Dawson County Community Assessment for Public Health Emergency Response (CASPER)

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Career Epidemiology Field Officer Program

Overview of CASPER

- Model used to quickly assess community needs following a disaster
- Designed to be efficiently and rapidly deployed
- Health status and basic community needs determined
- Requires minimal resources
- Sampling method allows extrapolation to whole population of the defined area

What a CASPER is NOT

- NOT intended to deliver food, medicine, medical services or other resources to the affected area
- NOT intended to provide direct services to residents such as cleanup or home repair

Assessment Timeline

- May be initiated hours, days or months after a disaster
- Aim: Concept to completion in 72 hours
- Initiation and implementation times are flexible to suit scenario

CASPER Organization

- **Leadership**
  - Local coordination
  - Logistics
  - Data management

- **Teams**
  - 2 person
  - Volunteers or deployable force
  - 10–15 teams

Assessment Steps

1. Define geographic area
2. Determine sampling method
3. Select instrument(s)
4. Train field personnel
5. Conduct assessment
6. Analyze data
7. Report results

SAMPLING

Sampling

- CASPER uses two-stage cluster design
- Based on World Health Organization epidemiology technique for estimating vaccine coverage from small pox eradication
- 30 clusters x 7 households (n = 210 household interviews)
- Population needs can be estimated from sample
- Estimates are usually within 10 percent

First Stage: Select Clusters

- Random, weighted selection of 30 census blocks with $\geqslant 7$ housing units in defined area
- GIS used to complete

Dawson County

- **Census blocks = 1,087**
  - 487 blocks with 0 housing units
  - 361 blocks with 1–6 housing units
  - 239 blocks with ≥7 housing units

