

# MIXED-METHODS DATA COLLECTION, VISUALIZATION, AND DATA STORYTELLING IN HUMANITARIAN RESPONSES

HEALTH & HUMANITARIAN LOGISTICS  
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Motivation

# Ebola Outbreak - Forecariah, Guinea



**Qualitative – Stories – Local Context**



**Quantitative – Data – Large Scale**





# Mixed-Methods Design Questions

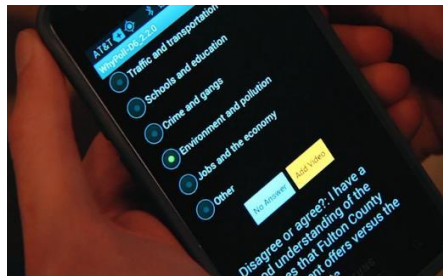
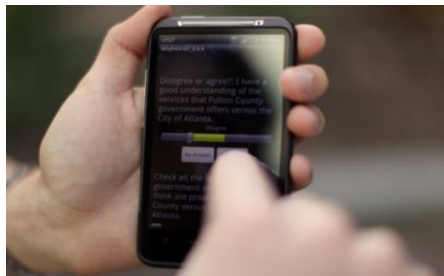
Convergent Design

Explanatory Design

Exploratory Design

- To what extent do the quantitative and qualitative results converge?
- In what ways do the qualitative data help to explain the quantitative results?
- In what ways do the quantitative results generalize the qualitative findings?

# Intercept Survey Meets Man on the Street (Synlab, 2014)



A mobile polling application for direct face-to-face survey or remote for respondent self-administration. The format combines closed-ended questions with media recording (video, audio, or pictures) to enable the tight coupling of quantitative and qualitative data, adding depth and context to the dataset.

## Data Visualization for Analysis, Presentation, & Discussion



Once words are coupled with numbers, analysts can use data visualizations to quickly access the media-rich data using a variety of analysis and presentation platforms.

Robinson, S. J., Williams, G., Parnami, A., Kim, J., McGregor, E., Chandler, D., & Mazalek, A. (2014, June). Storied numbers: supporting media-rich data storytelling for television. In *Proceedings of the 2014 ACM international conference on Interactive experiences for TV and online video* (pp. 123-130). ACM.

# USAID-CDC Innovation Project: Overview

## GOALS

- Generate useful data for ongoing Zika public health interventions (DR & Brazil)
- Advance methodology of mixed-methods field research & evaluation using mobile, networked digital media.
- Create a platform for implementing media-rich surveys on mobile devices; design for low resource settings; open source code, methods, & training resources.



Center for Global Health

CSELS  
Center for Science, Engineering, Learning, and Systems

EPI INFO™  
Open-Source Software for Public Health

Office of the Associate Director for Communication



# Technology Development: Prototype



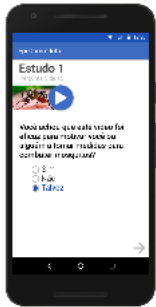
Start Screen



Screen 1 – Show Media Screen:  
Presents media (video, audio, picture)



Screen 1 – Show Media Screen:  
Plays media (auto-rotated)



Screen 2 – Main Question/Closed-ended Q:  
Will scroll if necessary.



Screen 3 – Follow-Up Question/Open-Ended Q:  
Response is displayed; recording controls.



