



## **What makes a news interactive successful? Preliminary lessons from The Center for Investigative Reporting**

Lindsay Green-Barber, Ph.D.

As news organizations strive to take advantage of the possibilities afforded by online platforms and to meet the demands and needs of increasingly data-savvy audiences, new forms of digital storytelling abound. A news interactive is one of these new storytelling methods, intended to take complicated data and make it accessible to media consumers. However, news interactives, or apps, require significant organizational resources, and the impact of these projects on audiences remains underexplored.

At The Center for Investigative Reporting, we pay careful attention to the impact of the media we create and to the calculus between the costs and benefits of assets produced on various platforms. This paper's analysis is intended to help CIR understand the impact of its news interactives and to identify those characteristics that contribute to an interactive's success. While based on an analysis of CIR news applications, these findings also have implications for the field.

To begin, I surveyed CIR staff and asked, "Why do we make news apps, and what makes an interactive successful?" While I anticipated that there would be as many different answers to the question as there were respondents, instead, staff identified three main functions of news interactives: to "dive deeper" and "explore" data, in general; to enable users to find information specifically "relevant" to one's own life or community; and to "tell a story."<sup>1</sup>

Our challenge was how to evaluate whether an interactive application does those things and to answer the following questions. *Do* people dive deep and explore our data apps? And does this exploration carry over to deeper exploration of other elements of our stories? Or does the audience consume an application as a standalone story?

This analysis finds that CIR's news interactives are most successful – meaning there are many unique visitors who click around in the interactive – when they are part of a full content package, have a high degree of interactivity, have a pleasing aesthetic and design, and load quickly. These findings can inform our newsroom – and potentially others – and help them make decisions about when and how to invest in a news interactive.

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<sup>1</sup> These were responses to a survey administered internally on Feb. 7, 2015, at CIR. The specific question asked: "What is the value added of a data app in an online news package?"



### **News interactives**

News interactives are one way to tell a story. And while some will tell stories more effectively, engagingly or beautifully than others, an app, in general, is a medium for communicating information.

The same goes for data apps providing relevant information to an audience. An app either does or does not supply relevant information. However, what is relevant is an open question.

The third and most often cited function of data apps – exploration – illustrates the underlying assumption that audience members want information to explore, understand and find relevant to their own life.

This analysis will do its own deep dive into news interactives and ask:

- How do the nonjournalists in our audience use interactives?
- What are characteristics of our successful news interactives?
- What does it require to build an interactive? When should we create a news interactive? And when should we not create an interactive?
- How can news interactives be designed through an iterative process, including data input and updating?

### **What is a data interactive, anyway?**

In the Data Journalism Handbook, Scott Klein of ProPublica says a “news application is a big interactive database that tells a news story.” However, news interactives range from quick tools that illustrate simple concepts to complex data applications built upon sizable databases. For example, CIR created a simple timeline to show how [“Ebay waffles on guns as debate over assault weapons continues,”](#) while the data interactive [“Do you live in one of California’s pesticide hotspots?”](#) is based on 10 years of data from the California Department of Pesticide Regulation, including 22 million applications and 1.5 billion pounds of pesticides, and allows for deep interaction by the user. For this analysis, we have included all data interactives produced by CIR, whether they provide summary data or direct access to a database (and for which the necessary analytics are available).

Some commonly held assumptions about data apps: They allow audiences to do deep dives and explore; they allow audiences to find information relevant to their everyday life; and they tell stories.

However, not everyone in our newsroom sees things exactly the same way.

In one-on-one conversations, nondeveloper editorial staff at CIR said, “Our audiences engage with and explore data in apps.” This is thought to be important because deep diving allows individuals to “learn something about their own situation in a larger context.” And news interactives tell stories “in different ways” from other mediums.



Thus, editorial staff often imagine users spending a lot of time with news applications, clicking through the various layers of data.

However, CIR data journalists and senior news applications developer Michael Corey and former staff member Aaron Williams emphasized that in their experience, audience behavior typically is to “get in and get out,” accessing relevant information quickly and then exiting the interactive.