- Census blocks grouped to create blocks with ≥7 **housing units**

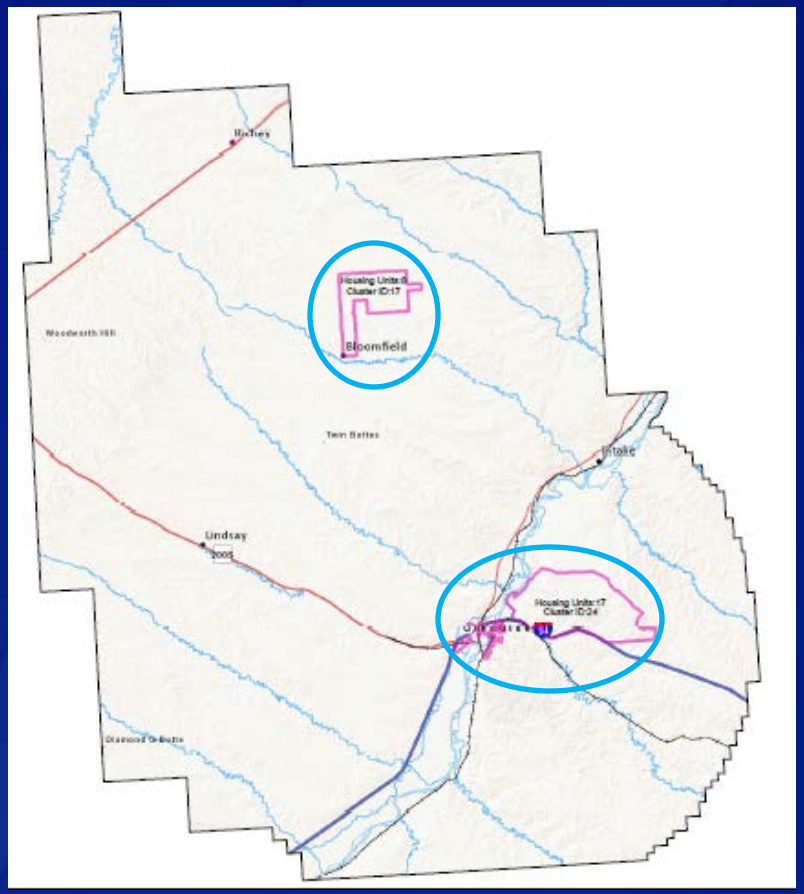
Census Block Grouping

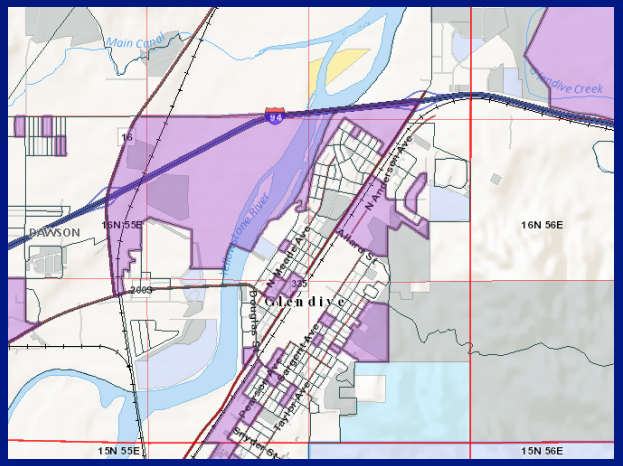
- Merged sampling area = 327
- Random weighted selection of 30 blocks from the merged areas

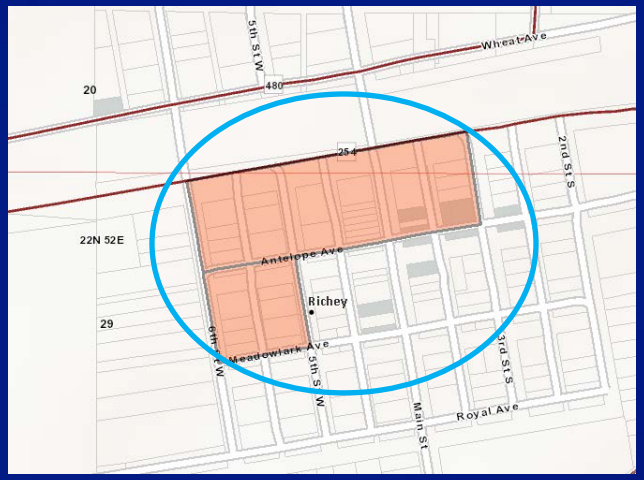
Selected Clusters (n=30)

- 531 HUs
- 26 clusters in Glendive
- 2 clusters in Richey
- 2 remote clusters
- 18 (60%) clusters <14 HUs

Dawson County with Randomly Selected Blocks







Second Stage: Select Households

- Households selected by teams in field
- Goal complete 7 household interviews in each cluster
- Sequential sampling
- Consistency is key to reduce bias

Example Cluster Map

Cluster 1

9 Housing Units

Cluster 1

9 Housing Units

SURVEY

Survey

- Developed by Dawson County Public Health Department
  - 31 questions
  - Closed-ended
- Question types
  - Emergency preparedness
  - Medical conditions
  - Oil and gas impacts

Data Collection

- Tuesday October 15 from 1 pm–6 pm
- Wednesday October 16 from 10 am–5 pm

RESULTS

Exercise Overview

- **1.5 hour just-in-time training**
  - Overview of CASPER
  - Household selection and tracking
  - Interview techniques
  - Safety briefing
  - HIPPA training
  - Team evaluation
- **Two days of field activities**

Teams

- **Tuesday — 25 clusters visited**
  - 12 two-person teams
- **Wednesday — 5 clusters visited**
  - 3 two-person teams

CASPER Response Rates

- **Completion rate = 43.8%**
  - How close to goal of 210 completed interviews
- **Cooperation rate = 64.3%**
  - Proportion of households at which contact was **made** and the household agreed to complete an interview
- **Contact rate = 24.5%**
  - Proportion of all households at which contact was **attempted** and the household successfully completed an interview

