Developing a Community Assessment for Public Health Emergency Response Protocol for Riley County

Mamakase Grace Sello
Master of Public Health Candidate 2021
Kansas State University

Presentation Outline

Introduction

- Public health problem

Applied Practice Experience

- APE site
- Learning objectives

Project Description

- CASPER overview
- Activities performed
- Products developed

Lessons Learned & Recommendations

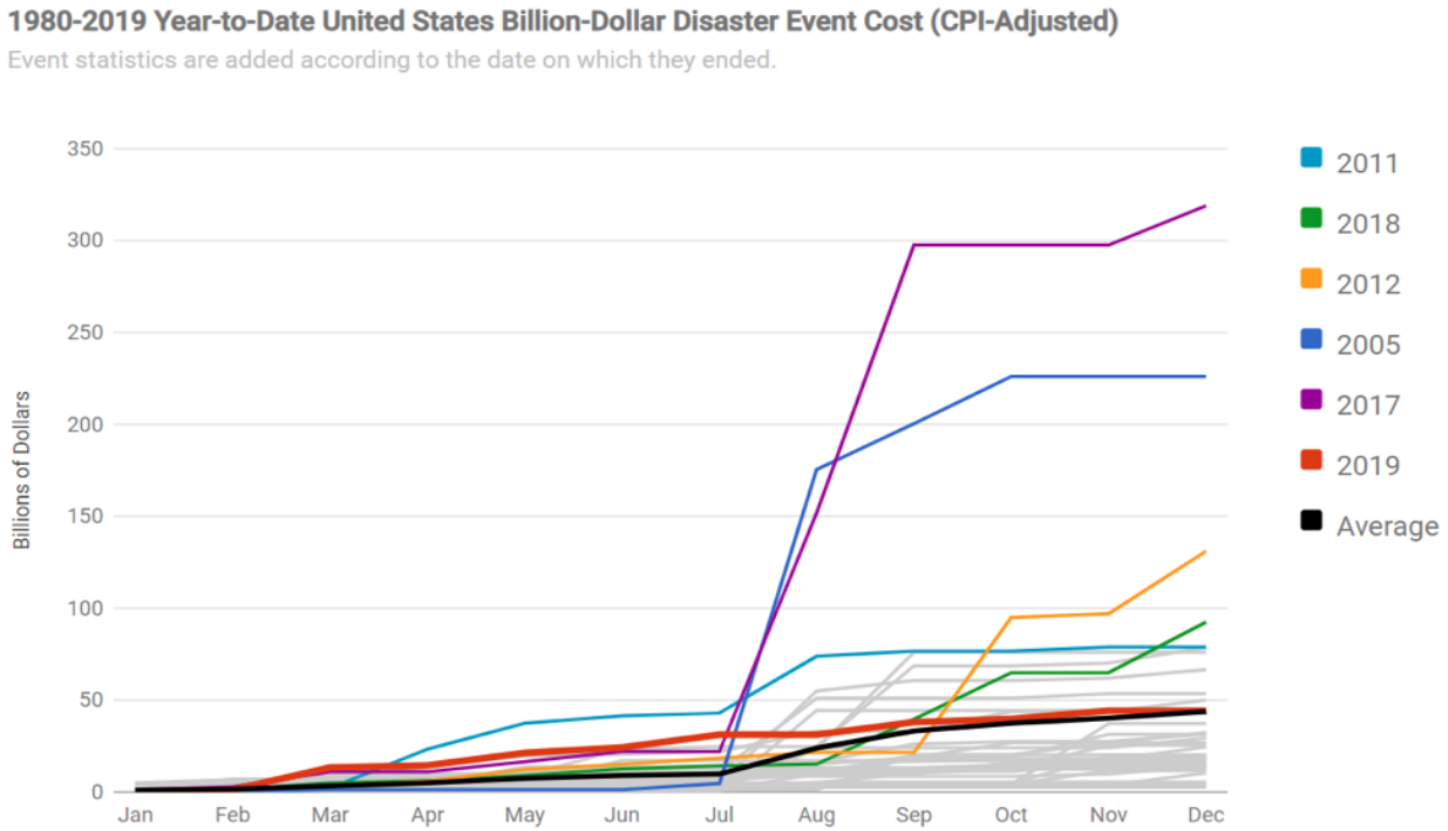
MPH Foundational Competencies

INTRODUCTION

Public Health Problem

- Disasters are a major public heath concern in USA
- No state is exempt from disaster devastation
- Responding appropriately and effectively to disasters' public health consequences requires timely access to accurate public health information
- CASPER is designed to provide public health information about communities