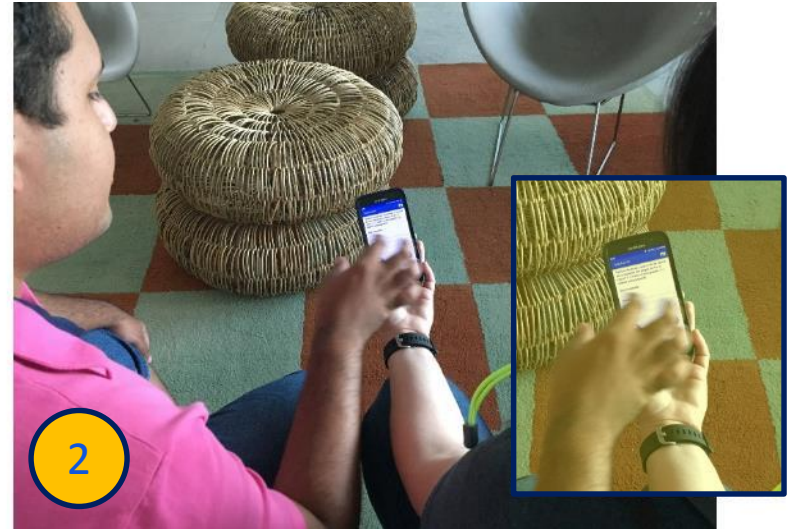
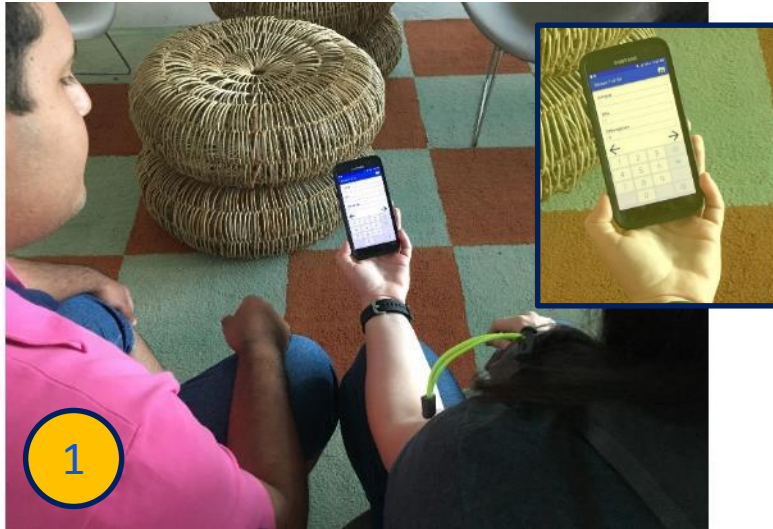
Screen 4 – Media Recording & Playback  
Uses front or back camera, portrait or landscape



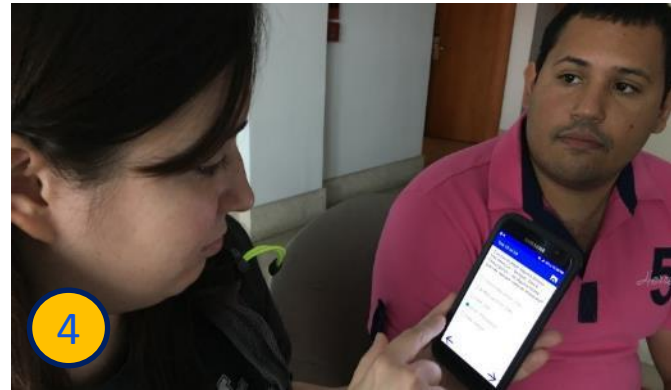
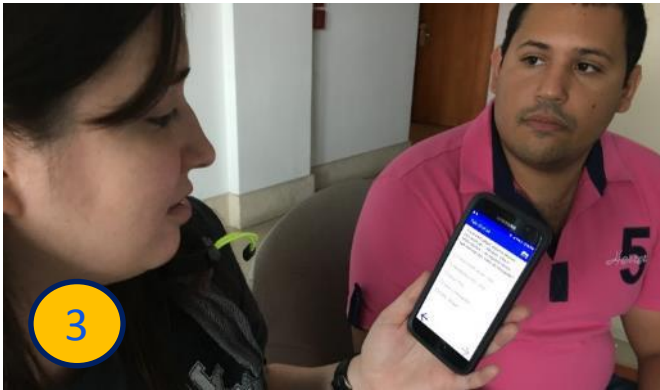
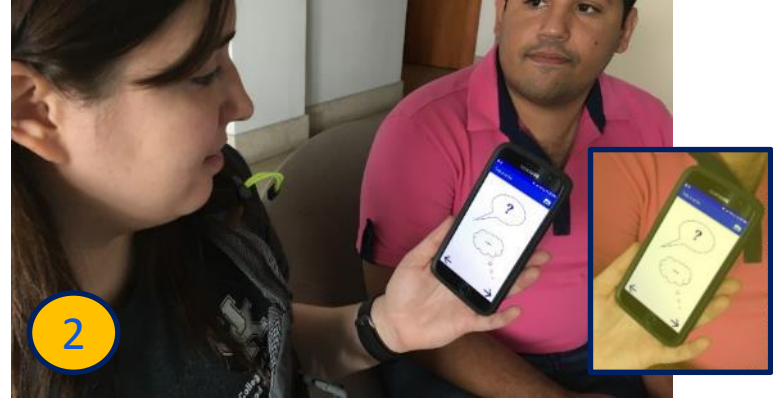


