
Canadian
Association of the Deaf



Association
des Sourds du Canada

Final Project Report

**Understanding User Responses to Live Closed
Captioning in Canada**

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Contents

1. Overview and Background	1
2. Project Objective	1
3. Project Implementation	1
4. Project Description	2
Phase 1: Qualitative Research	2
Phase 2: Quantitative Research.....	2
Phase 3: Final Report Preparation and Dissemination	3
5. Project Performance	3
Project Scope	3
Project Cost.....	5
Project Schedule.....	5
6. Project Benefits and Impact.....	6
7. Lessons Learned	7
8. Recommendations for Further Research	8

1. Overview and Background

Television is an almost ubiquitous medium that provides entertainment and vital information to millions of households in Canada. Closed captioning of live television programs, which is particularly challenging, extends the accessibility of these programs to the Deaf, deafened, hard of hearing and hearing communities.

An Accuracy Standard for captioning has been part of the CRTC's Standards for Quality in Closed Captioning since 2012, but the method of assessment defined there has proved to be ineffective and unworkable. As a result, the Commission started a new proceeding on this issue. In December 2015, members of the English Broadcasters Group (EBG) met with members of the Captioning Consumer Advocacy Alliance (CCAA), in response to CRTC Broadcasting Notice of Consultation 2015-325-2, to address aspects related to a closed captioning quality standard for live television programming in Canada.

The EBG and CCAA reached agreement on a common purpose, namely to improve the quality of live captioning in Canada. One of the outcomes of the discussions was to recognize that an appropriate system for measuring accuracy needs to be found and it was agreed that the NER model should be evaluated as a potential system of assessing caption accuracy in Canada. This ultimately led to a CRTC-supported two-year trial of a Canadianized NER model.

One of the challenges was a lack of substantive research into consumers' subjective reactions to, and preference for, different forms of live captioning in Canada, which was considered an important factor limiting the ability to improve accessibility in live television programming. The CCAA, with EBG support, decided to pursue an independent research initiative aimed at establishing users' preferences and responses to different aspects of live captioning in Canada. A proposal to conduct such research was submitted to the Broadcasting Accessibility Fund (BAF). The application for funding was successful and the project, titled Understanding User Responses to Live Closed Captioning in Canada, was formally launched in November 2016.

2. Project Objective

The primary objective of this project was to gain an in-depth understanding, through primary market research, of the subjective live captioning preferences of deaf, hard-of-hearing and hearing consumers of live captioned Canadian content, to inform the development of products and services, thereby improving accessibility in broadcasting.

3. Project Implementation

The project was launched in November 2016 and was formally completed by October 2018. Project direction was set by a Steering Committee comprising members of the Captioning Consumer Advocacy Alliance (CCAA), broadcasters and captioners, as follows:

- **James Roots**, Executive Director of the Canadian Association of the Deaf – Association des Sourds du Canada (CAD-ASC), Chair of the Steering Committee and Project Leader. CAD-ASC is a member of the CCAA.
- **James Hardman**, representing the Canadian Hearing Society (CHS). CHS is a member of the CCAA.
- **Cindy Gordon**, representing the Canadian Hard of Hearing Association (CHHA). CHHA is a member of the CCAA.
- **Beverly Milligan**, representing Media Access Canada (MAC). MAC is a member of the CCAA.

- **Jessica Miller**, representing Bell Media
- **Mike Menard**, representing Corus Entertainment
- **David Keeble**, an independent consultant representing Bell, Rogers, CBC and Corus from the English Broadcasters Group, and Chair of the NER Evaluation Committee
- **Melina Nathanail**, representing National Captioning Canada

The project team comprised of Christie Christelis as Project Manager, supported by a team of Canadian and International experts in closed captioning, as follows:

- Deb Fels, Professor at Ryerson University and Director of the Inclusive Media and Design Centre at Ryerson University
- Pablo Romero-Fresco, developer of the NER system and Professor at University of Vigo, Spain, and University of Roehampton, UK
- Pilar Orero, INDRA-ADDECCO Chair in Accessible Technology and Professor of Audiovisual Translation at the Universitat Autònoma de Barcelona, Spain

4. Project Description

The project was broken down into three phases, as follows:

Phase 1: Qualitative Research

The objective of the qualitative research phase was to develop an effective and defensible research design for measuring subjective preferences of live closed captioning amongst different classes of users. It drew on an international literature review and was supported by the team of Canadian and international experts.

Through the project Steering Committee, which included members of the CCAA, broadcasters and captioners, stakeholder insights and needs were established to inform the research design. The Steering Committee approved the research design in June 2017.

