What is the current narrative of rural Oklahoma as told by the media?

Results
- Relevancy: 53.6% (n=163)
- Tone
  - Positive: 87 (53.4%)
  - Negative: 42 (25.8%)
  - Neutral: 34 (20.9%)
- Year
  - 2017: 7 (2.3%)
  - 2018: 25 (8.2%)
  - 2019: 53 (17.4%)
  - 2020: 82 (27.0%)
  - 2021: 81 (26.6%)
  - 2022: 56 (18.4%)

Methods
- Factiva database
- 5-year period
- 304 articles
- Two coders, 9 variables
- Three factual
  - Date, Headline & Locality of publishing
- Cohen’s Kappa measured level of agreement
- Analysis included frequencies, descriptive, Chi-squared

Conclusions & Recommendations
- Database does not pull relevant information
- Political and financial goings on were more frequently reported on
- Individual political leadership is most frequently mentioned
- Natural capital is not a concern for media
- Non-formal group leadership is underreported by media
- Media frames stories positively more often than negatively
- Future researchers should specifically examine the capitals and their tone
- Refining search terms for accuracy and precision is essential

What are the leadership narratives of a rural Oklahoma community?

Results
- Theme 1: What leadership is needed
  - Generational changes
  - Contradictory views of Community Involvement
  - Internalized narrative of their community
- Theme 2: What Leadership Looks Like
  - Shared Purpose
  - Leader Attributes
  - Leader Behaviors

Methods
- 10 Semi-structured interviews
- Rural community members
- Pseudonyms were assigned
- In vivo coding
- Conceptual framework: Community Capitals & Adaptive leadership

Conclusions & Recommendations
- Most of the community leadership needs can be identified as adaptative challenges,
- Changes associated with community culture and values
- Shared leadership organically occurs in the community
  - Weight of influence and responsibility is not on one person or small group
- Many leaders in the community exhibit adaptive leader behaviors,
  - Seeing the big picture of community challenges
  - Bringing a variety of perspectives to the table, and
  - Managing distress during the change process
- Social and cultural community capitals are essential for effective leadership
- Community groups shared a similar vision for the community
  - Paths to achieving the community vision differed
- OSU Extension can work with community members to better understand the existing leadership in their communities and promote their leadership
- When tackling community challenges, begin to look at the cultural and social aspects to craft a long-term solution, rather than technical, short-term fixes
Abstract
• Rural communities in the US have been seeking sustainable alternatives to their power and energy consumption.
• During Summer 2022, surveys were done in Tillman County and Kiowa County, OK to assess electrical loading of various agricultural businesses.
• Electrical meter data was collected to develop a load model for analyzing different temporal environmental factors and trends.
• This comprehensive data can be used to analyze agricultural load profile patterns and potentially explore optimum integration of renewable energy resources to supply them.

Data Collection
• In-person electrical surveys took place at different agricultural sites such as cattle ranches, cotton gins, grain elevators, feed mills, and center pivot irrigation.
• Data collection took place in Southwest Oklahoma during June and July 2022. Each survey took approximately 3-4 hours and recorded the following:
  - Business type and description
  - Utility data from electrical meter(s) on the property
  - Inventory of major electrical users (loads)
    - Motors, HVAC, Pumps, Lighting, et cetera
  - Operating time schedule

Data Analysis
• Center pivots play a direct role in the irrigation of crops hence its electrical load has some meteorological dependencies like rainfall and temperature.
• Center pivots are operated to their maximum capacity during the planting season.
• Grain and cotton elevators process the crops for storage, so their electrical load is directly related to the harvest season. So, there is a temporal component, associated with their load compared to center pivots.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Pearson Correlation Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours</td>
<td>-0.005</td>
</tr>
<tr>
<td>Days</td>
<td>0.058</td>
</tr>
</tbody>
</table>

Conclusion
• From the analysis, the agricultural loads have temporal dependencies along with some meteorological dependencies like temperature, rainfall, seasons, humidity and irradiation.
• Based on these uncertainties, deterministic forecasting is not an accurate option for agricultural load modeling. A probabilistic model should be developed for a more accurate load model.
• All these factors somehow needs to be accounted for while doing load modelling.
Evaluating Private Well Water Quality in Southwestern Oklahoma

Rayna Ellison¹, Kevin Wagner², and Tyson E. Ochsner³

1. Rural Scholar, Environmental Science Undergraduate
2. Director of the Oklahoma Water Resources Center
3. Professor of Plant and Soil Sciences

Introduction:
- Many rural residents depend on private wells for drinking water.
- The number of private water wells in Oklahoma is estimated at >145,000 (Weaver et al., 2017).
- Water quality for private drinking water wells is not monitored unless by the owner.
- However, few well water quality programs available (Ellison, Bode, & Guy, 2022).
- The objective is to better understand water quality of private wells in Southwest Oklahoma and to inform rural citizens of their water quality.

Methods:
1. Work with OSU county extension offices to identify rural residents with private wells interested in water quality testing.
2. Develop flier, press release, and sampling instruction page for each county.
3. Send media to the educators to distribute to their community.
4. Screen well water samples for nitrates, E. Coli, pH, electrical conductivity, and total dissolved and compare the results to the EPA water standards.
5. Present results and explanation over the parameters screened.