Cost of Disasters in USA



(Smith, 2020)

APPLIED PRACTICAL EXPERIENCE

APE Site

(RCHD, 2020)

- Riley County Health Department
- Started in June 2020
- Initially remote
- Team project
  - Master of Public Health Students
  - Preceptor –Mr. Edward Kalas

Learning Objectives

1. Creating the local process for CASPERs for use in Riley County
2. Assessing how CASPER data must be entered and cleaned to prepare for proper analysis
3. Utilizing statistical software to enter and analyze data provided
4. Applying data analysis product to develop an overall evaluation of the CASPER tool

PROJECT DESCRIPTION

CASPER Project

What is CASPER?

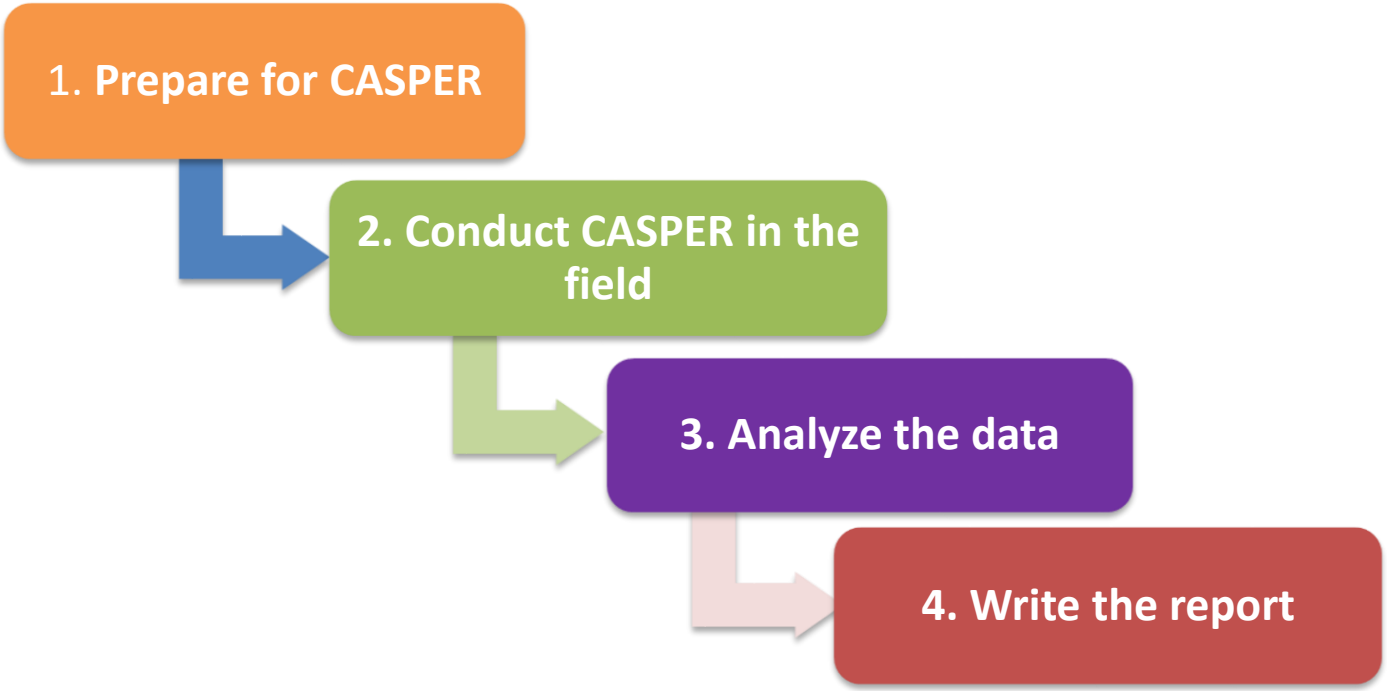
- A specific set of epidemiologic tools and methods
- It provides **rapid**, **inexpensive**, **accurate**, and **reliable** population-based public health information about communities affected by disasters