Constructing the Survey

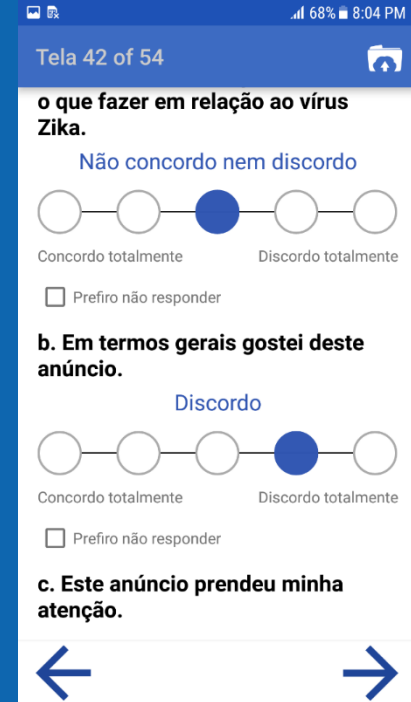
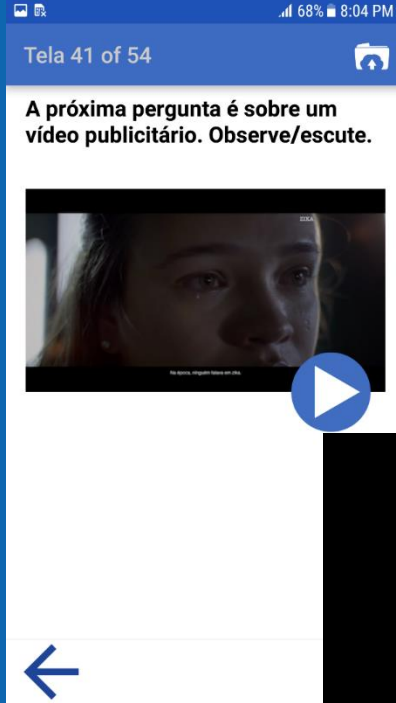
# To Share the Screen Or Not to Share the Screen ...



## That is the Question ... (in this case, not)

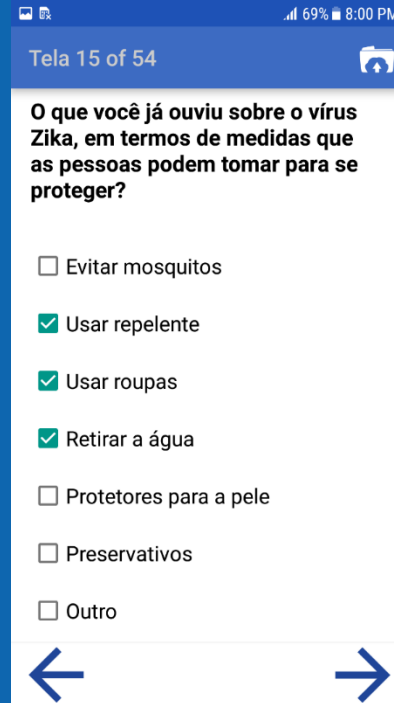
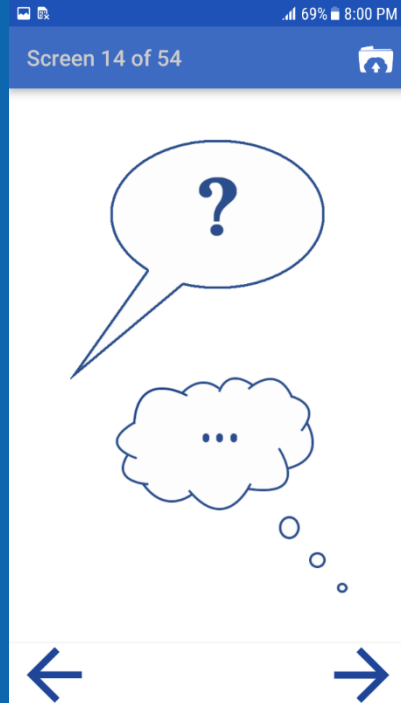


# Shared Screen: Message Testing





# Non-Shared Screen: Unaided Recall (Knowledge Q)



# A Tale of Two Field Studies

# Brazil: *Aedes Aegypti* 2016-17 Campaigns

Two cities in states where cases of microcephaly are concentrated (234 cases as of Nov 2016).