Results:

Table 1. County Averaged Results

<table>
<thead>
<tr>
<th>County</th>
<th># of Samples</th>
<th>Bacteria % positive</th>
<th>E. Coli % positive</th>
<th>Nitrate mg/L</th>
<th>pH</th>
<th>TDS mg/L</th>
<th>Salinity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greer County</td>
<td>18</td>
<td>44%</td>
<td>6%</td>
<td>10</td>
<td>6.5-8.5</td>
<td>1691</td>
<td>1331</td>
</tr>
<tr>
<td>Tillman County</td>
<td>12</td>
<td>83%</td>
<td>25%</td>
<td>1.2</td>
<td>7.5</td>
<td>1735</td>
<td>1228</td>
</tr>
<tr>
<td>Harmon County</td>
<td>21</td>
<td>67%</td>
<td>24%</td>
<td>2.8</td>
<td>7.1</td>
<td>2483</td>
<td>1747</td>
</tr>
</tbody>
</table>

Figure 2. Histogram of pH values for water samples from private wells in southwest OK. All samples were within the EPA standards.

Figure 3. Histogram of nitrate concentrations for water samples from private wells in southwest OK. All samples were below the EPA maximum contaminant level of 10 mg/L.

Figure 4. Histogram of total dissolved solids (TDS) concentration for water samples from private wells in southwest OK. Many samples had high TDS levels indicating poor quality or potential hazard for drinking.

Figure 5. Presenting water quality results and recommendations to well owners in Harmon County.

Acknowledgements:
I would like to thank the Greer, Harmon and Tillman Extension staff and residents for their support and participation in my research. As well as a special thanks to the Rural Renewal Initiative, Dr. Kevin Wagner, and the Oklahoma Water Resources Center for providing me with supplies and encouragement for my research.

Discussion:
- Although public water supplies in southwest OK with nitrate concentrations >10 mg/L, all samples from private wells had nitrate concentrations below that threshold and an acceptable pH range 6.5 - 8.5.
- Total Dissolved Solids (<500) were considered which had a small proportion of samples in the satisfactory range this was not too concerning except for samples in the potential hazard zone as it is not considered a primary pollutant.
- The presence of total coliform bacteria (>60% of samples) and E. coli bacteria (>17% of samples) is concerning and requires further investigation.
- The next steps of this project would be to conduct sampling over the factors enabling bacteria in the water samples. This would be to determine where the bacteria contamination begin to better understand and help citizens reduce contamination.
Rural Youth Photovoice: Civic Engagement

INTRODUCTION

- What is photovoice?
  - A process that aims to use photographic images taken by people to enhance community needs assessments, empower participants, and induce change.
- Sometimes, youth fail to know how policies are developed, laws are enacted, and decisions are made in their communities, leading youth to not feel connected or involved.
- Create youth who are passionate leaders in their communities through a developed understanding of areas to create change and the steps necessary to do so.

RESEARCH QUESTION

How do youth perceive their communities?

METHODOLOGY

This study followed the photovoice methodology. This included:

- Two workshops on photography and local civics and government.
- Four photo prompts to identify parts of their communities.
- A focus group discussion on the photos taken.

This study took place for 10 weeks in the summer of 2022, in three counties in rural southwest Oklahoma. These counties were Harmon and Tillman, with the purpose of interacting with their youth. Said youth were ages ranging from seven to 17, with a focus on middle and high school students. There were a total of eight participants total. These eight participants submitted a total of 20 photos taken to answer the four prompts. All eight youth attended focus group sessions discussing the photos they had taken.

PROMPTS

1. Please take a photo of the place you could serve your community
2. Please take a photo of the thing that is the most unique about your community
3. Please take a photo of the greatest potential for growth in your community
4. Please take a photo of the place with the most unrealized potential in your community

RESULTS

- The youth struggled to locate places that fit the description of the prompts.
- Most of the places in the photos were on the main downtown streets or areas that the participants regularly visited.
- The photos showed many areas that could use improvement but the participants had very few ideas to achieve the change and growth they wanted to see.

CONCLUSION

Youth in the rural communities felt disconnected from the events happening around them. The photos showed many areas where youth were disappointed in their communities, including abandoned buildings and projects that were never finished. The focus group discussions revealed a want for things that interested the participants including food shops and activity-based stores including recreational opportunities. These group discussions also showed a lack of understanding of how to change and create growth. This leads to youth feeling disconnected from their hometowns.

PHOTOS

The following photos were taken by participants in the study to describe the prompts.

1) Harmon
   “Hudson’s is a place in town I could work when I get older”
   “A place we could fix up and put in a bowling alley for kids to use”
   “The church is where I volunteer to help in the nursery.”
   “One of the cool parts of Frederick is the mural wall.”

2) Tillman
   “The Hollis News would let us know what’s happening in our town”
   “Maybe we could put in a donut shop for breakfast food”
   “The greenhouse is where we can make a change in the community because we can grow and sell vegetables.”
   “No one uses the park because there is barely any playground equipment.”