### **What are some challenges in creating news interactives?**

In order to make informed decisions about how to allocate resources to create interactives, it is important to understand the challenges associated with developing them.

According to one CIR developer, “Google has ruined it for the rest of us” – because of Google’s incredibly fast load times, users expect near immediacy in interactive Web content. (This observation is supported by the analysis below.) However, speed costs money. For complex applications that rely on large databases, delivering content quickly requires expensive indexing and hosting services.

Another common challenge to app development is even more fundamental: the data. Data can be difficult to access. Data are dirty. They come in a variety of formats, often incompatible, and require careful scrubbing to make them useful. And for newsrooms with high standards when it comes to data integrity, it may take longer. To make CIR’s [Payday California](#) interactive, reporter Joanna Lin spent countless hours acquiring data from 22 different sources – the state of California, 10 counties, 10 cities and the Los Angeles Department of Water and Power, whose data was separate from the city of Los Angeles – all of which were in different formats. Sometimes, even within one entity, formats varied from year to year.

Both of these challenges contribute to what is potentially the largest obstacle to building news interactives: They can be [expensive](#) to create. They require time to acquire, clean and analyze data. And once the data are cleaned and prepared, there is design work and coding that go into developing the actual interactive. However, when an application has clear objectives and is developed with the user in mind, resources can be allocated effectively. This process was implemented for CIR’s recent [The Lost & The Found](#) interactive, which was not included in this analysis but has proven to be a successful interactive and will be analyzed in a future study.

In building interactives, newsrooms need to plan ahead. Unlike a print story, which is published and usually not updated, interactives may require maintaining and updating. Some of the process can be automated. But if a government agency changes the format of its data, new analyses may need to be done and programs may need to be updated. Decisions can be made ahead of time about how often the interactive will be updated and how long updates will continue before an application is retired.



### **OK, but what is a *successful news interactive*?**

For the purpose of this research, we consider a news interactive to be successful when it is **highly trafficked** (many unique visitors), **deeply explored** (evidenced by the number of events or instances of interaction on the page), and results in a **better-informed audience**.<sup>2</sup> This study will focus on the first two indicators of success and leave measuring a better-informed audience for a future project.

CIR staff hypothesizes that successful news interactives:

- Are easy to use.
- Are beautifully designed.
- Are relevant to a large number of people.
- Have a good “10,000-foot view” and a good “5-foot view.”
- Present a story interestingly to a broad audience, as well as a specific constituency.
- Present data to which the audience can immediately relate.
- Present data either not available elsewhere, or in a way not available elsewhere.
- Load quickly for the user.
- Are quickly deployable.
- Are easy to find.

To this list of characteristics, I add that successful data apps likely:

- Are presented in context.
- Have memorable information nuggets that can be shared.
- Have clearly written, yet intriguing, headlines.

To test how these characteristics relate to an interactive’s success, which this study defines as traffic and clicks, I analyzed 29 CIR data applications.<sup>3</sup> Each characteristic<sup>4</sup> was assigned an ordinal value based on a three-point rubric (see Appendix A). Two coders analyzed each data app. Intercoder reliability was high for six independent variables:

- The degree of interactivity, meaning how deep a user can go in exploring data and interacting with the application.
- Whether it was part of a full package, meaning there was an accompanying text story, video, audio and/or other content.
- National in scope, meaning that the data are relevant to a national U.S. audience.

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<sup>2</sup> A successful news application may score high on one, two, or three of these variables. Depending on the goals of the application, high scores on all three are not necessary.

<sup>3</sup> This sample includes all CIR data applications that are still live online and for which we could access the necessary analytics. We did not include CIR’s America’s Worst Charities application; due to the partnership with both the Tampa Bay Times and CNN, it is an extreme outlier.

<sup>4</sup> Degree of interactivity; Full package; National; Regional; Local; Specific constituency; Broad interest; Ease of use; Design/aesthetic; Unique data; Load time; Context; Information nuggets; Headline; Underlying database.