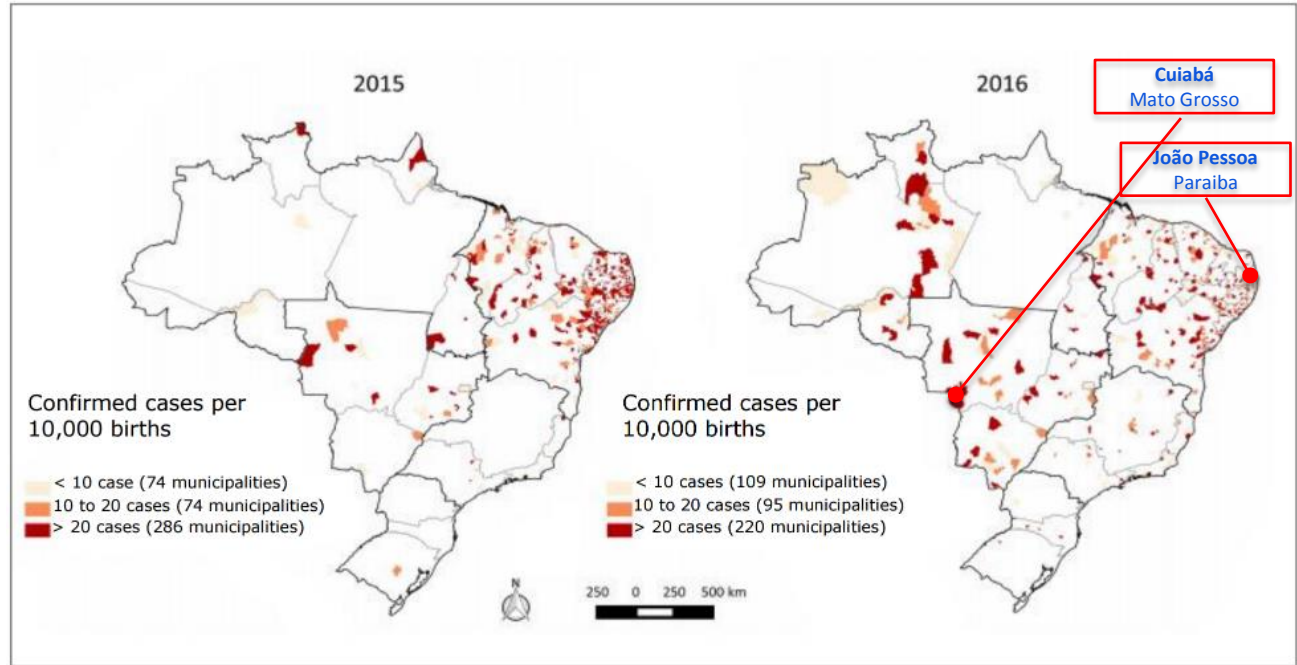
**João Pessoa**  
**State of Paraíba**

Population: 801,718\*

**Cuiabá**  
**State of Mato Grosso**

Population: 585,367\*

\*Instituto Brasileiro de Geographia e Estatistia, 2016



# Focus on Mosquito Control & Arboviruses

**ORIENTAÇÕES GERAIS  
PREVENÇÃO E COMBATES**