AFFILIATIONS

Rural Renewal Initiative through Oklahoma State University
Adverse Childhood Experiences (ACEs) include experiencing abuse, violence, or substance use in the home, or having a parent incarcerated. ACEs are associated with long-term changes, which result in poor mental health, substance use disorders, and reduced educational and occupational achievement. More importantly, the prevention of ACEs can have a positive impact on education and employment levels. Thus, providing intervention resources is pivotal to reducing negative life outcomes in Harmon County, OK. We partnered with the Shortgrass Community Healthcare Center, to assist them in implementing the Neuroscience, Epigenetics, ACEs, and Resilience Science (NEAR) curriculum. The NEAR curriculum provided them with positive coping resources and strategies, which will have a long-term effect in improving the community’s health and well-being.

NEAR Education and Mentorship Program: Early adversity can increase the risk for long-term physical, emotional, and social disparities. However, protective factors can support children, adults, and families and therefore mitigate risks associated with exposure to adversity.

Neuroscience, Epigenetics, ACEs, and Resilience (NEAR) Science training explores how life experiences impact our biological nervous system. It takes a deeper dive into the ACEs study and how to support communities and increase key areas including: 1) core protective factors of building capabilities, 2) attachment and belonging, 3) fostering community growth, 4) culture and spirituality.

INTRODUCTION

OBJECTIVE

Behavioral, protective factors of building capabilities, and attachment and belonging, 3) fostering community growth, 4) culture and spirituality.

METHODS

Objective 1a: Understand the biobehavioral profile of adversity and resilience of Harmon county community health care providers residents through dyadic biological, behavioral, and outcome driven data collection highlighting understanding of the contributions of early life adversity and resilience on substance use behaviors.

Objective 2a: Train a cohort of Community Champions on the Neuroscience, Epigenetics, ACEs, and Resilience (NEAR) Science curriculum.

Collection of demographic information, Pre-NEAR-training Surveys, Salivary collection using Genotek Omegene ORAL M-505 saliva collecting devices, and Tasso+ blood collection devices.

Collection of blood using Tasso+ devices and Salivary collection using Genotek Omegene ORAL M-505 saliva collecting devices.

Research: The Biology of Stress and Science of Hope Film Screening to educate community members on ACEs and its effects.

1st NEAR training: 2-3 hour-long session with NEAR Trainer via Zoom.

Post-NEAR-training Surveys via Google Forms.

2nd NEAR training: 2-3 hour-long session with NEAR Trainer via Zoom. Modulated case study scenarios that increased participant interaction and clinical application.

Participants n=23

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Percentage respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Licensed Practical Nurse</td>
<td>3</td>
</tr>
<tr>
<td>Receptionist</td>
<td>3</td>
</tr>
<tr>
<td>IT</td>
<td>1</td>
</tr>
<tr>
<td>Behavioral Health Case</td>
<td>5</td>
</tr>
<tr>
<td>Family Nurse Practitioner</td>
<td>6</td>
</tr>
<tr>
<td>Billing</td>
<td>2</td>
</tr>
<tr>
<td>Medical Assistant</td>
<td>2</td>
</tr>
<tr>
<td>Pharmacist</td>
<td>1</td>
</tr>
</tbody>
</table>

RACE

- White 86%
- Hispanic 7%
- American Indian 13% 12%

ETHNICITY

- Hispanic 71%
- Not Hispanic 29%

Participants n=23 pre vs post survey responses about adverse childhood experiences (ACEs) in the community

Pre and post survey responses about adverse childhood experiences (ACEs) in the community:

The importance of identifying and addressing ACEs

Participants n=23

<table>
<thead>
<tr>
<th>ACEs' impacts on brains and behavior</th>
<th>Percentage respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High</td>
<td>23%</td>
</tr>
<tr>
<td>High</td>
<td>36%</td>
</tr>
<tr>
<td>Moderate</td>
<td>36%</td>
</tr>
<tr>
<td>Low</td>
<td>8%</td>
</tr>
</tbody>
</table>

The role of ACEs in my job

Please rank the importance of this statement: My community needs to get organized and mobilized to identify and address ACEs:

Very High 41%
High 27%
Moderate 27%
Low 5%

CONCLUSIONS

We were able to evaluate the effectiveness of the NEAR Science training program as a professional development. It was a general consensus that the program worked, and healthcare providers were looking forward to subsequent training opportunities.

We were able to create and administer surveys to measure specific knowledge acquisition about ACEs and resilience science.

We identified additional training needed to address any areas of weakness that can be improved.

We administered a satisfaction survey about the content and delivery of the training program.

FUTURE DIRECTIONS

What is the prevalence of ACEs, substance use, and positive coping strategies in the community of Harmon County? Understand the biobehavioral profile of adversity and resilience of Harmon county residents through dyadic (parent-child) biological, behavioral, and outcome driven data collection highlighting understanding of the contributions of early life adversity and resilience on substance use behaviors.

ACKNOWLEDGMENTS

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