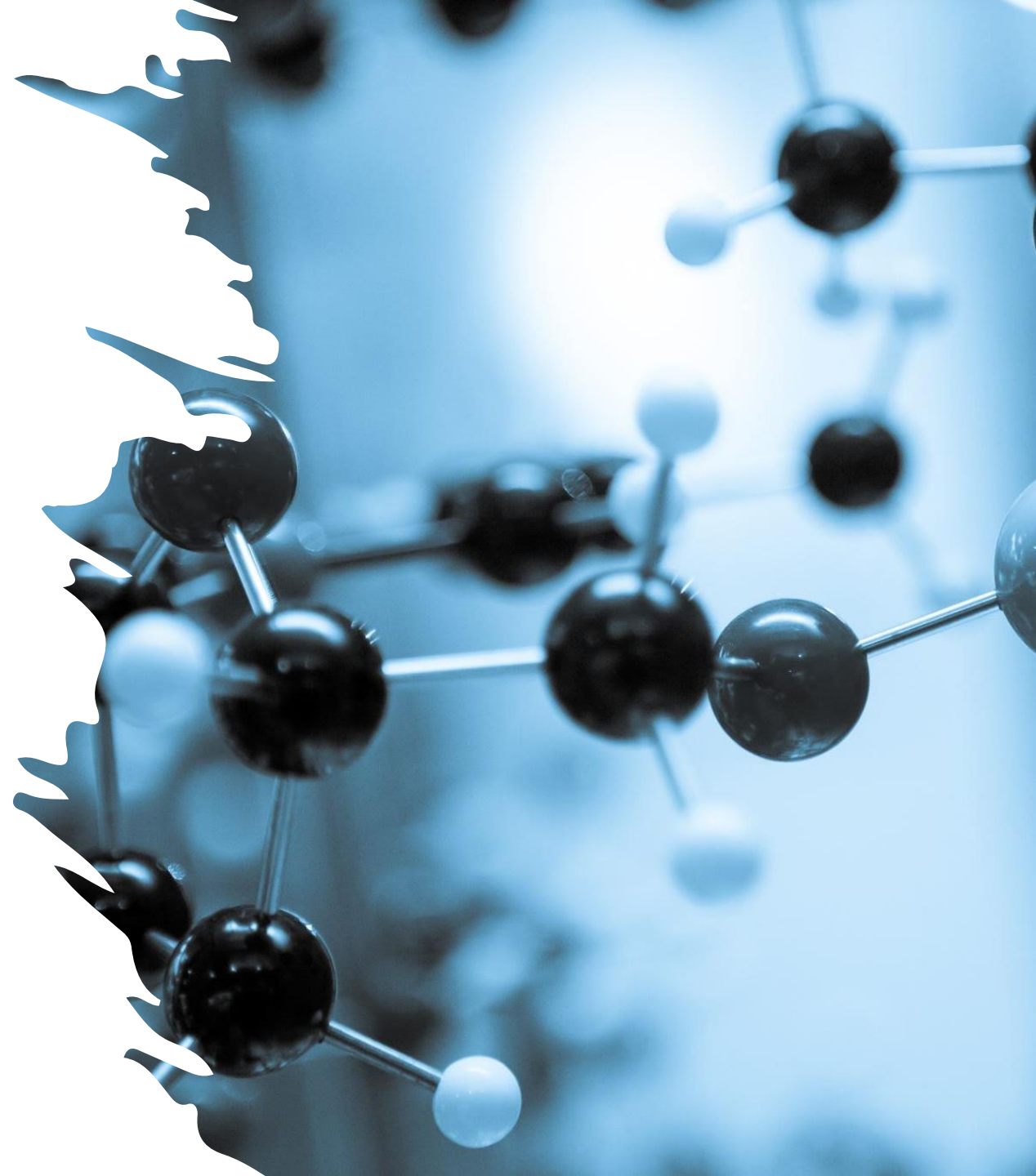


Mentoring Research

Creating an Original Manuscript in a Graduate Class

Anwar Ahmad

October 15, 2025



The Process



How to
Motivate-
Yourself

Students-
Involvement and
commitment

Divide and
Conquer

Topic

- What motivates you?
- Issue closer to you, family, communities, State, Country?
- Where to get the relevant information
- Literature Review-relevant databases
- PubMed
- JSU Library Databases,
- How many papers to read?