**DENGUE, CHIKUNGUNYA E ZIKA**

Acesse aqui

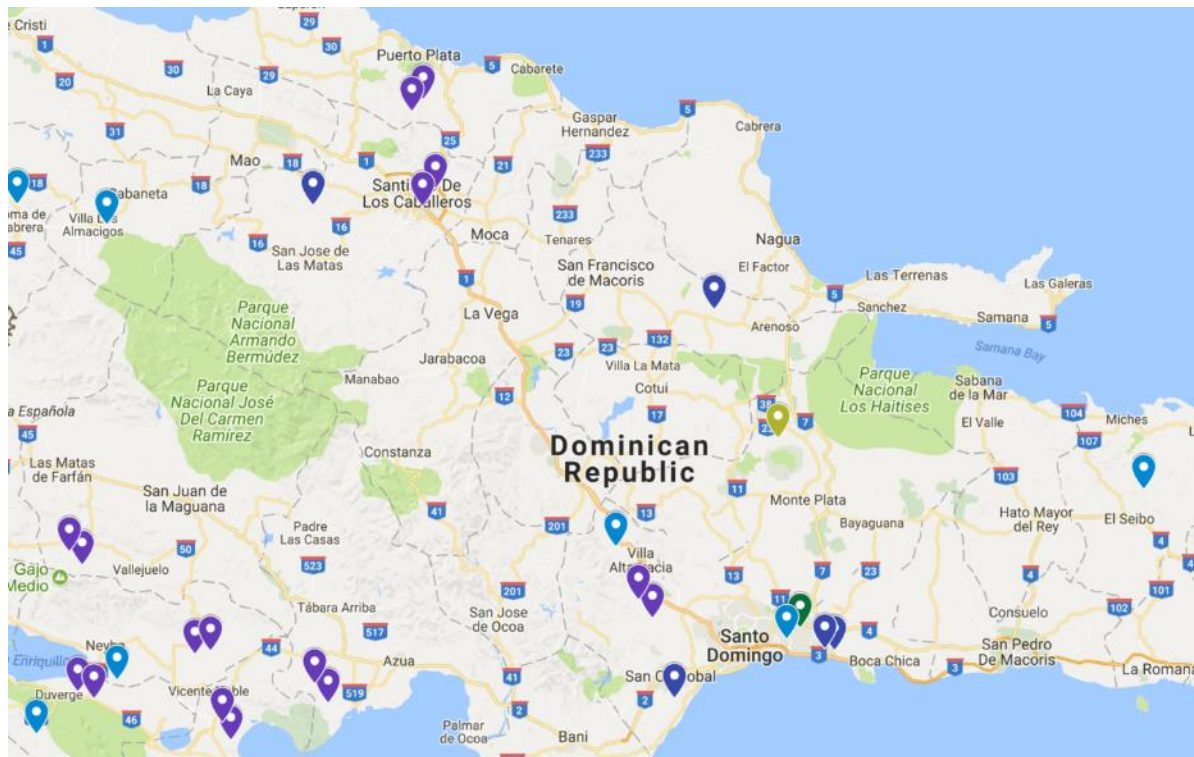




# Dominican Republic: Zika education in clinical settings

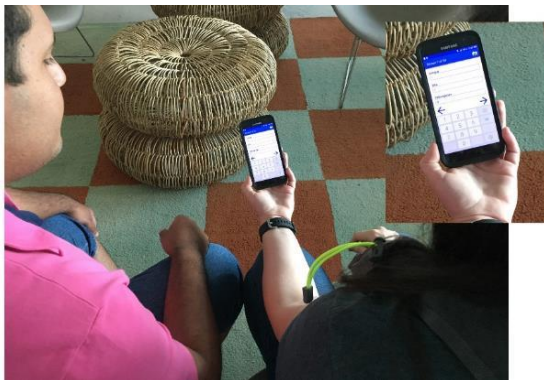


**USAID ASSIST Project**  
Applying Science to Strengthen  
and Improve Systems



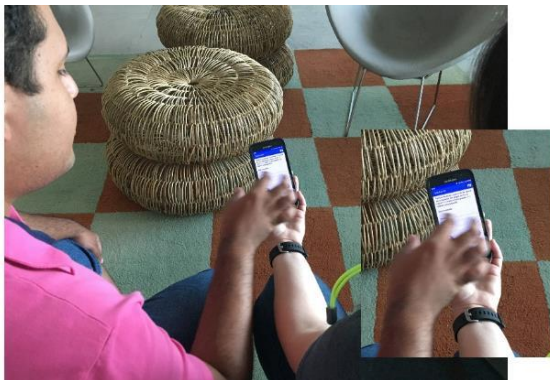
HANDS ON!

