

## Map-based Visual Storytelling Survey Protocol

### INSTRUCTIONS

**Page #2: Thank you for agreeing to participate! Please review the following instructions before taking the survey.**

Today, newspapers commonly release their news stories online in addition to their printed versions. These stories often have a geographic component (i.e., where the event took place), and increasingly include visuals such as maps or graphics to support the textual news descriptions. Stories that rely more on graphics than text are referred to as “visual” stories, and take many different forms on the internet. The following survey uses two case study visual stories to learn how to improve news reporting that relies on a combination of text, maps, and graphics.

### INSTRUCTIONS:

The survey proceeds in three sections:

1. First, you will be given an example story to familiarize yourself with the “visual” story form used in the study. You also will be given example questions to get a feel for the kinds of written and multiple choice questions you will need to answer about the visual stories.
2. You then will be presented with two different visual stories. You will review each visual story individually and respond to a set of questions about your comprehension, reaction, retention, and preference of the stories. Please review the visual story and complete the related questions using your **complete focus** (do not view other websites, split your attention, etc.). This survey relies on your feedback, so please take time in your responses.
3. After reviewing both visual stories, you will respond to a series of background questions about your interests and experiences. You will be compensated after you submit the background survey.

[button] I have reviewed the instructions and confirm I am eligible to participate in the study.

## TRAINING BLOCK

### Page #3: Training Example

Please review the following example about bookstores in the U.S. to get a feel for the visual story form used in the study. Use as much time as needed to review the example story. You will answer questions about the visual story on the next page. **Note:** The following example is a partial story, only presenting the beginning panels, and uses synthetic data. Subsequent visual stories are complete and use real datasets.

### Page #4: Training Questions

Please answer the following questions as they relate to the example visual story you just reviewed.

#### *Sample questions*

1. In your own words, please summarize the introduction to the visual story you just reviewed:

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2. Rate the degree to which you agree with the following statements (1=strongly disagree, 7=strongly agree): *randomize order*

- The visual story excited me. (arousal +)
- I enjoyed the visual story. (hedonic +)

3. What were the peak total online sales in the U.S. over the past 10 years? (Panel 2, accented; rank: attribute)

- 380 billion**
- 430 billion
- 480 billion
- Not sure

4. What year had the highest amount of online sales in the U.S.? (Panel 2, accented; rank:time)

- 2006
- 2011
- 2016**
- Not sure

## Visual Story A

### Page #5: Visual Story A

The following visual story discusses the topic of sea-level rise in the U.S. Please review the visual story using your **complete focus** (do not view other websites, split your attention, etc.).

### Page #6 Visual Story A Comprehension (*IV: Genre and Trope, RQ #1 and #2*) (DV)

Please answer the following written questions as they relate to the visual story on sea-level rise in the U.S. that you just reviewed. This survey relies on your written feedback, so please take time in preparing your responses.

1. In your own words, please summarize the visual story you just reviewed. Please be as comprehensive as possible? \_\_\_\_

### Page #7 Visual Story A Personal Reactions (*IV: Genre and Trope, RQ #1 and #2*) (DV)

1. Rate the degree to which you agree with the following statements about the visual story on sea-level rise in the U.S. (1=strongly disagree, 7=strongly agree): *randomize order*

- The visual story excited me. (arousal +)
- The visual story bored me. (arousal -)
- I enjoyed the visual story. (hedonic +)
- I was upset by visual story. (hedonic -)
- The visual story interested me. (interest +)
- The visual story concerned me. (interest -)
- I agree with the visual story. (belief +)
- The visual story did not influence my beliefs about sea-level rise. (belief -)

### Page #8 Visual Story A Retention (*IV: Genre and Trope, RQ #1 and #2*) (DV)

Please answer the following directed questions about specific aspects of the about the visual story on sea-level rise in the U.S.. Please complete the directed questions using your **complete focus** (do not view other websites, split your attention, etc.). You can mark only one answer for each response.

