.*

**Captions are ahead of speech (10 mentions).** While relatively rare and commonly due to ENT being out of sync, just like in the case of caption delays, the effect can be as devastating on people:

- *The captions are finished, but the news segment is only half over. The effort to provide captions is totally wasted.*
- *I use and teach lip reading and my students sometimes remark that captions are sometimes gobbledygook or way ahead or behind the story.*
- *ABC is terrible. They run the captions so fast it ends halfway thru the segment.*
- *Captions for the next story comes up when the newscasters are talking about something else, or next story is scrolled very fast when the newscasters are still talking about the present story.*

**Captions scroll too fast or speakers talk too fast (37 mentions).** This problem occurs when captions scroll by faster than the person is able to read. The survey responses attribute this people needing to slow down their speech, but also to technical problems with captions, and generally poor pacing of captions:

- *My main complaint is the announcers talk too fast so the captioning flies by on the screen before I can finish reading.*
- *They talk so much faster than the National News speakers, especially the young women. They sound like teenagers. in a race to get everything said.*
- *Sometimes when a reporter speaks too fast, I have trouble keeping up with the captions.*

- *Sometimes the captioning is very fast paced and cannot keep up reading. Lose some of the context of the story.*
- *Scrolls too fast and/ or variable speeds. Captions only fill 1/2 the screen either only 3-4 words making it hard to read with scroll speed. Scroll sometimes in fast-forward.*
- *Captions are often delayed thus creating a long pause in captions followed by rapid output of the captions to "catch up." This makes it almost impossible to follow.*
- *Three words appear long enough to read and then ten words appear and disappear before we can read them.*

### **2.3. Theme: Accuracy (123 mentions)**

Accuracy did not feature as prominent of a theme as completeness. One possible explanation is that the survey was geared toward local news, which outside of the top-25 markets would feature predominantly ENT, and thus introduce a bias toward problems with incomplete captions in live segments. These mentions can be further divided into:

**Spelling errors, misspelled names and places (43 mentions).** Spelling errors are mentioned as a source of distraction or missing information:

- *One news report on the US/Mexico border wall kept captioning "boarder" instead of border.*
- *You didn't mention spelling, it is often atrocious with misspelled words, entirely wrong words many times, and I often wonder if the one doing the captioning needs hearing aids!!*
- *Also, sometimes the spelling is so incorrect that I puzzle trying to figure out the meaning.*
- *What bothers me most are the misspellings of the most obvious names (like mayors, governors, aldermen and other well-known people or streets or ... whatever). Sometimes, but rarely, they correct themselves.*
- *The pronunciation(spelling)of what is being said, is not always accurate and leaves you wondering what they really said.*
- *Also, the spelling errors of local news locations tells me that the captioner is unfamiliar with my local area.*

- *Sometimes the spelling is way off.*
- *It amazes me that the stations cannot even correctly identify their reporters. In another instance, the meteorologist was identified as a urologist! What???*

**Captions are inaccurate or do not match audio (53 mentions).** Many respondents

flagged a mismatch between the content and the captions, such as:

- *I'm grateful for captioning, but sometimes the accuracy is very bad.*
- *Accuracy needs to improve*
- *Words are wrong*
- *The captions are woefully inaccurate - almost funny*
- *One humorous example from last year. The newscaster was talking about "Olympic hopefuls" and the captioning said "a limp dick hopefuls"*
- *Sometimes have to clarify the actual word with hearing impaired watching news or program with me. By that time the next announcement is lost while trying to clarify the previous statement.*
- *Captions sometimes are NOT what was spoken giving the OPPOSITE meaning of what was actually said.*
- *The captions are off so much, sometimes it has nothing to do with the dialog.*
- *Premade captions sometimes are placed in the wrong time slots and do not fit the video being seen*
- *The words and captions on the teleprompt aren't always matched*

**Captions do not make sense (19 mentions).** Respondents mentioned some instances

where they failed to make sense of captions altogether:

- *Many errors are made, so sometimes info makes no sense.*
- *The news stations that I watch have captions that don't even make sense. The words are totally misfired.*