## SHARE QUESTION



1

## SELECT ANSWER



2

## “TELL ME MORE”



3

**Carrying Case**  
**Mobile Phone**  
**Microphone**  
**Earphones**  
**Backup Battery**  
**Clipboard**





# TIPS & TRICKS

- Treat the phone as a **shared object of attention**. If they want to touch the screen, they are welcome. (It will go faster if you do it).
- The style of interviewing is **qualitative interviewing**. It's a conversation. Establish, maintain rapport.
- In recording a video, it's totally fine and even advantageous to just have them looking at you. **Don't look at the phone, look at them.**
- People usually are surprised by the video recording feature, it's novel. Once they give it a go a couple of times, they are fine.
- **HAVE FUN! If you are having fun, they will have fun. Think "interview selfies!"**

After showing the demo, default to taking video.

*Ask: "Shall we take a video?"*

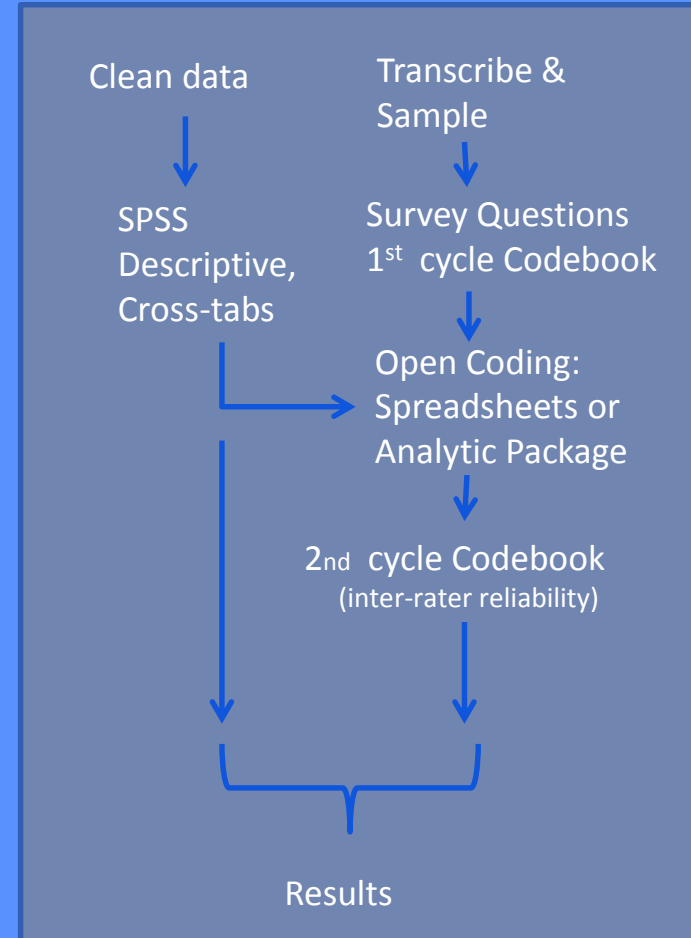
After asking if they want to review the video with the first question, don't emphasize reviewing.