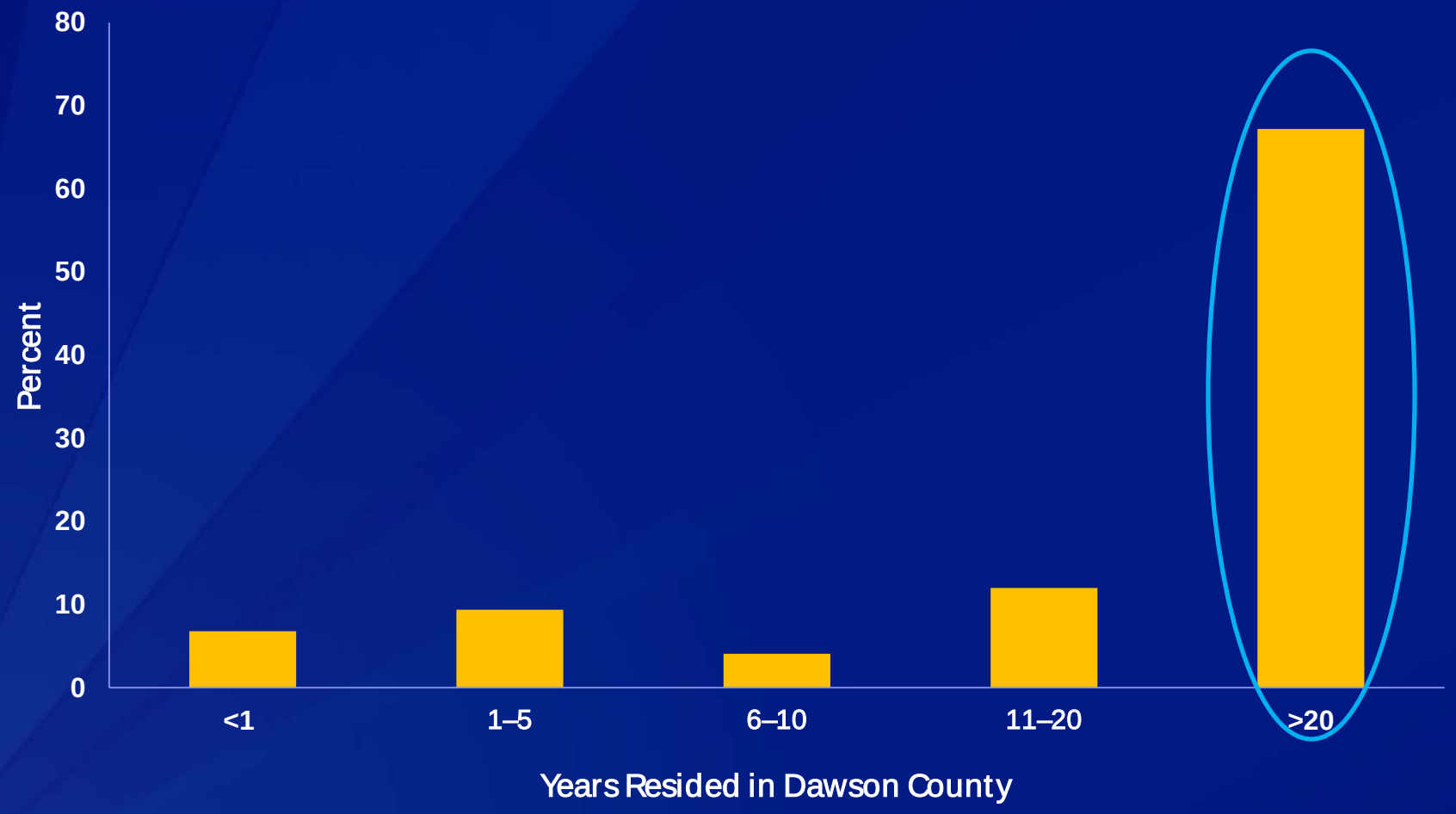
Weighted Data

- 80% completion rate needed
- Relatively low completion rates (43.8%)
  - Weighted estimates might not yield valid population estimates
  - Estimates can still be used by the county

Demographics

- 28% persons ≥65 years of age
- 50% male
- Average 2.3 persons per household
- Type of housing structure
  - Single family = 88%
  - Multiple unit = 9%
  - RV = 2%
  - Mobile home = 1%
- 86% own housing structure
- 77% resided with family

Years Resided in Dawson County



Mandatory Evacuation

- 88% would evacuate
- 79% would go to a friends, other family members home, or a second home
- Main reasons for not evacuating
  - Inconvenient = 18%
  - Personal safety concerns = 18%
  - Concern about property = 16%
  - Animals = 15%

Animals

- 57% have animals
- 90% would take animals with them during an evacuation

Main Source of Information

Services

Characteristic	% of Surveyed Households (n=92)	% of Projected Households (n=4,233)
Public water	82	85
Private well	18	15
Public sewer	87	87
Septic tank	13	14
Land line	78	76
Cell phone	94	94
Garbage collection	93	91
Propane/natural gas	84	86
Electric	17	14

Emergency Plans

	% of Surveyed Households (n=92)	% of Projected Households (n=4,233)
Emergency communication plan	58	54
Designated meeting place within neighborhood	35	37
Designated meeting place outside neighborhood	22	24
Copies of important documents	82	80
Multiple evacuation routes	67	66
3-day supply water	62	61
3-day supply food	92	92
7-day supply medications	85	87