- *The most incomprehensible parts of a speech are also incomprehensible to the captioning system so are of no help and only confuse me more.*
- *Real-time captioning often has comical errors, even obscene words. One sometimes has to guess what the meaning really is.*
- *I get the impression that the captioning on TV is done by people that don't speak proper English - for whatever reason. There are too many times the words don't make sense when captioned.*

**Captions are garbled (8 mentions).** Although not frequently encountered, transmission errors may continue to be a challenge for some viewers:

- *Sometimes the captioning appears garbled.*
- *Often the letters in captions are scrambled.*
- *Sometimes captioning is garbled, but then straightens out.*

#### **2.4. Theme: Placement (34 mentions)**

Although many people indicated problems with placement in the survey question (only 11.66% indicated that placement and covering up important content was never a problem), this dimension of caption quality was called out in the comments much less frequently than the other three dimensions (accuracy, synchronicity, and completeness):

- *Often the captions are right over the temperatures, so I don't know what the next few days highs will be.*
- *Cover up the information when I can't see the information. I have to stop or replay to get clear information.*
- *Captioning always covers the information on weather and sports scoring.*
- *Sometimes, the Captioning is "underneath" the emergency info. We had a lot of flooding and tornado warnings, sometimes it is difficult to read the Captioning that has a banner of emergency information.*

## 2.5. Theme: Consistency of captions (43 mentions)

A common complaint was that caption quality is inconsistent. Many respondents mentioned that it depends on the time of the day (with early mornings and weekends causing more problems), and that it depends on the station:

- *I do not watch KTVI local news because the Closed Captioning on this station is terrible. KMOV and KSDK do a good job with CC.*
- *The two stations I watch do it differently and I can tell the difference between methods.*
- *Only KOAT - channel 7 (ABC affiliate) has live captions for local news. KRQE and KOB display the teleprompter so captions are ahead of speaker instead of slightly behind.*
- *The quality of the captioning varies from station to station and from day to day*
- *Sometimes Good sometimes Not Good. Who verifies what is good or bad?*
- *I have complained that SNN6 only offers captions some of the time and I would like it to be all of the time.*
- *The early morning news broadcasts have really, really bad captioning as well.*
- *WIS, the preferred station does not caption in the morning or noon.*
- *SOMETIMES ON WEEKEND IT IS WORSE. CHANNEL 12 NJ*

## 2.6. Theme: Consumer satisfaction with captions (82 mentions)

Consumers mentioned captions negatively nearly twice as often as they mentioned them positively. Additionally, some respondents stated that they picked the survey option of adequate captions only because they were better than nothing. In particular:

**Captions are good (19 mentions).** Some respondents were satisfied with caption quality:

- *I actually am mostly pleased with the captioning.*

- *The local news do a very good job most of the time.*
- *The captioning for the Boston stations is very good. No complaints.*
- *Most of the time the captioning is good.*

**Captions are adequate or better than nothing (21 mentions).** A common feeling among respondents who rated captions as adequate was that they were better than not having access to video programming at all:

- *I put adequate because it is the best we can get.*
- *The state of affairs isn't good, but I've learned to deal with it, which is why "adequate". I pity people that are just starting out.*
- *It's better than nothing though. I would be lost without it.*
- *What they have is better than nothing, but could be improved upon.*
- *It is better than no captions, but that is all.*
- *Captions are helpful but could be better.*

**Captions are bad or terrible (33 mentions).** Respondents called out caption quality negatively more often than positively:

- *Very POOR!*
- *My local New Jersey station channel 12 is horrible, and the reason I was interested in taking this survey. Thank you!*
- *We often switch channels because of poor CC that we receive.*
- *It is so horrible, I hate to watch live programs.*
- *The quality of the captions are so bad, it leads me to believe that voice recognition is being used rather than live captioners.*
- *We really rely on it. Especially in breaking news events - where usually the captioning is crappy at best.*

**Caption quality changes over time (9 mentions).** Respondents were evenly divided between whether captions have improved or gotten worse over time. However, this topic was rarely mentioned.

### **2.7. Theme: Feelings related to caption quality (67 mentions)**

Respondents mentioned feelings of being frustrated or annoyed, but also expressed concerns about missing information and feeling left out.