*Ask: "Want to review? (no) Okay, next question then."*

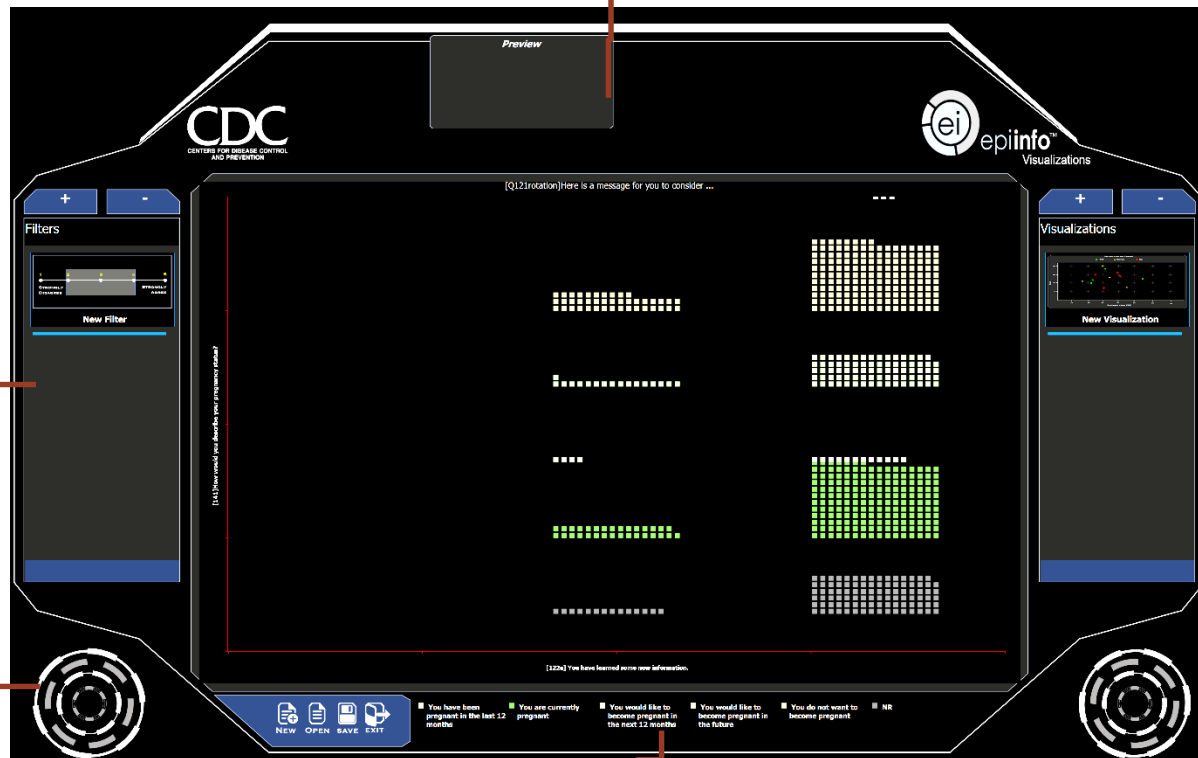
# Data Visualization



# Traditional Data Analysis



Video preview area (up to 3 screens)



Filters & vis colors selection

Datavis views & graphics to display picklist

X-axis variable selection

Y-axis variable selection

Datavis color legend



[Q121rotation]Here is a message for you to consider ...

**[141]How would you describe your pregnancy status?**

**[122a] You have learned some new information.**

[Q121rotation]Here is a message for you to consider ...

[122c]It is difficult to understand the information

*Audio/Video Response*

X

Q12

[121]What is the main idea that this message is trying to get across, in your own words?

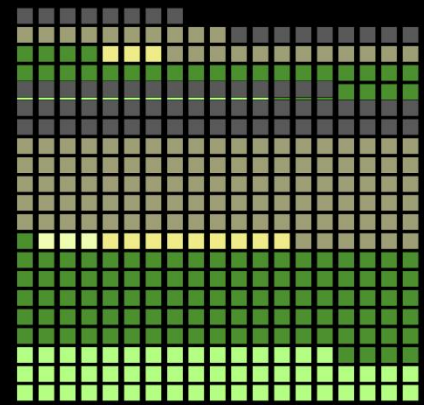
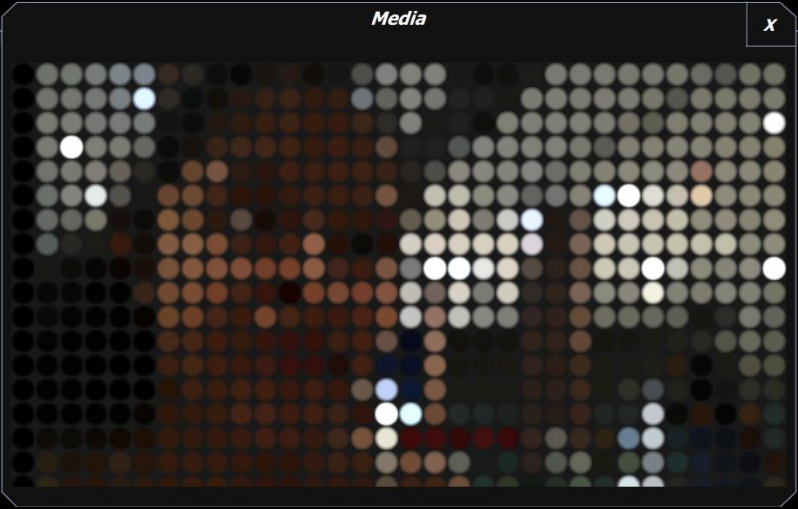
Ok

[122a] You have learned some new information.