CASPER can be used in both disaster and non-disaster settings

Developing the RCHD CASPER Process

- Developing a simplified CASPER toolkit for Riley County
- Providing guidelines to assist local CASPERs

CASPER Phases



CASPER Methods

2 stage cluster sampling used to pick households to interview

- 30 clusters
- 7 interviews in each cluster

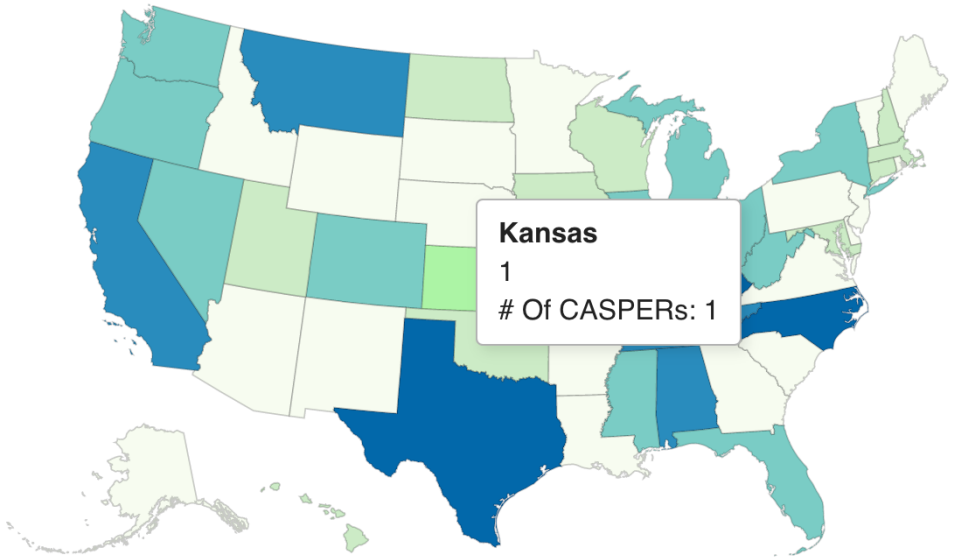
Goal – 210 interviews

- Completed in 1-2 Days
- ~10 interview teams
- (2-3 people per team)

CASPER Uses

1. Assess public health perceptions
2. Estimate needs of a community
3. Assist in planning for emergency response
4. As part of Public Health accreditation process

CASPER Interactive Map



Territories AS PR VI

Number of CASPERs (of filtered type)

Click the ranges and/or filters below to customize the map.

No CASPERs
1
2 to 5
6 to 10
11+

Filters

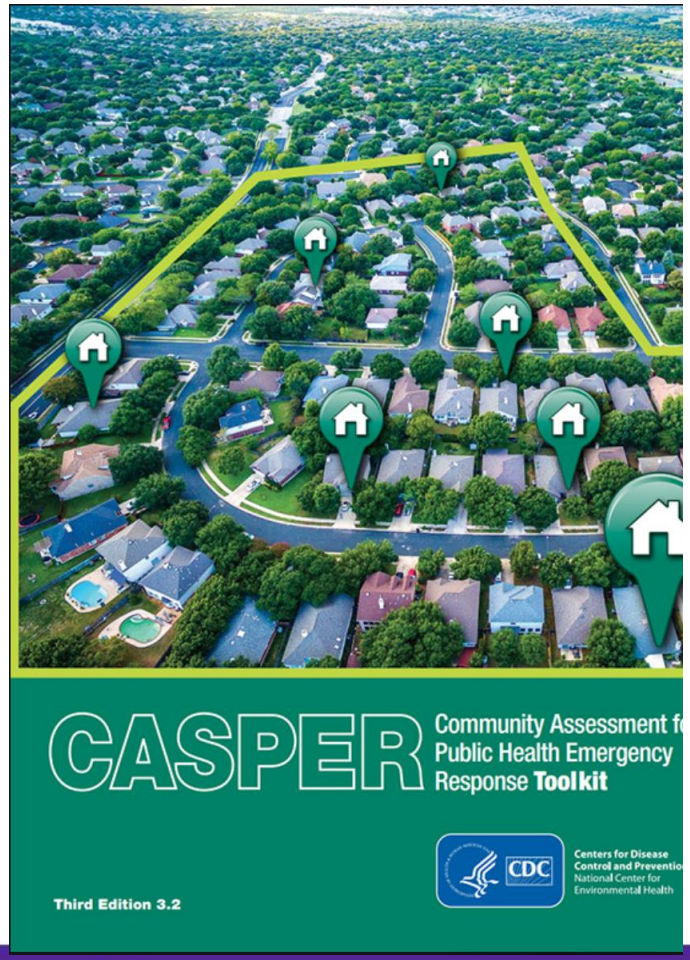
Type of CASPER

Total

Centers for Disease Control and Prevention [CDC], 2020)