#### *Identify (6 tasks)*

What was the peak average temperature for the U.S. over the past 40 years? (Panel 2, accented; identify: attribute)

- a. 44.3 °F
- b. 54.3 °F**

- c. 64.3 °F
- d. Not sure

What was the average coastal population density for New York in 2012? (Panel 3, accented; identify: attribute)

- a. **3,081 people per square mile**
- b. 3,581 people per square mile
- c. 4,081 people per square mile
- d. Not sure

What was the largest amount of sea level rise exhibited in a single year from 2002-2012? (Panel 4, accented; identify: attribute)

- a. **8.4 millimeters**
- b. 10.4 millimeters
- c. 12.4 millimeters
- d. Not sure

What was the average value of vulnerable coastal properties in North Carolina in 2012? (Panel 5, accented; identify: attribute)

- a. \$3,730
- b. \$5,730
- c. **\$7,730**
- d. Not sure

What was the largest rate of sea-level rise at a single New York station in 2012? (Panel 6, accented; identify: attribute)

- a. 2.4 millimeters/year
- b. **4.4 millimeters/year**
- c. 6.4 millimeters/year
- d. Not sure

According to the 2020 prediction, what will be the average per person value of vulnerable coastal properties in North Carolina? (Panel 9, accented; identify: attribute)

- a. \$125
- b. \$225
- c. **\$325**
- d. Not sure

***Compare (3 tasks)***

Which state had the larger coastal population density in 2012? (Panel 3, accented; compare: space)

- a. **New York**
- b. North Carolina
- c. They were about the same
- d. Not sure

Which state had the higher average value of vulnerable coastal properties in 2012? (Panel 5, accented compare: space)

- a. **New York**
- b. North Carolina
- c. They were about the same
- d. Not sure

According to the 2020 prediction, which state will have the larger per person value of vulnerable coastal properties? (Panel 9, accented compare: space)

- a. New York
- b. **North Carolina**
- c. The same
- d. Not sure

**Rank (3 tasks)**

Which year had the highest average temperature in the U.S. (Panel 2, accented; rank:time)

- a. 2005
- b. 2010
- c. **2015**
- d. Not sure

Which year from 2002 to 2012 exhibited the highest annual rise in sea levels? (Panel 4, accented; rank: time)

- a. 2004
- b. 2008
- c. **2012**
- d. Not sure

Which New York station had the highest rate of sea-level rise in 2012? (Panel 6, accented; rank: space)

- a. **Bergen Point**
- b. Montauk
- c. Port Jefferson
- d. Not sure

**Subjective**

Which state do you think is handling sea-level rise better?

- New York, and I would have guessed New York before reviewing the visual story.
- New York, but I would have guessed North Carolina before reviewing the visual story.
- North Carolina, and I would have guessed North Carolina before reviewing the visual story.
- North Carolina, but I would have guessed New York before reviewing the visual story.
- Not sure

## Visual Story B

### Page #9: Visual Story B

The following visual story discusses the topic of U.S. presidential campaign donations. Please review the visual story using your **complete focus** (do not view other websites, split your attention, etc.).

### Page #10 Visual Story B Comprehension (*IV: Genre and Trope, RQ #1 and #2*) (DV)

Please answer the following written questions as they relate to the visual story on U.S. presidential campaign donations that you just reviewed. This survey relies on your written feedback, so please take time in preparing your responses.

### Page #11 Visual Story A Personal Reactions (*IV: Genre and Trope, RQ #1 and #2*) (DV)

1. Rate the degree to which you agree with the following statements about the visual story on U.S. presidential campaign donations. (1=strongly disagree, 7=strongly agree): *randomize order*

- The visual story excited me. (arousal +)
- The visual story bored me. (arousal -)
- I enjoyed the visual story. (hedonic +)
- I was upset by visual story. (hedonic -)
- The visual story interested me. (interest +)
- The visual story concerned me. (interest -)
- I agree with the visual story. (belief +)
- The visual story did not influence my beliefs. (belief -)

### Page #12 Visual Story A Retention (*IV: Genre and Trope, RQ #1 and #2*) (DV)

Please answer the following directed questions about specific aspects of the about the visual story on U.S. presidential campaign donations. Please complete the directed questions using your **complete focus** (do not view other websites, split your attention, etc.). You can mark only one answer for each response.