Introduction-First Milestone

A clear description
of the issue

Current standing
and body of
knowledge

Data gaps

Reasonable and
achievable
Objectives 2-3

Testable
Hypothesis



Set up Milestones on Canvas

▼ Milestones!

⋮  **Milestone 1!**
Due Sep 3 at 11:59pm | 25 pts

⋮  **Milestone 2!**
MODULE 5! Module | Due Sep 17 at 11:59pm | 25 pts

⋮  **Milestone 3!**
MODULE 8! Module | Due Oct 8 at 11:59pm | 25 pts

⋮  **Milestone 4!**
[Multiple Modules](#) | Due Oct 29 at 11:59pm | 25 pts

Milestones

Each milestone should achieve a distinctive goal:

Milestone 1: Introduction, Literature Review, Hypothesis

Milestone 2: Data identification and collection, Data management and cleaning

Milestone 3: Data Analysis Strategies and Execution

Milestone 4: Manuscript Development from Introduction to discussion

Final Product with presentation and publication opportunities and funding source



Expectations and Details

Term Paper:

There will be a one-session long-term paper that will carry 40% toward the final grade. This paper should be a first-rate effort that will be encouraged to submit to a peer-reviewed journal for publication. The topic for the term should be decided using data modeling approaches to address/solve biological problems, such as COVID-19 modeling of outbreaks among African Americans, etc., and the final draft will be due on **11/19 (text and data analysis files with PPT)**. The term paper, at minimum, should contain the following contents with proper captions: Topic, Introduction, Recent advances in the area, Methodology, Results, Discussion, Conclusion/Summary; References (see the attached websites for example):

1. [Ghosh](#), S., [Ahmad](#), H.A., Akil, L., Tchounwou, P.B. (2022). COVID-19 Progression: A County-level Analysis of Vaccination and Fatality in Mississippi-USA. *J. Environ. Res. Public Health*, 19, 16552. <https://doi.org/10.3390/ijerph192416552>. PMID: 36554432, PMCID: [PMC9779808](#)
2. [Ogungbe](#), O.V., Akil, L., and [Ahmad](#), H.A., 2019. Exploring Unconventional Risk-Factors for Cardiovascular Diseases: Has Opioid Therapy Been Overlooked? *J. Environ. Res. Public Health*, 16(14), 2564; <https://doi.org/10.3390/ijerph16142564>
3. [Akil](#), L and Ahmad, H.A. (2016). Recent Polio Outbreaks and Movement in War Conflict Zones. *International Journal of Infectious Diseases* 49(8): 40-46. PMCID: [PMC4975965](#)

Your paper should be concise and to the point and must not be mere downloads from the Internet. I expect a journal-quality paper to be strongly encouraged to be presented and published.

EXPECTATIONS: A journal-quality paper is expected from this graduate-level class. This paper must contain original and meaningful primary data or secondary raw data. Depending upon its nature, such data should be analyzed using SAS or other analytical software for descriptive statistics and/or inferential statistics with adequate methodologies, such as T-test, ANOVA, regression analysis, quantitative risk assessment, Baye's Theorem, etc. The results should be compiled in organized tables, graphs, and narrative details. Results should be discussed for their implications against the current body of knowledge, followed by conclusions and current

Resources

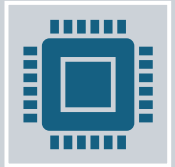
[Computing and Communications \(DCC\) - Information Technology | Jackson State University](#)



SAS



SPSS



SAS Studio Free for
Academics: [SAS](#)
[OnDemand for Academics](#)
[| SAS](#)