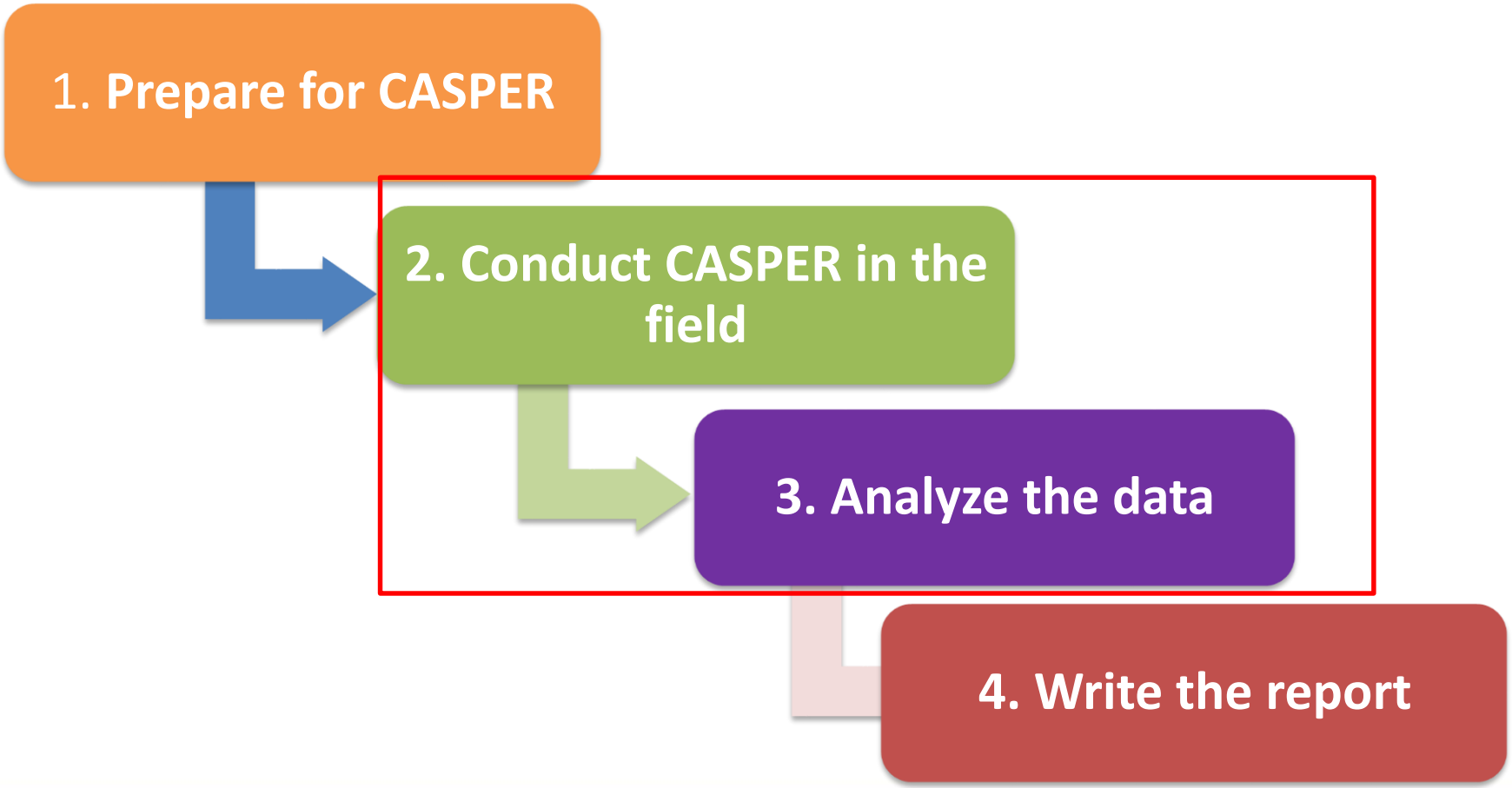
ACTIVITIES PERFORMED & PRODUCTS

Activities at the Beginning of APE



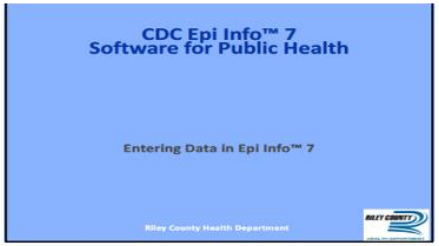
- Studied the CDC CASPER toolkit
- Brainstormed ideas that could work for Riley County
- Research and literature review
- Developed objectives for CASPER project
- Met with team to discuss project ideas

Activities During the APE

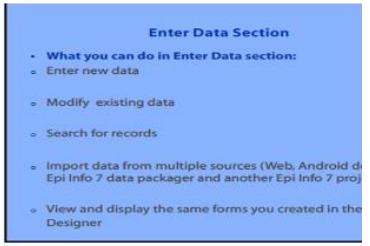


Developed Data Entry Guide Tools

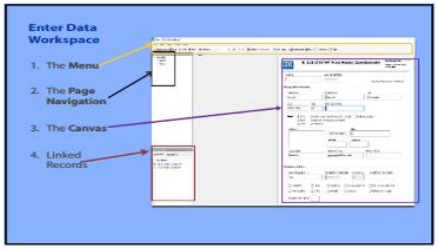
- Created Epi Info data entry training PowerPoint for the Riley CASPER process
  - Epi Info
  - How to enter data from multiple sources in Epi Info
  - Provided steps for using the "enter data" module in Epi Info
  - Updated progress in team meetings