**Feelings of frustration or annoyance (29 mentions):** Some respondents expressed their frustration directly in the comments:

- *If I want to watch the speaker to lip read I cannot do it. The captions come five seconds or much more after what is being said. Very, very frustrating.*
- *Now that I have to depend on captioning, it is too frustrating because they leave out parts or the captions disappear.*
- *It is so frustrating to watch a segment on the local news and the captioning will be for a different item*
- *When breaking for commercial the important ends of sentences are often cut off. Very frustrating.*
- *Other times they do not caption the name of a key city or person and I have to keep asking my husband, where is this? or who is this? It is extremely frustrating.*
- *Also if is breaking news or live - they don't caption at all. It's so annoying to say the least.*
- *The most maddening thing are the captions for the weather report or some local event: The captions block out weather graphics and live reports are in the lower third of screen.*
- *NBC only uses scripted captions which is very annoying.*
- *Sometimes it shows "TEST TEST TEST" which is annoying of all!*

**Feeling of missing information or being left out (38 mentions):** The feeling of being left out or missing important information came up more frequently than feelings of frustration or annoyance.

- *Important portions or information are skipped. Depending only on captions could be very misleading.*
- *If it cuts to commercial, don't get end of story. Feel like I miss a lot.*
- *It would be a more pleasurable experience to watch the news if they had good captioning and I would not have to rely on my spouse or the internet to fill in what I missed.*
- *There are too many times when the captions are cut off midway and I have no idea what was said.*
- *Anchor person comments are never captioned, and sometimes their questions are important.*
- *Many would love to be informed of the information that is being said more than one really knows.*
- *I couldn't understand what's happening with weather snow storm or ice storm or any Storms. I had to ask my hearing family to make sure what is said.*

## **2.8. Theme: Consumer actions in response to caption quality problems (59 mentions)**

While stations are required to have a contact address for caption quality issues, and caption quality enforcement is complaints-driven, respondents overall rarely availed themselves of these options. Almost as common as taking action with stations was to give up on news, or in isolated instances to switch channels.

**Contacted station or the FCC (30 mentions):** Some respondents attempted to contact the station in question, with only eight reporting a resolution of the problem, while 18 reported



that their problem was not resolved by the station – a common reason being that stations did not respond to the contact. Only four respondents filed an FCC complaint:

- *Sometimes there is no captioning and my husband sends emails to the stations. They always apologize and correct the situation.*
- *Have emailed local ABC twice in the past re no captions or poor captions and they did make it better.*
- *I contacted them by email and then I was so surprised when it was resolved within a couple of days after I sent the email. I honestly thought they would just ignore my email. I did email them back to thank them very much and how much it meant to me.*
- *I called Verizon Disability and told them that the local weather was not captioned on Accuweather [...]. They did not know the newly selected weather station was not captioned and thanked me for letting them know. Within two days the local weather reports on Accuweather were captioned.*
- *I contacted KRON channel 4 to complain and got no response at all.*
- *I have complained through email. No response from station. I don't watch local news or weather anymore.*
- *I've written to them with no results.*
- *Since moving here in 2017 from the Detroit metro area it has been my experience that the greater northern Michigan area in general is NOT deaf friendly at all. [...] I have contacted 2 of the stations that operate out of the same building and have never gotten any response from them.*
- *Call when things are really bad. Sometimes they are courteous, sometimes say everything is OK on their end, or they say they will look into it. Very frustrating.*
- *Captions in the face are horrible. CNN, Fox26 Houston do it. I have asked both to change and got stupid replies from each.*
- *I have contacted WAVE about their captioning and there is always an excuse.*
- *I did file a complaint with the FCC and on the complaint I had requested communication by email. For some reason they sent it to AT&T and AT&T never addressed it with me, they sent a letter to my housemate who is the owner of the house saying they made attempts to*

*contact her (when it's really me) and after I said something to FCC, they just said that's the process.*

- *Recently during live break severe weather (Tornado warnings) our local station WTAJ, did not provide captions for these weather event reports. This is a common occurrence with my local news and I have reported the lack of captioning to my local news station, without results. Therefore, I have reported the issue to the FCC. (Multiple times)*