Medical

	% of Surveyed Households (n=92)	% of Projected Households (n=4,233)
Current tetanus shot	60	53
Heart disease/high blood pressure	41	40
Diabetes	21	21
Chronic pain	16	17
Asthma/COPD/Emphysema	13	13
Neurological disorder	7	6
Pregnant	4	3
Cancer requiring chemotherapy	1	1

Factors that Have Changed in Dawson County over the last Year*

Increased

- Cost of food (88%)
- Traffic (88%)
- Housing costs (84%)
- Criminal activity (81%)
- Employment opportunities (66%)
- # students at school (55%)

Decreased

- Housing availability (77%)

*Limited to persons residing in Dawson County >1 year and unweighted data

Volunteer Evaluation of Process

- 77% completed evaluation
- All saw value in the CASPER
- Concerns expressed:
  - Time of day of exercise
  - Length of introduction and consent form
  - Difficulty finding HUs in remote clusters
  - Lack of community awareness of CASPER

Limitations

- Low completion rates
- Response rate might have been influenced by door-to-door contractors after hail storm July 8th
- Non-disaster
- Time of day for surveys
- Census blocks with only 7 HUs
- Volunteer vs. deployable workforce

Conclusions

- Successful CASPER conducted in Dawson County
- Demonstrated utility in Montana
- Collaborations between local, state, and federal partners
- Successful recruitment and use of volunteers
- Volunteers saw value
- Knowledge increased about population of Dawson County
- Can be used for public health accreditation purposes

Lessons Learned

- **Adaptations needed for frontier area**
  - Increase HUs in each cluster to at least 14
  - Use 20 clusters x 7 households (n = 140 household interviews)
- **CASPERs as exercises or community health assessments**
  - Volunteer management
  - Time of year and day
- **Introduction and consent form length**
- **Survey questions for frontier area**
- **Understanding media preference important**

Recommendations

- Continue to recruit and use volunteers periodically
- Continue to engage partners
- Use the results to target public health activities
- Maintain randomized census tract maps for each county
- Use lessons learn and practice again
- Change two-stage sampling to 20 clusters and 7 HUs
- Include additional DPHHS personnel

CASPER — Community Health Assessment

- Used by other states to complete a community health assessment
- Improves generalizability compared to focus groups or convenience samples
- More cost effective than telephone interviews
- Can fulfill requirement for accreditation process

Limitations of CASPER as a Community Health Assessment

- **Results represent number of households not individuals**
  - Most health care concerns likely similar for all household members
  - Household information useful for public health planning
- **Not ideal for estimating low-prevalence diseases or conditions**
  - Construct questions on grouped conditions or broad health care needs
  - Complement CASPER data with other surveillance or registry data for low-prevalence conditions

Thank you!

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Consent Script

Community Assessment for Public Health Emergency Response (CASPER)
Dawson County, MT

Good afternoon, my name is _____ and this is _____ with the Dawson County Health Department. We have some information we would like to leave with you related to disaster preparedness and volunteer registry for your household.

Also, we are talking to residents in Dawson County about how prepared they are for a disaster or emergency, how communication messages are received, and to assess any impacts of the recent changes in Dawson County. This is so we can get a better idea of how we can warn households and assist them during these events. Your house is one of many that have been randomly chosen to be in this survey. If you agree to participate, we will ask you some general questions about how your household prepares for a disaster or emergency and how your household is likely to receive information during an emergency. The survey should take approximately 10 minutes to complete. Your answers will be kept private, and you can refuse to take part in the survey or refuse to answer any of the questions. Nothing will happen to you or your household if you choose not to take part in the survey. You can also stop the survey at any point during the interview.

You may have questions about this survey. If so, you can ask anyone here right now or call the Dawson County Health Department at **(406) 377-5213** at any time. If you would like to confirm that we were sent by the Dawson County Health Department, you can call **(406) 377-5213** during business hours.

Are you willing to participate in this survey?

*[WAIT FOR RESPONDENT TO CLEARLY ANSWER **YES** OR **NO**].*

Are you a resident of this household?

Are you at least 18 years or older?

