

Statistics and the humanities: News and numbers in journalism as a proof of concept

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An honors course called “News and Numbers: Lies, Statistics, and the Stories Media Tell” was developed in response to a shared interdisciplinary assumption – that quantitative literacy (QL) is as important as written literacy. QL takes practice and repetition for students (and any educated adult) to navigate a media world so overloaded with information, data, and numbers. The pilot course also laid part of the foundation for a larger mission: getting buy-in on QL from across a university whose size and requirements made consensus problematic, even intimidating. Many of the successful QL initiatives in the US happen at smaller colleges where faculty members in disparate areas seem to meet more routinely, talk to one another more easily, and team teach more often. Miami University (MU) is a public university with approximately 14,000 undergraduates located in southwest Ohio, US. Historically, a single class in mathematics, formal reasoning or technology satisfied a general education distribution requirement. Recent activities on campus led to a review of all requirements including this one which never adequately served as requirement that would promote quantitative literacy among Miami undergraduates.

History and institutional context

Recent discussions at MU associated with quantitative literacy started innocently at a breakfast in 2006 hosted by the Provost where the teaching of statistics across multiple departments and divisions across campus was discussed. A working group including faculty from statistics, computer science, the journalism program, and the director of the liberal education program (the gatekeeper of general education requirements) began to meet in the Spring of 2008. Two concrete outcomes resulted from this discussion: 1) a faculty learning community would be formed to address quantitative literacy issues on campus; and 2) a team-taught class on news and numbers should be developed by the journalist and statistician in this group.

JRN/STA 380: News and Numbers: Lies, Statistics, and the Stories Media Tell

The need for this course appeared relatively clear. Nick Kristoff, a New York Times columnist, noted during a campus visit at a dinner attended by the Provost and JRN director that Times did not have enough people in their newsroom who

know how to tell stories with and about complex numbers,. As a result, the Times sometimes unwittingly avoided doing enough of these types of important stories. This class addressed the challenge of enhancing QL ideas in a humanities course. This was important for developing the next generation of journalists and citizens but it also would be a proof-of-concept class for promoting QL at Miami.

Course description excerpts

As part of preparing our syllabus and course promotion materials, we decided to explore the quality of how quantitative ideas and material are represented in daily journalism. This would be explored by examining the quality of how quantitative ideas and material are represented in the narratives of daily journalism.

The course needed to be current and relevant. We described this as a course with topics “ripped from current events and headlines”—with a particular focus on numbers and data related to political polling, the financial crisis, and health/science issues. We examined not only newspaper versions of stories, but public radio, commercial TV, and online versions of stories as well— with particular interests in stories that used visual displays (e.g., charts, graph, etc.) to present numerical material. We had a dual challenge of presenting journalistic ideas to students with no journalism background and statistical ideas to students with minimal statistical background. We wanted students to examine and critique concepts such as journalistic objectivity and bias, news writing as storytelling, the concept of uncertainty, and various visual presentations of numerical data.

To illustrate what sometimes happened in the course, we had a fairly rich class discussion on the statistical notion of weighting around the journalistic convention of “telling both sides a story” that raised important questions. What if those two sides are not equal, or what if there more than two sides, or what if there’s only one side? In fact, the statistician helped the students (and the JRN faculty member) to see this often taken-for-granted convention in a new and richer light. On the other hand, the journalist pointed out that a significant factor driving the two- sides convention was its efficiency as a literary device for helping construct narrative conflict by producing two opposing sides in which sources “duel it out” in juxtaposed quotes in print media stories and sound bites in broadcast news. This device also helps reporters manage time or space limits and deadline demands by cultivating stories constrained in two-sided narrative formulas. Journalists often call this balance, but statisticians ask: what is the actual weight of various perspectives presented in a “balanced” news report and how is that determined?

In the context of these kinds of discussions about how journalism works, students needed to function as story producers as well as critics and consumers of journalistic products. We needed to create opportunities for students to craft their own articles on related topics, some of them tied to course speakers and/or Miami faculty who have expertise in political polls, financial systems, and environmental sustainability. We provided students with the opportunity to “cover” lectures from visitors and write -- as individuals and in groups --their own news stories. In turn, their stories were critiqued, not only by course faculty, but by the lecturers themselves to see how well students presented complex quantitative issues in their journalistic representations.