#### *Identify (6)*

What was the peak U.S. presidential election campaign cost over the past 40 years? (Panel 2, accented; rank: attribute)

- a. \$1.34 billion
- b. \$1.54 billion
- c. **\$1.74 billion**
- d. Not sure

What were Colorado's average campaign donations per person during the 2012 presidential election? (Panel 3, accented; rank: attribute)

- a. \$1.3 per person
- b. \$2.3 per person
- c. \$3.3 per person**
- d. Not sure

What was the largest Democratic advantage in campaign donations in a single month during the 2012 presidential election? (Panel 4, accented; identify: attribute)

- a. \$41 million
- b. \$51 million**
- c. \$61 million
- d. Not sure

What was the increase in the Democratic voting lead in Ohio from July to November during the 2012 presidential election? (Panel 5, accented; identify: attribute)

- a. 0.7%**
- b. 1.7%
- c. 2.7%
- d. Not sure

What was the largest Democrat's advantage in a single Colorado city in 2012 presidential election? (Panel 6, accented; identify: attribute)

- a. \$2,400,000
- b. \$3,400,000
- c. \$4,400,000**
- d. Not sure

According to the 2020 prediction, what will be the voting change towards Republicans in Ohio from the 2016 presidential election ? (Panel 9, accented; identify: attribute)

- a. 2.5%
- b. 7.5%
- c. 12.5%**
- d. Not sure

### ***Compare (3)***

Which state had greater campaign donations per person during the 2012 presidential election? (Panel 3, accented; compare: space)

- a. Colorado**
- b. Ohio
- c. They were about the same
- d. Not sure

In which state did the Democrats gain a larger voting lead from July to November during the 2012 presidential election? (Panel 5, accented; compare: space)

- a. **Colorado**
- b. Ohio
- c. They were about the same
- d. Not sure

According to the 2020 prediction, which state is expected to have the larger change in voting results from the 2016 presidential election? (Panel 9, accented; compare: space)

- a. Colorado
- b. **Ohio**
- c. They were about the same
- d. Not sure

### ***Rank (3)***

Which year had the highest cost for a U.S. presidential election? (Panel 2, accented; rank:time)

- a. 2004
- b. **2008**
- c. 2012
- d. Not sure

Which month exhibited the largest advantage in campaign donations for the Democratic party during the 2012 U.S. presidential election? (Panel 4, accented; rank: time)

- a. August
- b. **September**
- c. October
- d. Not sure

Which city in Colorado had the largest lead in the Democratic candidate's donations during 2012 presidential election? (Panel 6, accented; rank: space)

- a. Boulder
- b. **Denver**
- c. Grand Junction
- d. Not sure

### ***Subjective***

Which state do you think is handling presidential campaign donations better?

- Colorado, and I would have guessed Colorado before reviewing the visual story.
- Colorado, but I would have guessed Ohio before reviewing the visual story.
- Ohio, and I would have guessed Ohio before reviewing the visual story.
- Ohio, but I would have guessed Colorado before reviewing the visual story.
- Not sure



### Page #13: General Background Information (*Individual Differences, RQ #3*)

Thank you for reviewing the pair of visual stories! Before finishing the survey, please complete the following preference and background questions.

#### 1. *Story Preferences*

1. Rate the degree to which you agree with the following statements about the visual story form. (1=strongly disagree, 7=strongly agree):

- I *liked* vertically scrolling through all content. | I *liked* clicking through each panel in the slideshow.
- I instead would have *preferred* vertically scrolling through all content. | I instead would have *preferred* clicking through each panel in the slideshow.
- I instead would have *preferred* a video animation with narration.
- I instead would have *preferred* a single static map poster.
- I instead would have *preferred* a single interactive map.
- I instead would have *preferred* a printed, text-based write-up.
- I instead would have *preferred* a website with a text-based write-up.

2. Rate the degree to which you agree with the following statements about the visual story content. (1=strongly disagree, 7=strongly agree):

- I thought the story needed *more* text.
- I thought the story needed *less* text.
- I thought the story needed *more* numbers.
- I thought the story needed *less* numbers.
- I thought the story needed *more* maps.
- I thought the story needed *less* maps.
- I thought the story needed *more* graphics.
- I thought the story needed *less* graphics.
- I thought the story needed *more* interactivity.
- I thought the story needed *less* interactivity.

3. Rate the degree to which you agree with the following statements about the way content was highlighted in the visual story. (1=strongly disagree, 7=strongly agree):

- I *liked* the use of thick black outlines to emphasize important content.
- I *didn't notice* the use of thick black outlines to emphasize important content.
- I *liked* the use of annotations with connecting lines to emphasize important content.
- I *didn't notice* the use of annotations with connecting lines to emphasize important content.
- I *liked* how the layout of text, maps, and graphics emphasized important content.
- I *didn't notice* how the layout of text, maps, and graphics emphasized important content.