*[CONDUCT INTERVIEW IF RESPONDENT ANSWERED **YES** TO ALL THREE QUESTIONS].*

[IF NOT, THANK THEM FOR THEIR TIME] Thank you very much for your time.

Date:	Cluster:	No.HUs in Cluster:	Survey No.:	Interviewer Initial:

1. Type of structure

[ ] Single family [ ] Multiple unit [ ] RV
[ ] Mobile Home [ ] Other:_____

2. Do you: [ ] Own [ ] Rent [ ] DK [ ] Refused

3. How many people live in your household? _____

4. How many people living in your household are (list number)

Less than 2 years_____ 2–17 years _____
18–64 years _____ More than 65 years_____
[ ] Refused

5. How many people living in your household are

Male _____ Female_____ [ ] Refused

6. What is the relationship between individuals living at this address? (Check all that apply)

[ ] Family [ ] Renting a room, not housing unit
[ ]Friends [ ] Roommates
[ ] Other:_____ [ ] Refused

7. How long have you lived in Dawson County?

[ ] Less than 1 year [ ] 11–20 years
[ ] 1–5 years [ ] 20+ years
[ ] 6–10 years [ ] Refused

8. Do you have any of the following services in your home?

Public water [ ] Yes [ ] No [ ] NH [ ] DK [ ] Refused
Private well [ ] Yes [ ] No [ ] NH [ ] DK [ ] Refused
Public sewer [ ] Yes [ ] No [ ] NH [ ] DK [ ] Refused
Septic Tank [ ] Yes [ ] No [ ] NH [ ] DK [ ] Refused
Land line [ ] Yes [ ] No [ ] NH [ ] DK [ ] Refused
Cell Phone [ ] Yes [ ] No [ ] NH [ ] DK [ ] Refused
Garbage collection [ ] Yes [ ] No [ ] NH [ ] DK [ ] Refused

9. What is the current source of heat in your home?

[ ] No heat [ ] Electric
[ ] Propane/Natural gas [ ] Wood
[ ] Coal/charcoal [ ] Space heaters
[ ] Other_____
[ ] DK [ ] Refused

12. Has your household prepared a first aid kit with emergency supplies to take with you if you had to leave quickly?

[ ] Yes [ ] No [ ] DK [ ] Refused

13. Does your household have a three day supply of adequate drinking water (besides tap)? Typically one gallon per person per day is needed.

[ ] Yes [ ] No [ ] DK [ ] Refused

14. Does your household have a three day supply of adequate non-perishable foods (e.g., protein bars, nuts)?

[ ] Yes [ ] No [ ] DK [ ] Refused

15. Does your household currently have a 7-day supply of medication for each person who takes prescribed meds?

[ ] Yes [ ] No [ ] No prescriptions [ ] DK [ ] Refused

16. If public authorities announced a mandatory evacuation from your community due to a large-scale disaster or emergency, would your household evacuate?

[ ] Yes [ ] No [ ] DK [ ] Refused

17. If your household had to evacuate due to a large-scale disaster or emergency, where would you go?

[ ] Friends/family/2nd home outside your area
[ ] Hotel or motel
[ ] American Red Cross, church or community shelter
[ ] Would not evacuate
[ ] Other _____
[ ] DK [ ] Refused

18. What would be the main reason that might prevent you from evacuating if asked to do so? (Check all that apply)

[ ] Lack of transportation
[ ] Concern about leaving property
[ ] Nowhere to go
[ ] Concern about personal safety
[ ] Concern about leaving pets
[ ] Concern about traffic jams
[ ] Inconvenient
[ ] Lack of trust in authorities
[ ] Other _____
[ ] DK [ ] Refused

10. Does your household have any of the following emergency plans?

Emergency communication plan such as a list of numbers [ ] Yes [ ] No [ ] DK [ ] Refused
Designated meeting place immediately outside your home, or close by in your neighborhood [ ] Yes [ ] No [ ] DK [ ] Refused
Designated meeting place outside of your neighborhood in case you cannot return home [ ] Yes [ ] No [ ] DK [ ] Refused
Copies of important documents in a safe location (water proof container) [ ] Yes [ ] No [ ] DK [ ] Refused
Multiple routes away from your home in case evacuation is necessary [ ] Yes [ ] No [ ] DK [ ] Refused

11. Has your household prepared an emergency supply kit with supplies like water, food, flashlights, and extra batteries that is kept in a designated place in your home?