**Gave up on news (24 mentions):** Some respondents mentioned that they have given up on watching news due to the problems; for example:

- *Honestly, I am not sure how to solve those issues. That's why I don't watch it often. I just depend their news on Facebook.*
- *I want to watch the news and keep abreast of events and information, but these issues do not motivate me to watch; instead I find myself avoiding the news.*
- *I usually give up watching the news on TV and get the news over the internet.*
- *Even "at best" the LAG is so long it's just not worth trying. Therefore I don't watch near as much as I would. :(*
- *In the past captions were excellent and on just about all stations and it was a joy to watch TV. Now I don't enjoy TV and watch it very little.*
- *Often times captioning is so lousy...just switch to another channel or turn off completely.*

## **2.9. Theme: Content-specific concerns (151 mentions)**

The top mention of uncaptioned or poorly-captioned content was the weather. A number of respondents also brought up access to emergency information in conjunction with the weather. It is not clear how the concept of an emergency among respondents differs from the concept of an emergency that would trigger EAS. Local news also was mentioned in conjunction with poor caption quality, while sports rarely were called out explicitly.

**Concerns about weather (80 mentions):** Weather was mentioned many times, as either uncaptioned or captions having nothing to do with the actual spoken content. Placement of captions covering up important weather information also came up:

- *Captioning not always shown for pop up news or weather changes – that should be noted.*
- *Lately there have been no captions for weather on weekends.*
- *Weather is almost always not captioned.*
- *During serious weather events, details seem to be missing. It can be location or repetitive words that don't reflect the problem.*
- *Weather is the worst. The captions just repeat over and over again and don't sync with what is being said.*
- *Recently during live break severe weather (Tornado warnings) our local station WTAJ, did not provide captions for these weather event reports.*
- *When there is bad weather evidently the captioners take a while to get there as captions aren't on for awhile.*
- *The weather captions never follow the meteorologist's dialogue.*
- *Weather is not captioned with the forecast. Canned script.*
- *I left for a trip near Thanksgiving. the weather online sites said snow, but they didn't say Blizzard!. I drove right into a major blizzard because the news didn't caption the weather and the on-line sites gave poor and incomplete information. It was VERY dangerous!*

**Concerns about emergency information (35 mentions):** Access to emergency information was a frequent concern. As mentioned above, it is unclear how many of these would be covered by EAS:

- *During emergency situations, floods, tornadoes, etc, the special reports are often not captioned.*
- *Yesterday we had a major flash flood and this station did not provide real time captions. The other stations did.*

- *Not knowing where it is and only seeing what is happening is very unnerving— especially when it is the fire season or an “emergency” like that. I know they try but just don’t understand how unnerving it is to see something but not knowing where it is or what is happening.*
- *Sometimes Live News Interruptions for a serious situation may not have captions at all, making it impossible for people that need them to know there is an emergency happening and to receive instructions on what to do.*
- *Captions should be available NO MATTER WHAT for safety and independence of Deaf/deaf/hard of hearing individuals.*
- *Often however, emergency notifications (i.e. severe weather) are not captioned.*

**Concerns about local news captioning (28 mentions):** Some respondents explicitly

called out local news as an area of concern:

- *I was in Salt Lake City for HLAA conference, and was shocked that local news wasn't captioned ---what happens in an emergency, e.g. WHY did we go to a city without the captioning on local news?*
- *Local news captions are inadequate and make for a frustrating experience.*
- *Since Sinclair moved to digital captioning, the quality of captions has declined significantly. Local names are usually if not frequently misspelled (example: "Alki Beach" was captioned as "Al Qaeda Beach") and incidental sounds are never described. I wish local stations would switch back to live, human captioning, so we can have the same level of excellence in local programming as our national news.*
- *Sometimes I need to get the local news of my area which is channel 12 news, and the captioning is very sporadic.*
- *Local news remote reports without captions. All you get is the banner with the reporter's name (who cares?) I would like to know what's happening and where. ("Obviously something serious happened - was it a robbery, a shooting, an abduction -- was it near me, or fifty miles away?")*

## 2.10. Theme: Perceptions of Providers (115 mentions)

Many respondents shared their impressions and perceptions of broadcasters, stations, and caption providers. The sentiment was overall negative, with positive mentions making up less than one third of the overall.