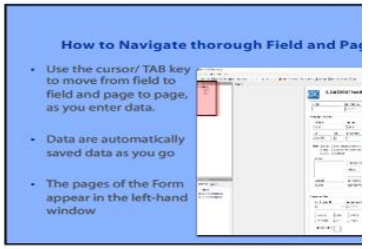
1



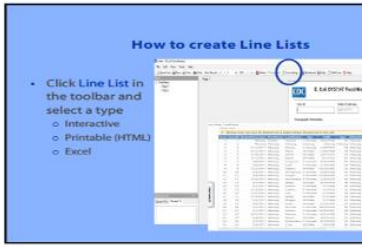
2



3

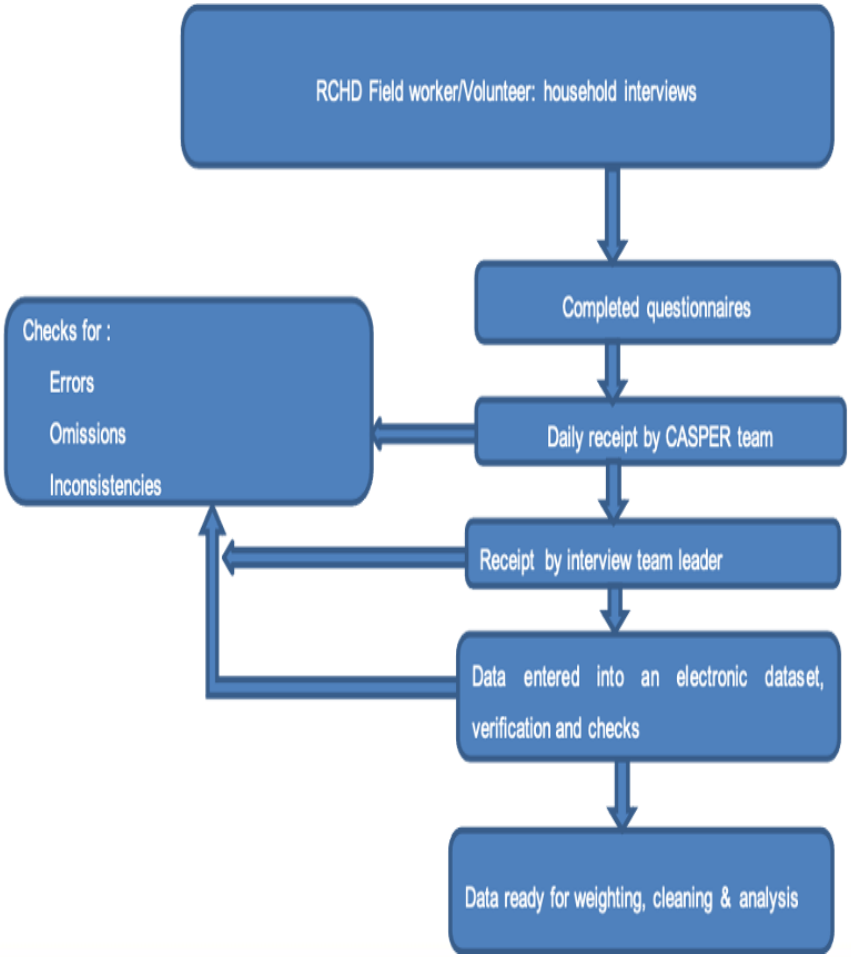


4



Developed Data Entry Guide Tools

- Created data entry flowcharts
  - Guide on data entry methods
  - How to handle data entry if a CASPER uses a paper form
  - How to handle data if a CASPER uses electronic devices

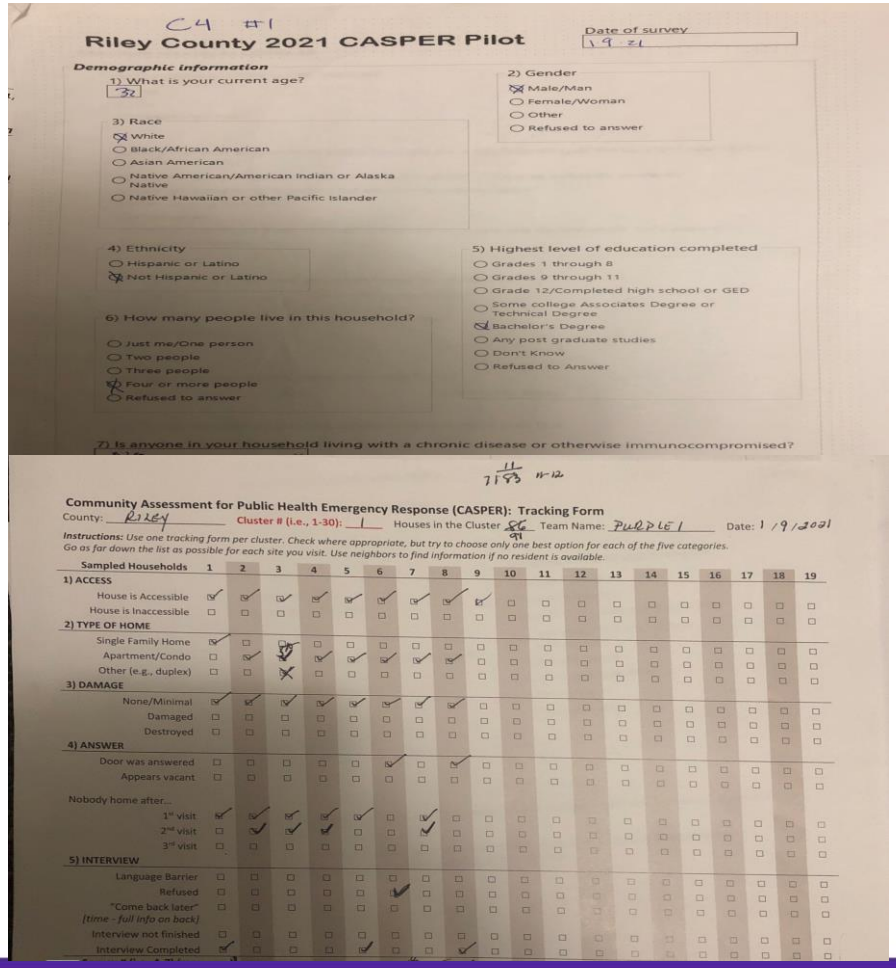


Participated in Conducting the CASPER Trial

Assist volunteers with installing mobile Epi Info

Collect data

Entered and Cleaned Data



C4 #1

Riley County 2021 CASPER Pilot

Date of survey: 1-9-21

Demographic information

1) What is your current age? 32

2) Gender
- [x] Male/Man
- [ ] Female/Woman
- [ ] Other
- [ ] Refused to answer

3) Race
- [x] White
- [ ] Black/African American
- [ ] Asian American
- [ ] Native American/American Indian or Alaska Native
- [ ] Native Hawaiian or other Pacific Islander