Steering Committee members from Bell Media and Corus prepared live captioned programming segments in the news/weather, sports news, live sports and talk show genres for testing in the quantitative research phase. National Captioning Canada and Ericsson provided prepared tests and captions for the alternatively captioned live program segments.

Phase 2: Quantitative Research

The research design approved by the Steering Committee in June 2017 called for an online survey to be conducted amongst deaf, hard-of-hearing and hearing respondents, with a view to gaining insight into their perceptions about live captioning in Canada. The purpose of the quantitative research phase was therefore to gather these responses from the different groups of respondents. This required the use of a third-party research supplier with the necessary capabilities to conduct such research.

RFPs were sent to five different research companies to find a vendor that could conduct the research, given the challenging requirements. The most difficult aspect of conducting the online research was the ability to prepare and program an online ASL questionnaire. Only two companies responded with satisfactory proposals, and Leger was ultimately chosen.

Leger programmed an English version of the survey, which was to be completed by members of their panel comprising mostly of hearing people. The English survey was launched in October 2017. An ASL version of the questionnaire was also developed, to address the needs of live captioning viewers who preferred ASL. The ASL survey was programmed and launched in January 2018. This enabled us to recruit respondents from the deaf and hard-of-hearing communities and offer them an option of completing the survey in English or ASL. Respondents from these communities are difficult to access, but through the unrelenting recruitment efforts of members of the Steering Committee, sufficient responses were received to provide a valuable outcome. The survey was closed on April 15, 2018.

In total, 550 responses were received for the survey, 330 from the deaf and hard-of-hearing communities and 220 from the hearing community. Respondents to the survey were asked a series of questions on viewing behaviour, the importance of live captioning attributes, their satisfaction and experience of captioned live TV segments, and demographics.

Throughout the quantitative research phase several interim presentations were delivered to the Steering Committee to highlight important research findings as they became available.

Once the survey was completed, cross-tabulations were developed, advanced statistical analysis was performed, and a detailed research report was prepared by Leger. The final version of detailed report was presented to the Steering Committee at the meeting held on June 26, 2018.

Phase 3: Final Report Preparation and Dissemination

The report, analyses and cross-tabulations prepared by Leger contain the detailed findings of the research. The objective of this final phase of the project was to prepare a report of key findings, which could be shared with a wide range of stakeholders.

A draft Key Findings report was prepared and circulated to members of the Steering Committee for comment. The final version of the report was then prepared and disseminated to a wide range of stakeholder groups, through members of the Steering Committee and the research team. An accessible version of the report has also been prepared and circulated.

Throughout the project, members of the project team disseminated information about the project to both a Canadian and international audience. The study was highlighted in several international conferences, was placed on the agenda in the ITU Accessibility Working Group, and stimulated additional research amongst post-graduate students at Ryerson University, under the leadership of Deb Fels.

5. Project Performance

Overall, we believe that the project was successful in achieving its primary goals, namely, to gather valuable information on user responses to, and preferences for, live captioning across different genres, and across different user groups (deaf, deafened, hard-of-hearing and hearing respondents). The information that we obtained was comprehensive in scope and has already proved to be of value to different stakeholder groups. However, there were challenges in execution. The scope of the project had to increase as progressive elaboration of requirements yielded additional activities. Consequently, there was an increase to the budget and the original timelines expanded.

Project Scope

In the original research design, which was elaborated in the qualitative research phase, the goal was to secure 200 responses from each group of respondents, as follows:

Group	#	%
Hearing	200	25%
Deaf	200	25%
Deafened	200	25%
Hard-of-hearing	200	25%
TOTAL	800	100.0%

During the execution of the fieldwork, it became clear that very few respondents self-identified as deafened and were more likely to categorize themselves as deaf. Consequently, the deaf and deafened categories were merged. As a result, the new target for responses was reduced to 600.

Deaf and hard-of-hearing live captioning consumers are difficult to reach. The low incidence in the population means that traditional survey panels are ineffective at sample recruitment. This was recognized as a risk at the outset of the project, and the risk mitigation strategy was to use Steering Committee members and other interested stakeholder groups to recruit respondents from their members and networks. A substantial and sustained stakeholder outreach proved effective at securing respondents for the survey, although it meant that the time in field was delayed. Other means used to recruit respondents included setting up a project website, setting up a project page on Facebook, using Facebook ads, and posting on other social media channels (LinkedIn, YouTube and selected Facebook groups). While these latter techniques did yield some responses, the outreach via the Steering Committee was the most successful recruitment channel, and ultimately led to us securing enough responses to yield valid results.