Ultimately, we believed that this class should advance in-depth critical

thinking, promote clear communication, and teach compelling storytelling about complex topics. Our aim was to help students understand numbers to become: more discerning media consumers, more perceptive journalistic critics, and more actively engaged citizens in democratic life.

Using news in stat classes is not new

Bernie Madison lectured to the Ohio Mathematics and Science Coalition about using news stories to help understand mathematical concepts such as proportionate reasoning and has a book using news to teach quantitative literacy (see <http://www.ohiomsc.org/omsc/PDF/QLMadison.pdf> for this talk). Gelman and Nolan (2002) discuss using news media to promote statistical literacy as does the CHANCE course (<http://www.dartmouth.edu/~chance/>).

So what was different about this class? We did not use news as a tool for learning statistical concepts but hoped to develop a sense and insight regarding application of statistics in a journalistic context. We also developed partnerships with news outlets and professional reporters, including the data base reporter from the Dayton Daily News, a business reporter from Cincinnati's Business Courier, and the news director at Miami's public radio station. These guests, along with others, helped brainstorm with the class on group projects aimed at producing actual news reports and visual displays to support them.

Learning objectives

We had three main learning objectives outlined for this class. First, we wanted students to be better prepared to critically assess assertions in the media. Students should be able to incorporate quantitative measures of uncertainty in understanding assertions, such as those found in popular media. Second, we believed that students should be able to understand and communicate quantitative concepts. Students should be able to interpret graphs and multiple visual displays of information and data. Further, students should be able to communicate quantitative information in written and graphical forms. Finally, we believed a qualitative dimension of inquiry needed to be considered. Students should have strategies for making decisions in the face of uncertainty and incomplete data. Students should be able to write narratives interpreting quantitative data and their meanings.

Course logistics

We required two texts for this class. The Cohn and Cope (2001) book, *News & Numbers*, is an exceptional resource for what journalists should know when evaluating data, reports, and experiments. Joel Best's *Stat-Spotting* (2008) addresses media blunders and provided a template for a major assignment for the students -- a portfolio of news media mistakes and errors such as those found in the taxonomy of blunders described by Best.

Grades were based on: 1. Class discussion [10%] – includes bringing news stories to class for general discussion [not a problem with a highly motivated cohort of honors students]; 2. Short writing exercises [10%] -- illustrations of current classroom topics from the media– includes 1-page report on class visitors [very successful and good way to provide instructor feedback]; 3. News &

numbers portfolio [25%] – reviewed at midterm at end of the class [perhaps more than we bargained for but still very useful]; 4. Two major individual stories based on faculty research projects [20%] [could have been more successful]; 5. Critically edit and peer review other stories [10%] [not as successful as we hoped]; and 6. Group project – for these students partnered with a news outlet [25%] [ambitious and moderately successful – three of five groups had their projects published in some form with one other project deferred to following semester; in the future, news project planning with newsroom partners would be done well in advance of the course].

Visitors

Visitors were invited to pitch story ideas for students to possibly pursue. The visitors sent articles in advance of their visits and the students prepped for the upcoming visit. After the visit, the students submitted a contact report summarizing the visit and brainstorming possible future story ideas. Our visitors included: Steve Watkins – Cincinnati Business Courier -- who discussed executive compensation and changing economic landscape; Ken McCall Dayton Daily News – who discussed home foreclosures and political donations in the context of mining data bases and identifying potential news stories; Gary Scott -- WMUB public radio news director – who discussed radio news and numbers; Jim Tobin – Miami Journalism professor and former science and medical reporter at the Detroit News – who discussed reporting on medical and technical information; and Rose Marie Ward – professor of kinesiology and health – who discussed alcohol abuse among young adults.

Example Assignments

Students always had something due for this class. They would:

- Write a story lead/lede based on visit by external guests
- Generate alternative display for graphic included in *Newsweek* story
- Produce a two-paragraph story to interpret an *American Journal of Public Health* story
- Write a reaction paper to radio program “Giant Pool of Money” (from NPR’s This American Life)
- Produce stories by each of 5 teams (developed in two forms – newsprint, web, and/or radio). Include a quantitative element in visual display
- Construct a portfolio of bad and good news stories

The third assignment involved selecting an academic journal article that the students were asked to translate for a popular story. They read the story and the instructors served as surrogates for the study authors to answer questions the students might have about tabular displays, sampling designs, and statistical methods. The paper selected used logistic regression, which provided a chance to discuss how results from logistic regression models-- here odds ratios -- were interpreted.