4) Ethnicity
- [ ] Hispanic or Latino
- [x] Not Hispanic or Latino

5) Highest level of education completed
- [ ] Grades 1 through 8
- [ ] Grades 9 through 11
- [ ] Grade 12/Completed high school or GED
- [ ] Some college Associates Degree or Technical Degree
- [x] Bachelor's Degree
- [ ] Any post graduate studies
- [ ] Don't Know
- [ ] Refused to Answer

6) How many people live in this household?
- [ ] Just me/One person
- [ ] Two people
- [ ] Three people
- [x] Four or more people
- [ ] Refused to answer

7) Is anyone in your household living with a chronic disease or otherwise immunocompromised?

11 / 7193 M-12

Community Assessment for Public Health Emergency Response (CASPER): Tracking Form

County: Riley Cluster # (i.e., 1-30): 1 Houses in the Cluster 86 / 91 Team Name: PURPLE 1 Date: 1/9/2021

Instructions: Use one tracking form per cluster. Check where appropriate, but try to choose only one best option for each of the five categories. Go as far down the list as possible for each site you visit. Use neighbors to find information if no resident is available.

Sampled Households	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1) ACCESS																			
House is Accessible	☑	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
House is Inaccessible	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
2) TYPE OF HOME																			
Single Family Home	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Apartment/Condo	☐	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other (e.g., duplex)	☐	☐	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
3) DAMAGE																			
None/Minimal	☑	☑	☑	☑	☑	☑	☑	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Damaged	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Destroyed	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
4) ANSWER																			
Door was answered	☐	☐	☐	☐	☐	☑	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Appears vacant	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Nobody home after...																			
1st visit	☑	☑	☑	☑	☑	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
2nd visit	☐	☑	☑	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
3rd visit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
5) INTERVIEW																			
Language Barrier	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Refused	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
"Come back later" [time - full info on back]	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Interview not finished	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Interview Completed	☑	☐	☐	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

- Created data sheets after collecting data from the CASPER pilot
- Entered data from CASPER pilot surveys into Epi Info
- Reviewed data to check for inconsistencies
- Worked with part of data analysis with another MPH student

EXAMPLES OF DATA THAT CAN BE OBTAINED FROM THE RCHD CASPER PROCESS

CASPER Pilot test

Tracking Dataset

	A	B	C	D	E	F	G
1		**county**	Riley county	Riley county	Riley county	Riley county	
2		**cluster**	1	6	4	8	
3		**houses in the cluster**	91	110	95	43	
4		**interviewer**	purple 1	no name	Celeste + Hether	Harding/McCall	
5		**Date of interview**	1/9/21	1/9/21	1/9/21	1/9/21	
6							
7		house accessible	9	8	17	9	
8	**no access**	house inaccessible	0	0	2	0	
9							
10							
11	**type of dwelling**	single family home	1	7	10	9	
12		apartment/condo	7	0	6	0	
13		other(duplex)	1	0	3	0	
14							
15		none or minimal	8	7	15	9	
16	**damage**	damaged	1	0	4	0	
17		destroyed					
18							
19	**answer**	door was answered	5	5	5	8	
20		Apperas vacant	0	0	2		
21		nobody home after... 1st vist	6	2	9	4	
22		2nd visit	5		7	2	
23		3rd visit			7	2	
24							
25	**interview**	language barrier	0	0	0	0	
26		refused	1	0	2	1	
27		come back later	0	0	0	0	
28		interview not finished	0	0	0	0	
29		interview completed	4	7	4	7	
30							
31	**total number of houses attempted**		15	8	19	9	

Summary of Tracking Form Analysis

Response Rates	Clusters (n=4)
Completion Rate	78.6%
Cooperation Rate	95.7%
Contact Rate	43.1%

Demographic Data

	Observations	Weighted Observations	Age M(SD)
Male	8	280	35.0(15.9)
Female	12	571	47.6(17.8)

Example of Tables of CASPER Results (*n*=19 (23678))