[ ] Yes [ ] No [ ] DK [ ] Refused

19. Do you feel your home is currently physically safe to live in?

[ ] Yes [ ] No [ ] DK [ ] Refused

19a. If NO, why not?

[ ] Structural hazards [ ] Air quality [ ] Other:_____
[ ] Sewer/plumbing problems [ ] Mold

20. Do you have any animals? [ ] Yes [ ] No [ ] Refused

20a. (IF YES) In an emergency if your household was asked to evacuate, what would you do with your animals?

[ ] Take it/them with you
[ ] Find a safe place for it/them
[ ] Leave it behind with food and water
[ ] Would not evacuate because of pets
[ ] DK [ ] Refused

21. What type of transportation capabilities do you have? (check all that apply)

[ ] Own personal vehicle
[ ] Use company vehicle
[ ] Community bus
[ ] Walking
[ ] Bicycle
[ ] Family/friends provide transportation
[ ] I do not have any transportation means
[ ] Other _____
[ ] DK [ ] Refused

22. Do any of the following affect your ability to travel? (check all that apply)

[ ] Traffic is too heavy
[ ] Too much truck traffic
[ ] Do not own a vehicle
[ ] Do not currently have a driver's license
[ ] There are few areas where a bicycle can be ridden safely or effectively
[ ] Unable to leave home due to limited mobility
[ ] Roads are in bad shape
[ ] There are places without sidewalks
[ ] Other _____
[ ] DK [ ] Refused

23. What is your households main source of information regarding disaster or emergency events? (check only one)

[ ] TV
[ ] Radio
[ ] Text Message
[ ] Neighbor/word of mouth
[ ] Facebook
[ ] Flyer/poster
[ ] Newspaper
[ ] Twitter
[ ] Internet search (Website:_____)
[ ] Other _____
[ ] DK [ ] Refused

24. Does your household have insurance to cover disaster clean-up and/or repair?

[ ] Yes [ ] No [ ] DK [ ] Refused

25. Has everyone in your household had a tetanus shot (Td/Tdap/Dtap) in the past 10 years?

[ ] Yes [ ] No [ ] DK [ ] Refused

26. Is there anyone in your household who is pregnant?

[ ] Yes [ ] No [ ] DK [ ] Refused

27. Have you or anyone in your household been diagnosed with any of the following medical conditions? (Check all that apply)

[ ] Asthma/COPD/Emphysema
[ ] Heart disease/high blood pressure
[ ] Kidney failure/dialysis
[ ] Diabetes
[ ] Antibiotic resistant infection
[ ] Neurological disorder
[ ] Chronic pain
[ ] Cancer currently requiring chemotherapy
[ ] Other _____
[ ] I don't have any medical conditions
[ ] DK [ ] Refused

27a. (IF YES) Do you or does any member of your household need daily medications?

[ ] Yes [ ] No [ ] DK [ ] Refused

27b. (IF YES) Do you or does any member of your household need medical equipment that is dependent upon electrical power?

[ ] Yes [ ] No [ ] DK [ ] Refused

28. Which of the following factors do you believe is having impact on you or your household in Dawson County? (check all that apply)

[ ] Increased traffic
[ ] Cost increase in housing
[ ] Cost increase in food
[ ] Underemployment
[ ] Increase students at school
[ ] Unemployment
[ ] Lack of available housing
[ ] Lack of available childcare
[ ] Lack of personal safety
[ ] Unable to get an appointment at the local clinic
[ ] Lack of health, dental, or vision insurance
[ ] Other_____
[ ] None of these factors
[ ] DK [ ] Refused

29. What environmental issues do you believe Dawson County is currently facing? (Check all that apply)

[ ] Increase in litter
[ ] Increase in air pollution
[ ] Increase in noise pollution
[ ] Threats to agricultural land
[ ] Improper sewage disposal
[ ] Drought
[ ] Improper use of pesticides and herbicides
[ ] Increase in water demands for the community
[ ] Impact of fracking on water supply
[ ] Increase demand on food sources
[ ] Increase in number of septic systems installed in area
[ ] Other _____
[ ] None
[ ] DK [ ] Refused

30. True or False, the environmental changes in Dawson County have had an impact on you and your family.

[ ] True [ ] False [ ] DK [ ] Refused

31. Do you or does anyone in your household perceive an increase in criminal activity in Dawson County last year?

[ ] Yes [ ] No [ ] DK [ ] Refused