Toward the end of the fieldwork, a trade-off had to be made between the number of responses and further delays on the project. At the March 7, 2018 Steering Committee meeting it was agreed that the fieldwork would be terminated on April 15. The following table summarizes the sample profile across different groups at the close of the fieldwork.

Group	#	%
Hearing	220	40.0%
Deaf	157	28.5%
Hard-of-hearing	173	31.5%
TOTAL	550	100.0%

In the original proposal to the Broadcasting Accessibility Fund, the sample size targets were not specified. Rather the primary goal was to ensure that there were enough responses to provide valuable information to advance the interests of accessibility in broadcasting. We believe that this primary goal has been achieved and hence we conclude that the implementation of the project to achieve the designated scope was successful.

As noted above, there were increases in scope that were required on the project and were instrumental in allowing us to achieve overall project success. These are identified in the following section.

Project Cost

The original project budget was \$141,250. In October 2017, a motivation was submitted for an additional \$52,575 in funding, bringing the total project budget to \$193,825. The increase in funding was necessary to address the following areas:

- More complex research design resulting from the need to find an acceptable alternative way of captioning live segments compared with those as broadcast.
- NER evaluation of video segments, to gain insight into users' perceptions for video segments with different NER ratings
- Sample recruitment, integration of the educational video developed by broadcasters into the recruitment process, and development of the Live Captioning Canada website.
- ASL translation of the online survey questionnaire
- Logistics costs associated with providing interpreters at meetings, venue costs and travel costs for Steering Committee members
- Increased project management costs due to delays
- Contingencies

Upon completion, the project was within the revised budget.

Project Schedule

At the time that the project was launched it was expected that the project would be completed by June 2017, subject to sample video segments being available for the research, a questionnaire being translated into ASL and programmed, and enough survey responses being received to provide meaningful insights into user responses to live closed captioning. It was recognized at the outset that the original timelines were optimistic, but that they provided a useful aspirational target for the project. As the project progressed there were a few delays that were unavoidable:

- The research design took longer than anticipated. Early in the research design phase we decided to follow a comparative approach, getting each respondent to provide ratings to two video segments. The measures to be assessed were identified in the early stages of the project. However, the options available for preparing the recaptioned video segments for analysis proved elusive. We investigated three alternative captioning options as a basis for comparing against the 'as broadcast' captioned segments, and ultimately agreed to an approach that was expedient, using voicewriters to caption the comparative video segments. This was not an ideal solution, but we felt that it was the only realistic way to get comparable video segments. As a result, we had to spend more time assessing the options available for the research design, testing different options, finalizing the research design, and getting stakeholders' approval for the design. In addition, the preparation of captioned video segments took longer than anticipated because of the way in which the alternate captioning was to be prepared.
- In the first phase of the project it became evident to the research team that, apart from a high-level understanding of the objectives of the project, there was no clear understanding of how the different stakeholder groups represented on the Steering Committee would use the data from the research project. The project team felt that it was imperative to get Steering Committee members to address this question amongst their constituents to ensure that the research delivered the expected project outcomes. As a result, we requested a hiatus in project development activities and that effort be focused on developing this understanding. This resulted in delays to the project.

- The ASL translation of the questionnaire proved particularly challenging. The approach to ASL translation was to prepare a video of an ASL translation of the questionnaire, using an experienced interpreter, and then get a panel of deaf interpreters to evaluate the quality of the ASL questionnaire. The first iteration proved unacceptable. A different interpreter had to be found and the process had to be repeated.
- Programming of the ASL questionnaire. Our investigation into research companies showed that there were none that had conducted an online survey of this complexity using an ASL questionnaire. Leger undertook this task, but the length and complexity of the survey resulted in a few technical challenges in implementing it on their platform. Programming the ASL survey up to an acceptable online performance standard resulted in further delays to the initiation of the fieldwork. The programmed ASL survey finally became available to respondents in January 2018, whereas the English questionnaire was available online (for use with the Leger panel) in October 2017.
- As noted previously, securing respondents from the deaf and hard-of-hearing communities for this research was expected to be difficult, and it proved to be difficult in the execution. This meant that the fieldwork had to remain open for an extended period to allow Steering Committee members the opportunity to engage in a substantial and sustained manner with their constituents and their networks. The fieldwork was finally closed in April 2018.

Because of these delays, the project was completed in October 2018, almost two years after initiation. We appreciate that the Broadcasting Accessibility Fund was supportive throughout this process and continued to emphasize that the quality of the research was of paramount importance.