LinkedIn Python

METHODOLOGY

DATA COLLECTION

Driven by the needs and topic

Health Related Data CDC

Agriculture: USDA

State Departments of Health

International Data: WHO, FAO, OIE

Local Embassies

Literature Review

Analysis Methodologies

Start with
Descriptive
Statistics

Determine
relationships:
Correlation and
Regression

Classifications

Differentiate
between means

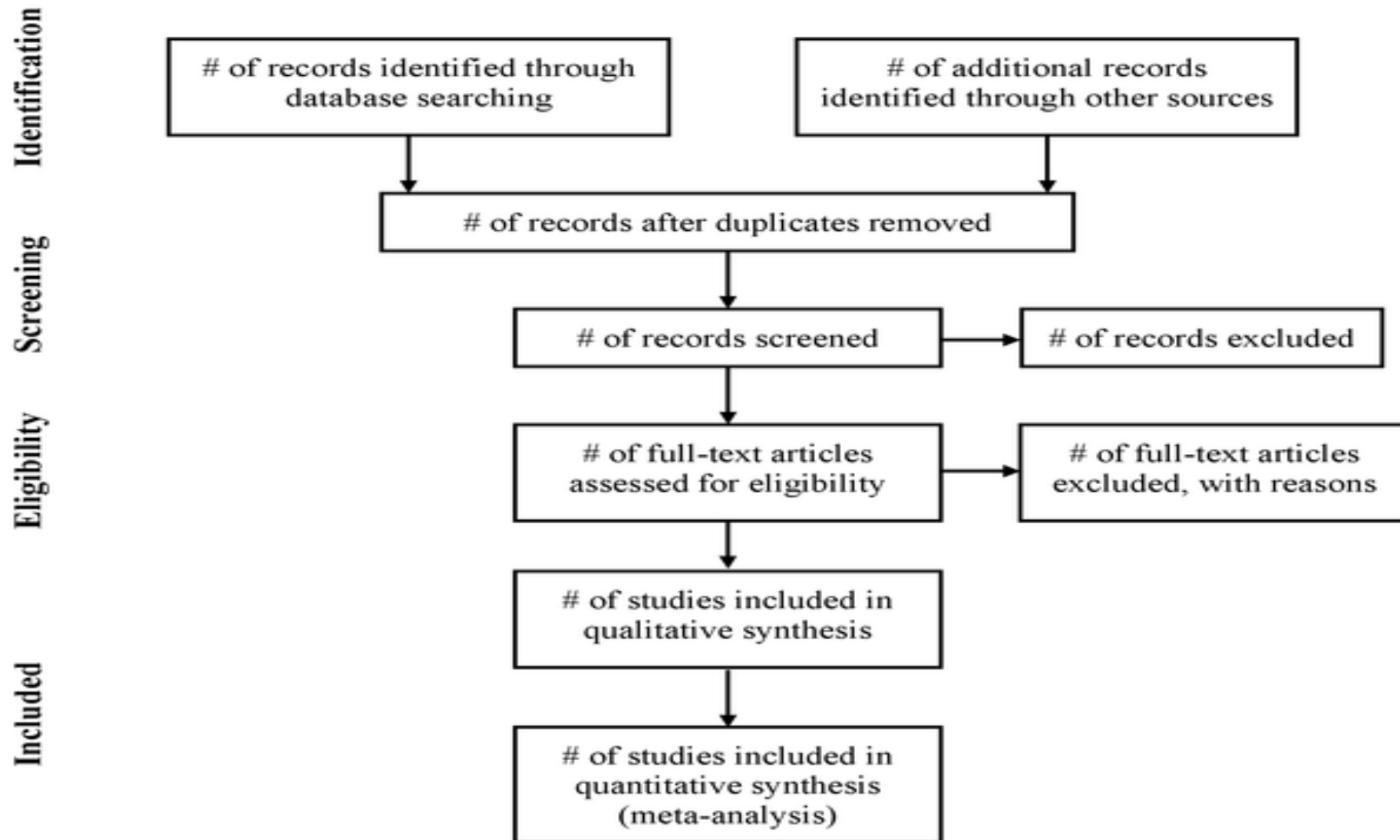
Advanced
Modeling
Approaches

Mixed Models

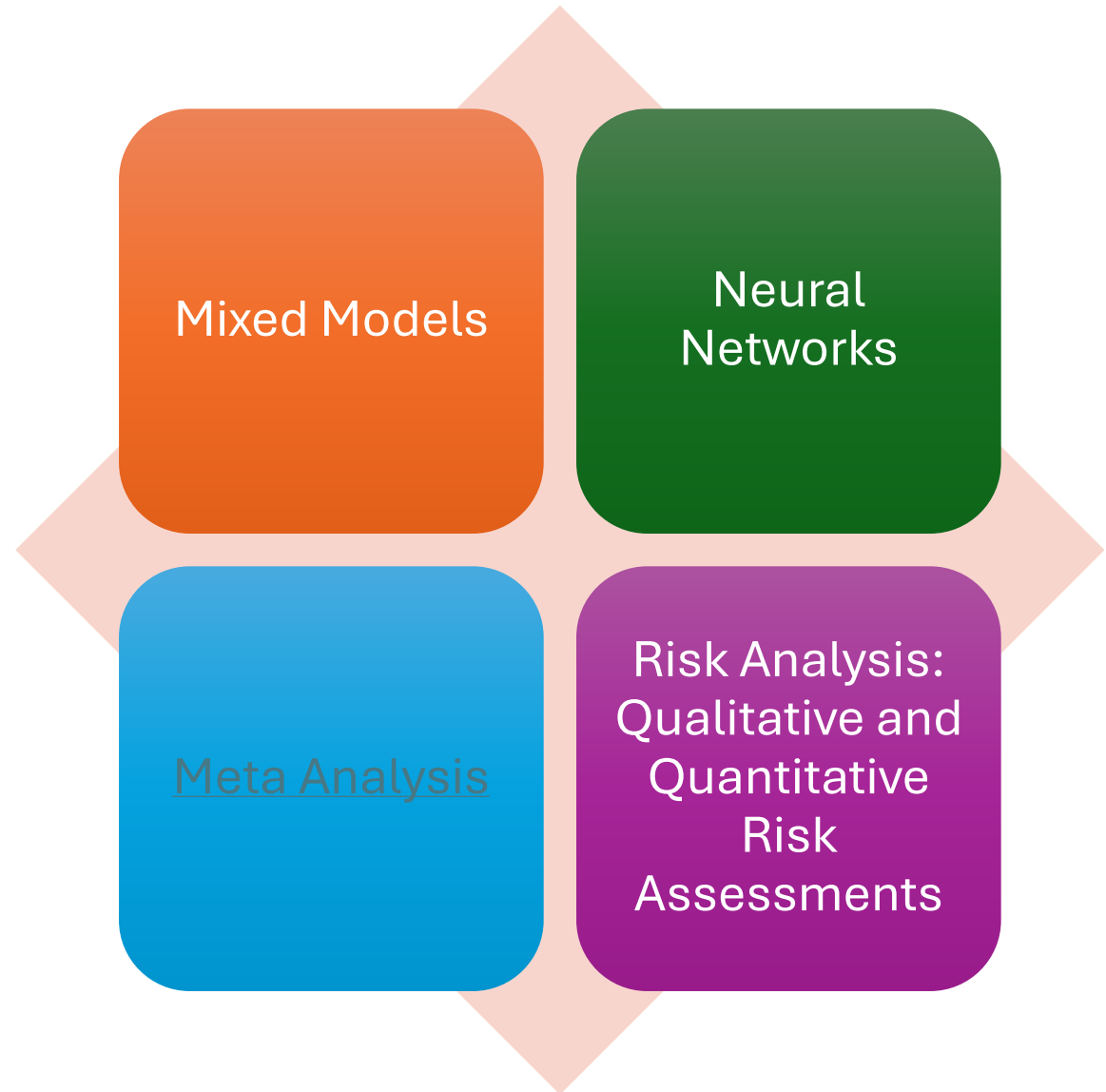
Neural Networks

Meta Analysis

Figure 1. Flow of information through the different phases of a systematic review