- Local in scope, meaning that the interactive presents data relevant to a geographically local audience.
- Designed for a specific constituency, meaning that the interactive presents data relevant to a particular interest group audience.
- Unique data, meaning that the interactive presents data not easily available elsewhere.<sup>5</sup>

I first determined the correlation between each of the independent variables (calculated as the average score of two coders) and the dependent variables of Web traffic (for 90 days post-publication) and average events per session. I found that Web traffic is moderately positively correlated with applications that have higher scores for “degree of interactivity,” “full package,” “local,” “broad interest,” “design/aesthetic “context” and “headlines” (at the .05 level). Web traffic proved to be moderately negatively correlated with “load time.” However, when we drop variables that had low intercoder reliability, we are left with “degree of interactivity,” “full package” and “local” as the only dependent variables that are positively correlated with Web traffic. An interactive that scored high in these criteria and experienced high traffic is the previously mentioned [application that explores California’s pesticide hotspots](#).

Because CIR has gone through multiple transformations over time, I split the data into two sets: one for data applications that were hosted on the California Watch website (2011-12) and one for apps hosted on CIR and Reveal’s websites (2013-present). “Degree of interactivity” and “full package” remained moderately correlated with Web traffic for each subset. However, “local” proved to be correlated only for CIR and Reveal application traffic.

Traffic to CIR and Reveal apps is moderately positively correlated with “design/aesthetic” and strongly negatively correlated with “load time,” while California Watch apps do not correlate with either of these variables. This suggests that users are becoming more discerning about the design of the apps they use and more accustomed to rapid load times.

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<sup>5</sup> Intercoder reliability was calculated using a simple 100 percent for agreeing scores, 0 percent for disagreeing scores. I then averaged the reliability scores for each variable to determine the overall reliability of the coding schema, by variable. The six resulting variables all had greater than 67 percent reliability.



| Correlations with Web traffic to data application during first 90 days live |                       |                              |                                    |
|---|-----------------------|------------------------------|------------------------------------|
|   | All news interactives | CIR/Reveal news interactives | California Watch news interactives |
| Degree of interactivity   | Moderate              | Moderate                     | Moderate                           |
| Full package  | Moderate              | Moderate                     | Moderate                           |
| Local   | Low                   | Moderate                     | None                               |
| Broad interest  | Moderate              | Moderate                     | None                               |
| Design/aesthetic  | Moderate              | Moderate                     | None                               |
| Load time   | Moderate (negative)   | Strong (negative)            | Moderate (negative)                |
| Context   | Low                   | None                         | Moderate                           |
| Headlines   | Moderate              | None                         | None                               |

*Gray fields indicate those where there was not a high degree of intercoder reliability.*

The same analysis using events per session shows that this dependent variable is correlated with “degree of interactivity” and “full package” (both at the .05 level).<sup>6</sup> However, when we analyze the data as two separate sets (one for CIR and Reveal, a second for California Watch), we find that “degree of interactivity” is strongly correlated with events per session for CIR and Reveal and not at all correlated with events per session for California Watch. And on the flip side, “full package” was moderately correlated with news apps, in general, but not at all with California Watch’s or CIR or Reveal’s in particular.

| Correlations with data application events per session |                       |                              |                                    |
|---|-----------------------|------------------------------|------------------------------------|
|   | All news interactives | CIR/Reveal news interactives | California Watch news interactives |
| Degree of interactivity                               | Moderate              | Strong                       | None                               |
| Full package  | Moderate/Low          | None                         | None                               |
| Ease of use   | None                  | Moderate (negative)          | None                               |
| Load time   | None                  | Moderate (negative)          | None                               |

*Gray fields indicate those where there was not a high degree of intercoder reliability.*

<sup>6</sup> “Regional,” “local” and “information nuggets” also were slightly correlated with events per session, but at the .1 level.