**Station or Broadcaster is called out negatively (58 mentions):** Many stations, and occasionally also entire broadcast corporations, were called out negatively by name, such as:

- *I would love to have Bristol, VA Channel over West Virginia TV station. I have had poor captions, since I move to Tazewell and would love to have my station back with Bristol.*
- *WLKY is better than WAVE. WAVE captions are sometimes presented from scripts completely out of sync with the live program.*
- *I have complained to WUSA-CBS 9 in Washington about the weather almost never being captioned.*
- *ABC is terrible. They run the captions so fast it ends halfway thru the segment. KXAN and CBS are much better.*
- *WPEC is frustrating because of their captioning that is frequently absent, incorrect, and non synchronized to the speakers.*
- *My comments are based mostly on WGN. I think they have the best local news & are my first choice for news, but their captions are completely useless.*
- *Local news stations in Phoenix and Chicago area will often have no captions and when they do, they drop in and out often.*
- *Live captioning done by a human shorthand writer is much better than the computer-generated captioning that Sinclair Media utilizes. If given the option, I do not watch news that is captioned by AI.*
- *Sometimes I watch Spectrum News (Channel 1) and they do not caption the news videos shown during their reports.*

**Perceived lack of care by providers or broadcasters (27 mentions):** Some respondents mentioned that caption problems are so glaring that they should not have made it past quality control, or that they are left feeling that stations could not care less. For example:

- *Amateurish at best.*
- *They are cut off. Like it doesn't matter to supply me the complete report.*
- *TV stations and cable news will NEVER solve this problem until they are forced to because it costs them \$\$\$\$.*
- *Very disappointed with the station ownership and their attitude toward the deaf community in the northern Michigan cities.*
- *I don't think they really care, they are just trying to minimally comply.*
- *Accurate and reliable captioning is not an important consideration of broadcasting.*
- *I often wonder if the one doing the captioning needs hearing aids!!*
- *TV stations should monitor CC and improve as needed.*
- *Lagging scroll Dubious spelling Insensitive positioning Who does this stuff?*

**Station is called out positively (30 mentions):** In many instances, a station is called out positively in comparison and contrast to another one:

- *Some of the best captioning is found on MLB network and the YES Network.*
- *I've compared news broadcasts with other stations but WGAL/CNN/MSNBC usually are the only ones with excellent synchronized captioning 24/7 which I love!*
- *WPTV is our choice due to the best captioning.*
- *NBC only uses scripted captions which is very annoying. [...] CBS and ABC use live captioning for most sequences.*
- *Only KOAT - channel 7 (ABC affiliate) has live captions for local news.*

- *The major Denver TV networks do a good job overall with news captioning, for afternoon and evening. Better than some bigger cities. And improved from a few years ago. Generally pleased with quality.*

### **3. The role of punctuation in caption quality standards**

Recent research<sup>4</sup> conducted by the Captioning DRRP over the summer compared four different test conditions for live video programming recorded from the Washington DC area. The videos were recorded with live human captions, and then subjected to alterations in the following forms: (1) unaltered human captioning, (2) human captioning with punctuation stripped, (3) ASR with the Google engine with punctuation (using Google Live Transcribe), (4) ASR with the Google engine with punctuation stripped (YouTube auto captions). All four types of videos were shown to human subjects and rated for readability. Findings showed that captions with punctuation were strongly preferred in the case of ASR-generated captions. Moreover, ASR captions with punctuation were rated more highly than human captions without punctuation.

While these results are preliminary, they suggest that punctuation may have a role to play in overall caption quality standards, and that it may be necessary to revise caption quality metrics to incorporate their effect. The Captioning DRRP plans to release additional details on this study as additional analysis and follow-up work gets completed.

<sup>4</sup> Datta, P., Balchandani, A, Jakubowicz, P., Glasser A. and Kushalnagar, R. (2019). Impact of Punctuation Quality on User Experience in Closed Captioning. REU Accessible Information and Communication Technologies Site, Gallaudet University. Online: <http://aict.gallaudet.edu/research/presentations/2019/>

Respectfully submitted

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