## 2. Demographic

1. What is your gender identity? (*gender, IV*)
  - a. Male
  - b. Female
  - c. Other
  
2. What is your age? (*age, IV*) \_\_\_\_\_
  
3. Please specify your race/ ethnicity: (*race/ethnicity, IV*)
  - a. Asian
  - b. Black or African American
  - c. Hispanic or Latino
  - d. Native American or American Indian
  - e. Pacific Islander
  - f. White
  - g. Other: \_\_\_\_\_
  
4. Please specify your nationality: (*nationality, IV*)
  - a. USA
  - b. Other. List all: \_\_\_\_\_
  - c. USA and other: List others: \_\_\_\_\_
  
5. Is English your first language? (*language, IV*)
  - a. Yes
  - b. No
  - c. Other: \_\_\_\_\_
  
6. What state do you currently live in? (*geography: absolute, IV*) \_\_\_\_\_
  
7. Which of the following best describes where you live? (*geography: relative, IV*)
  - a. Urban
  - b. Suburban
  - c. Rural
  - d. Other: \_\_\_\_\_
  
8. What type of device are you using? (*tech, IV*)
  - a. Laptop
  - b. Desktop computer
  - c. Tablet
  - D. Other: \_\_.

## 2. Education & Motivation

1. What is the highest degree or level of **education** you have completed? (*expertise: educational attainment, IV*)

- a. Did not complete high school
- b. High school/GED
- c. Some college
- d. Undergraduate (Major(s) :\_\_)
- e. Master level (Subject:\_)
- f. Post-undergraduate certificate (Subject:\_)
- f. Advanced graduate work or PhD (Subject:\_)
- g. Other:\_\_.\_\_

2. On a scale of 1 to 7 (**1 is not familiar, 7 is very familiar**), please rate your level of **familiarity** with the following topics: (*expertise: familiarity, IV*)

- Print News Sources
- Online News Sources
- Maps
- Computing Technology
- The Internet
- Information Graphics
- Environment and Science
- Domestic Politics

3. On a scale of 1 to 7 (**1 is no training, 7 is lots of training**), please rate your level of **training** in the following topics: (*expertise: education, IV*)

- Print News Sources
- Online News Sources
- Maps
- Computing Technology
- The Internet
- Information Graphics
- Environment and Science
- Domestic Politics

4. Have you ever **worked** in any of the following areas? (*expertise: experience, IV*)

- Journalism. If yes, years\_\_\_ (for all)
- Mapping/Geospatial Industry
- Computing Technology or Information Technology
- Web Design
- Graphic Design
- Environment and Science
- Domestic Politics

5. On a scale of 1 to 7 (**1 is not interested, 7 is very interested**), please rate your level of **interest** in the following topics: (*motivation: interest*)

- Print News Sources
- Online News Sources
- Maps

- Computing Technology
- The Internet
- Information Graphics
- Environment and Science
- Domestic Politics

### 3. Ability

1. Do you have color blindness or color vision deficiency? (*color identification ability, IV*)
  - a. Yes. Please indicate what type of color blindness/ deficiency, if you know:\_\_\_.
  - b. No.
  - c. I don't know.
  
2. Do you have corrected vision? (*vision ability, IV*)
  - a. No
  - b. Yes, I currently wear glasses
  - c. Yes, I currently wear contacts
  - D. Yes, I currently wear both
  - d. Other. Please indicate:\_\_\_.

### 4. Personal belief/bias

1. Please use 1-2 sentences to describe your attitudes toward the following topics:
  - Sea-level rise:\_\_\_\_\_.
  - Presidential Election donations:\_\_\_\_\_.
  
2. I *identify* myself as: (1-7 Likerts):
  - Socially liberal-v-conservative
  - Fiscally liberal-v-conservative
  - Environmentally conscious-v-agnostic
  - Politically active-v-agnostic
  
3. How *concerned* are you about following topics? (Please circle the number corresponding to your level of concern, from 1-7)
  - Concern about sea-level rise
  - Concern about coastal vulnerability
  - Concern about presidential campaign donations
  - Concern about the presidential election results
  
4. On a scale of 1 to 7 (1 is strongly disagree, 7 is very agree), please rate your level of agreement of the following statements:
  - I think sea-level rise is a topic *worth discussing*.
  - I think presidential election donations are a topic *worth discussing*.
  - I *believe* sea-level rise is a problem.
  - I *believe* presidential election donations are a problem.