## **Conclusion and recommendations**

This analysis supports the following hypotheses:

- Applications that are part of a full package will be both more highly trafficked and more deeply explored by users. This could be because there is more content pushing audiences to the interactives or because they are more heavily promoted by the organization.
- Applications that have high degrees of interactivity will logically have more events per session, but they also have more unique visitors.
- The aesthetics and design of applications are becoming increasingly more important to users.
- Load time is increasingly more important to users' likelihood of both visiting and using an app.

While these findings are specific to CIR, the implications are valuable for the industry as a whole. These findings would be strengthened if additional newsrooms applied the same methodology to analyze their news interactives and shared their findings. If other organizations found support for the hypotheses listed above, we as a community could be more confident that this is a general phenomenon.

Finally, these findings do not help us understand whether users learn more or different information from a data app than they might from content in a different format. User testing and focus groups would help us to better understand the relationship between learning and interaction with our data applications.

Because data apps are, as noted above, costly to produce, newsrooms should be intentional about planning and developing apps. For example, newsrooms should identify potential users of the app and maybe even conduct focus groups *prior to app development*. Newsrooms should identify the goal of an app, and then use this to inform the app's design and functionality. And newsrooms should have clear plans about updating apps. The findings from this paper can help to inform these decisions.

CIR employed this process for the development of [The Lost & The Found](#), which launched after the completion of this analysis. We will do a deep dive of this project in coming months and will share the research findings.

If you are interested in collaborating with us on an app research project, please contact [lgreenbarber@cionline.org](mailto:lgreenbarber@cionline.org).



## Appendix A

### Data applications coding rubric

#### Degree of interactivity:

- 0 - Not at all interactive
- 1 - Low degree of interactivity, only one option for interacting
- 2 - Somewhat interactive, multiple options for interacting
- 3 - Very interactive, multiple options and multiple layers per option

#### Full package:

- 0 - No other content related to app
- 1 - Other content related to app, but not much
- 2 - Other content with additional elements related to app
- 3 - Content for multiple platforms and elements related to app

#### National:

- 0 - Not at all national in scope
- 1 - Slightly national in scope
- 2 - Somewhat national in scope
- 3 - Very national in scope

#### Regional:

- 0 - Not at all regional in scope
- 1 - Slightly regional in scope (e.g., relates to one region)
- 2 - Somewhat regional in scope (e.g., states)
- 3 - Very regional in scope (e.g., states and counties)

#### Local:

- 0 - Not at all local in scope
- 1 - Slightly local in scope
- 2 - Somewhat local in scope (e.g., data by county)
- 3 - Very local in scope (e.g., data by address)

#### Specific constituency:

- 0 - No specific constituency to which data are relevant
- 1 - A vague constituency to which data are relevant
- 2 - A defined constituency to which data are relevant
- 3 - A clearly defined constituency to which data are relevant

#### Broad interest:

- 0 - Not of interest to the broad population
- 1 - Of little interest to the broad population
- 2 - Of interest to the broad population
- 3 - Of high interest to the broad population

#### Ease of use:

- 0 - Very difficult to use
- 1 - Somewhat difficult to use
- 2 - Somewhat easy to use



3 - Very easy to use

Design/aesthetic:

0 - No thought to design or aesthetic

1 - Little design or aesthetic

2 - Moderate design or aesthetic

3 - Well designed and aesthetically pleasing

Unique data:

0 - Data not unique

1 - Data somewhat unique

2 - Unique data

3 - Very unique data

Load time:

0 - Does not load

1 - Loads noticeably slowly

2 - Loads reasonably quickly

3 - No load time/loads immediately

Context:

0 - No context provided for app

1 - Little or unclear context provided for app

2 - Some context provided for app

3 - Clear and complete context provided for app

Shareable nuggets:

0 - No easily shareable information nuggets

1 - Very few shareable information nuggets

2 - Some shareable information nuggets

3 - Many shareable information nuggets

Headline:

0 - No headline

1 - Unclear headline

2 - Clear but unengaging headline

3 - Clear and engaging headline

Database underlying application?

0 - No

1 - Yes