Covid tests #	Frequency	Weighted Frequencies	% Percent	95% CI
None	10	11587	48.9	17.6-80.9
Once	3	3778	15.9	-16.8-48.7
Twice	2	2771	11.7	-13.3-36.7
Three times	3	4534	19.1	-24.7-63.0
Refused to answer	1	1008	4.3	-8.5-17.0

Lessons Learned & Recommendations

Challenges

- Cluster analysis is almost impossible with small samples
- Required technical expertise
- Requires skills in data manipulation
- Generates very long IDs
- Missing entries

Points to consider

- ✓Analysis team should be familiar with software
- ✓Epi Info is currently compatible with Windows only
- ✓Excel, SPSS etc. can be used for analysis

Observations from the RCHD CASPER

	Advantages	Disadvantages
Paper Forms	○ Low cost ○ Requires little training ○ Does not require power source ○ Easy to fill out in field	○ Forms not protected from getting lost, or form rain ○ Requires additional materials such as clipboard, pen or pencil. ○ Could introduce errors from the manual transfer of the data from the paper form to the database ○ Labor intensive ○ Additional data entry required
Electronic Forms	○ Electronic data transfer ○ No additional data entry required after data collection ○ Less time consuming	○ Technical training required ○ Surveys need to be pre-loaded into mobile devices prior data collection ○ Units not protected from elements ○ Requires more time to fill out ○ May limit number of field teams to availability of equipment

Conclusion

CASPER is a promising tool for assessing health needs in various settings including non-disaster settings

The Riley County CASPER trial suggested that essential data about the demographics and the impact of the COVID-19 pandemic on Riley households may be collected using this methodology

COMPETENCIES

MPH Foundational Competencies

	Competency description	Activities	Products
21 **9**	Perform effectively on interprofessional teams Design a population-based policy, program, program, project, or intervention	• Worked with the CASPER team • Attended the RCHD Coalition meeting	✓ RCHD CASPER protocol (data collection, entry, and analysis section)
2	Select quantitative and qualitative data collection methods appropriate for a given public health context	• Created data entry flowcharts for paper and electronic data collection • Compared paper and electronic data collection methods	✓ Data entry flowcharts

MPH Foundational Competencies

	Competency description	Activities	Products
3	Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming, and software as appropriate	• Created data sheets • Entered data into the Epi Info • Cleaned data to prepare for analysis	✓ Epi Info data output ✓ Epi Info data entry analysis report ✓ Tracking sheet data set
19	Communicate audience-appropriate public health content, both in writing and through oral presentation	• Created the Epi Info training tools • Created flyers	✓ Epi Info data entry training PowerPoint ✓ Flyers

Thank You

- Graduate Committee:
  - Dr. Richard Rosenkranz
  - Dr. Sandra Procter
  - Dr. Sara Rosenkranz
- APE & ILE Preceptor
  - Mr. Ed Kalas
- MPH Program
  - Dr. Ellyn Mulcahy
  - Barta Stevenson
- Family and friends
- CASPER team (Ganesh Kumar, Jason Defisher, Sofia Scavone, Amanda Todavchick) & Volunteers

References

- Adam. Smith. (2020).“2010-2019: A Landmark Decade of U.S. Billion-Dollar Weather and Climate Disasters: NOAA Climate.gov.” *2010-2019: A Landmark Decade of U.S. Billion-Dollar Weather and Climate Disasters | NOAA Climate.gov*. Available at:www.climate.gov/news-features/blogs/beyond-data/2010-2019-landmark-decade-us-billion-dollar-weather-andclimate#:~:text=Number%20of%20events&text=The%20most%20recent%20years%20of,year%20(1980%2D2019). Accessed on January 23, 2021.
- CASPER TOOLKIT. (2012). Community Assessment for Public Health Emergency Response (CASPER) Toolkit: Second edition. Atlanta (GA): CDC. Available at http://www.bt.cdc.gov/disasters/surveillance/pdf/CASPER_toolkit_508%20COMPLIANT. Pdf. Accessed August 16, 2020.
- Centers for Disease Control and Prevention [CDC].(2020). Available at: https://www.cdc.gov/nceh/casper/overview.htm
- Centers for Disease Control and Prevention. Interactive map of CASPERs. Available at: https://www.cdc.gov/nceh/hsb/disaster/casper/casper_map.htm. Accessed March 10, 2021.
- National Research Council. (1991). *A safer future: Reducing the impacts of natural disasters*. National Academies Press.

QUESTIONS?