Media

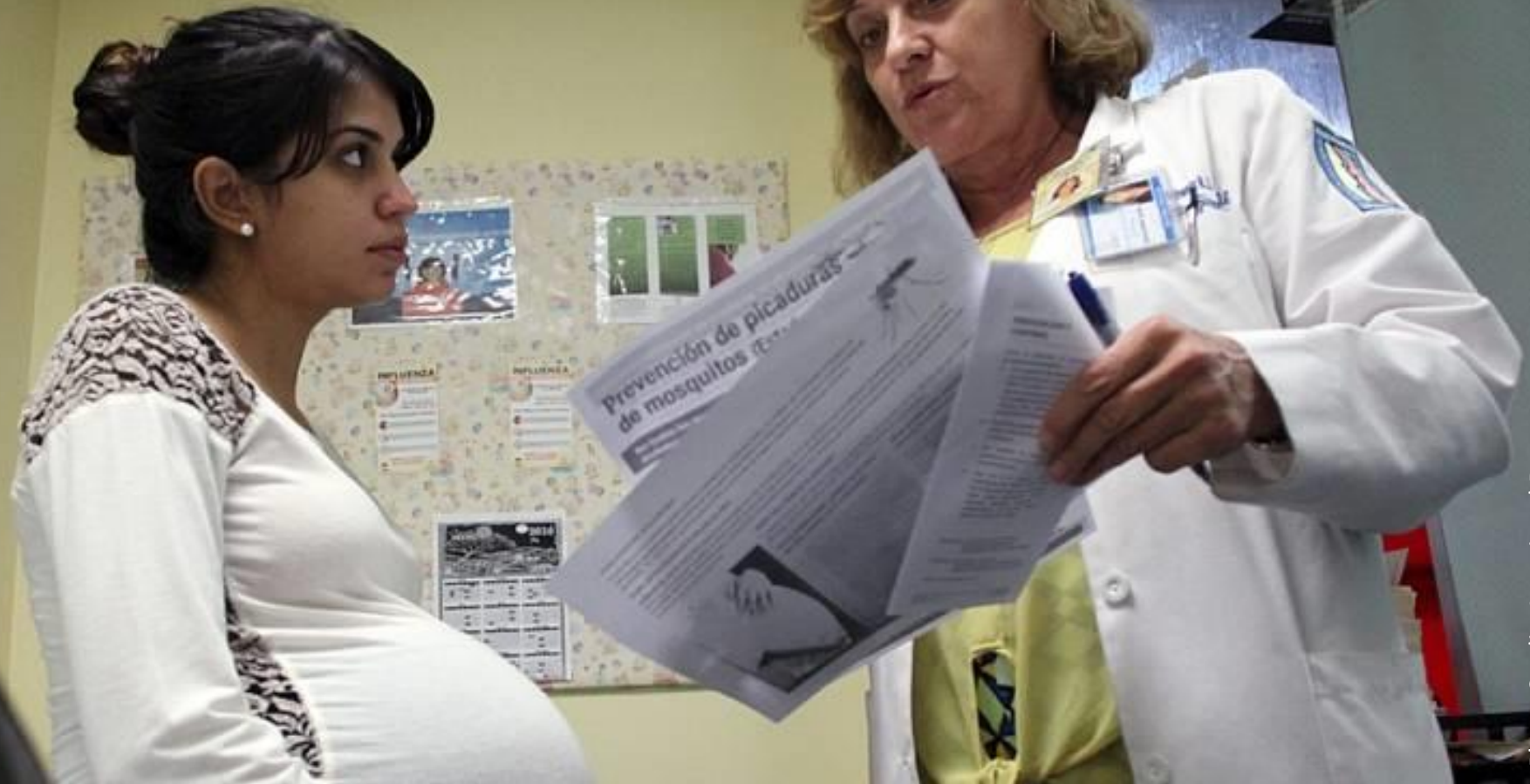
X

[122c] It is difficult to understand the information



[122a] You have learned some new information.

# Future Directions





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