6. Project Benefits and Impact

Although it is too early to determine what the net impact of the project is, there are certain benefits that have already accrued as a result of the project:

- The project has yielded detailed insights into user responses to, and preferences for, live closed captioning amongst deaf, hard-of-hearing and hearing users. This is an important input to the development of a Canadian live closed captioning quality management system, and the committee working on the NER evaluation has been an active participant in, and user of, this research.
- The project was an important vehicle for securing stakeholder commitment to the objectives of the project, since a cross-section of key stakeholders from consumer advocacy groups, the broadcast industry and captioners were involved in the design, management and execution of the project.
- The project has provided important directional information that could guide stakeholders in their interactions with regulators to aid in eliminating regulatory uncertainty around live closed captioning quality standards.
- This project is regarded as a world first and has garnered significant international attention through the dissemination activities of the expert advisors engaged to assist with the development of the project. Papers were presented at two international media accessibility conferences and there has been an enthusiastic response to both presentations, with the UK and Spain indicating that their research may follow a similar path. In addition, two post-graduate students at Ryerson have embarked on projects related to this, one using an alternative method to get consumers to prioritize captioning goals, and the other in which AI evaluates captioning.

The findings of the study will likely generate further interest and research as results are disseminated more widely. We expect that they will allow:

- EBG and other stakeholders to assist in creating and testing a uniquely Canadian NER measurement system for live captioning.
- Standards bodies to take cognizance of the findings for future consideration in their development of codes of conduct and standards.
- Academics to use the findings to stimulate new areas of academic research, as well as support existing research initiatives in this area.
- Government to use the findings to better understand the needs of disabled Canadians.
- Local and international stakeholders to be engaged, keeping Canada the pioneer and leader in provision of accessible media.
- Product developers to use the findings for research and development to design tools that will lead to improved captioning.

7. Lessons Learned

In any project of this nature it is worthwhile reflecting on what could have been done differently, with a view to allowing future projects of this nature draw on the lessons learned. The most important lessons were as follows:

- It is critical for any project of this nature to ensure that the stakeholders represented on steering committees have an in-depth understanding of what they will do with the results of the project, since the project is ultimately designed to fulfil the needs of the stakeholders. What we would do differently in any future projects of this nature is to spend more time at the early stages in ensuring that each group represented had a clear idea of their own objectives relating to the project.
- We recognized at the outset that recruitment of survey respondents in the deaf and hard-of-hearing communities is difficult and was the single largest element of risk in the project. Additional time and resources, and above all, strong stakeholder support, are required to ensure success for projects of this nature. While the risk was acknowledged and recognized by the project team, we could have done more to flesh out the risk mitigation strategy in detail and assess the impact of the risk event on the project. As an additional consideration, should market research projects amongst the deaf and hard-of-hearing projects become more frequent, thought should be given to establishing a panel of respondents with members from these communities. This would require some investment and could be done in conjunction with a research supplier.
- ASL translation of and programming of online surveys is in its infancy in Canada. We experienced a number of challenges in this area, with both the translation and programming of the survey. The first was setting up the process to complete a satisfactory translation of such a complex questionnaire. The second was related to programming and the technology used to implement the survey. There is nothing that we could have executed differently in this regard, since it was a learning curve for all involved. This project is a first in Canada, and as a direct outcome of it we have developed a body of knowledge that can be used for future projects of this nature.

8. Recommendations for Further Research

This was a seminal project in many respects and has contributed significantly to our understanding of user responses to live captioning in Canada. Based on what we found in the project, there are a number of areas where we believe it may be worthwhile in investing in further related initiatives that would improve broadcast accessibility in Canada:

- There was no clear direction as to whether live sports should be captioned, or what form the captioning, if done, should take, especially in fast-paced sports such as ice hockey. Some members of the Steering Committee indicated an interest in exploring possibilities of doing research in this area.
- The research design was comprehensive in the range of areas that it covered, which meant that not all themes could be addressed in depth. The results of the research have demonstrated clearly that live captioning users would like accurate captioning, with captions delivered at a readable speed, and where there is a little or no delay. A research project that focuses solely on real-life trade-offs between these variables, and which measures viewers' actual reading speed and comprehension, may be worthwhile.
- It would be worthwhile to assess user responses to live captioned program segments using NER quality assessments as a variable. The information obtained from this project provided some directional indication that satisfaction increases with NER score, but the sample of videos included (eight unique segments) is not sufficient to yield a scientifically valid result.