Projects

We formed project teams that included at least one journalism major and two other students. The students pitched multiple project ideas that resulted in the following stories: 1) Effectiveness of alcohol programs on campus; 2) Study

abroad program trends; 3) Recycling efforts; 4) Personal finance/Investing options for college students; and 5) Faculty home buying patterns in Oxford. Two different story presentation options were required. Most included a print version. The second option included either a web version (with links to maps, tables, and other stories) or a radio version (with interviews and a script produced for review).

To illustrate a sample student project, we have chosen the report on the university's alcohol awareness program called AlcoholEdu. The students covering this story were interested in the effectiveness of this program. They conducted a small survey of students to gauge whether students were paying attention when participating in this online awareness program. The survey involved a convenience sample (a teachable moment) and the results were graphically summarized. The graphic may not have been the preferred data display by the instructors but the students argued for the mix of aesthetic (to draw in readers) and data represented by this display. The story appeared in the student paper.

The students encountered challenges securing data on the effectiveness of the program from the program's vendor. The students decided that some data collection would be needed to make this story real and relevant for Miami students. Designing a questionnaire and a survey strategy surfaced as major part of the background for this story. Finally, conducting the survey and summarizing responses for inclusion in the story required significant effort from the students.

Lessons learned (and still learning)

When did we know this class might work? Early in the course, the journalist – who felt daunted by what he did not know about numbers and statistics – knew the class might work when the statistician commented about a particular visual display, “We need to ask what is the story and why is it engaging when we look at figures or tables derived from data.” Now “story” was something the journalist knew about and common ground had been established.

We believe that this was a successful first pass based on quality of stories produced and feedback received from the students. In fact, it worked better than either instructor expected. Reasons for this included the class make-up. We had an upper-level honors class populated with 6 journalism majors (including both the current and former editor of the student paper) plus students for many divisions (A&S, Bus., Eng., Ed.). This was a highly motivated cohort of students. In addition, the instructors are both experienced teachers who were honest about the experimental nature of the class and the students embraced the class. This class provided a great opportunity for the students to interact with faculty with different backgrounds who would often debate about story structure.

Challenges and changes?

We did not spend as much time on reviewing story writing for journalism (even vocabulary challenges – *lede*). This put more pressure on the journalism students on each team. In addition, the class tended to do a bit better with issues associated with consuming numeric information in the media vs. producing media with numeric information. This could be addressed by starting the story production process earlier in the semester. In future offerings, we would start the production of a shorter story early in the term and start major stories earlier as well. We would also look to bring guests to class sooner.

How might we offer this in the future?

We believe that this could work well as an undergraduate capstone experience for JRN and STA students. In addition, we would move this course to the Fall term. This would allow the production of stories to carry over to Spring when students are still available and interested in working on them and seeing them through to publication, broadcast, or webcast. But the class might also work well as a 200-level offering with 60–80 or so first or second year students and 8–10 skilled Undergraduate Assistants (UAs) who are seniors or advanced juniors and who could direct a small group of students in various news projects supported by visual data displays. UAs could do some of the early editing on portfolios, some training in journalistic reporting and writing, and some oversight of peer editing on shorter reports.

How was the course received? Would we be tempted to do this again?

It was a very positive experience for students and professors alike. Both instructors were excited about the experience and the work that the students produced. Student evaluations were positive. Student comments included the observation that the course was interesting because of the different backgrounds of the instructors; that the statistics and journalism teachers think differently but fields complement each other; they felt that they now possessed a better understanding of how look at numbers and how they are presented in the media and finally, the course more like a workplace than other courses. Ultimately, we strongly recommend such collaborations for the richness of the experience that will result for student and professor alike.

Subtitle

News and numbers

REFERENCES (RÉFÉRENCES)

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RÉSUMÉ (ABSTRACT) — optional

Quantitative literacy is core competency that university graduates should possess, and should be manifest across a broad range of course offerings. We describe the institutional context in which a joint journalism-statistics course was developed, the learning objectives of this class, the structure and logistics of this class, its interdisciplinary character, and student activities in the class. We also evaluate the response of students and faculty to the initial offering of this class, and consider improvements for future versions of such a class.