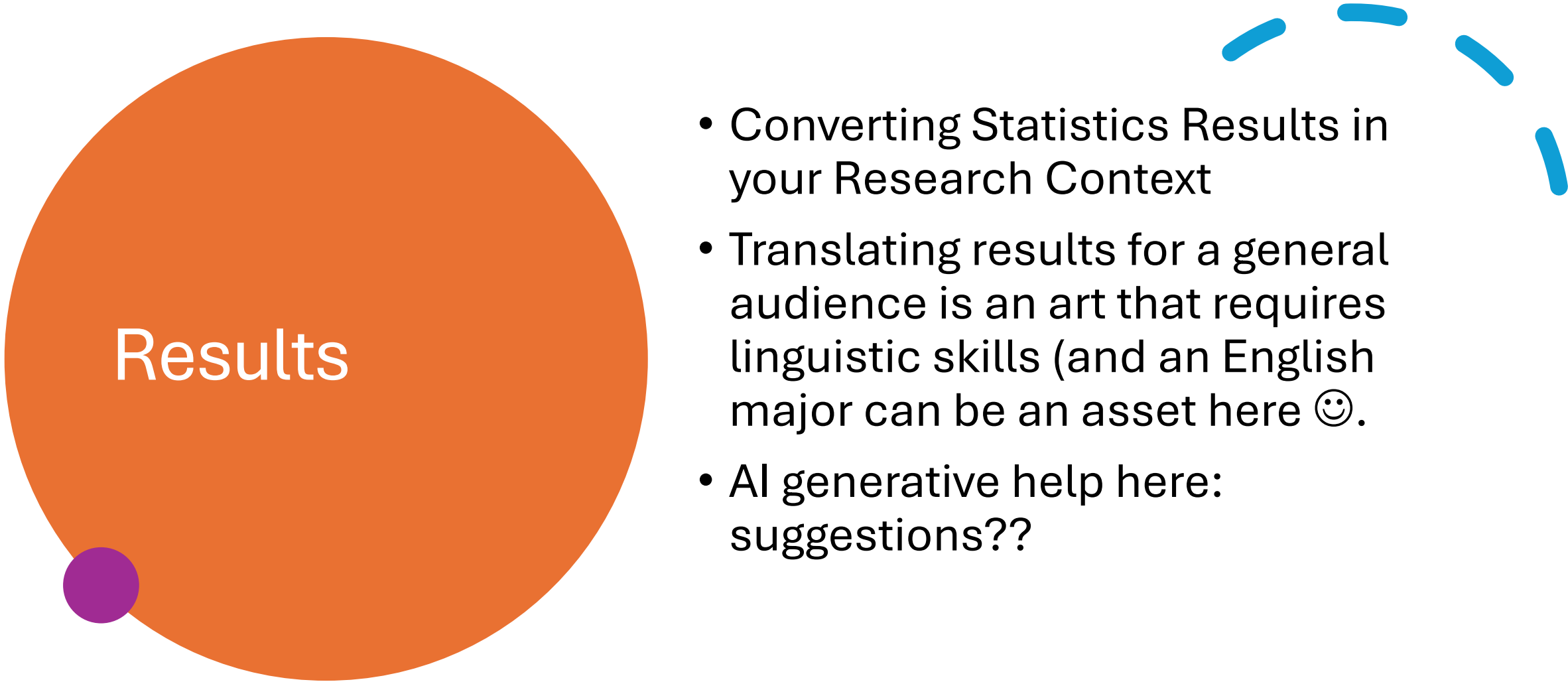


Advanced Modeling Approaches



Results and Discussion

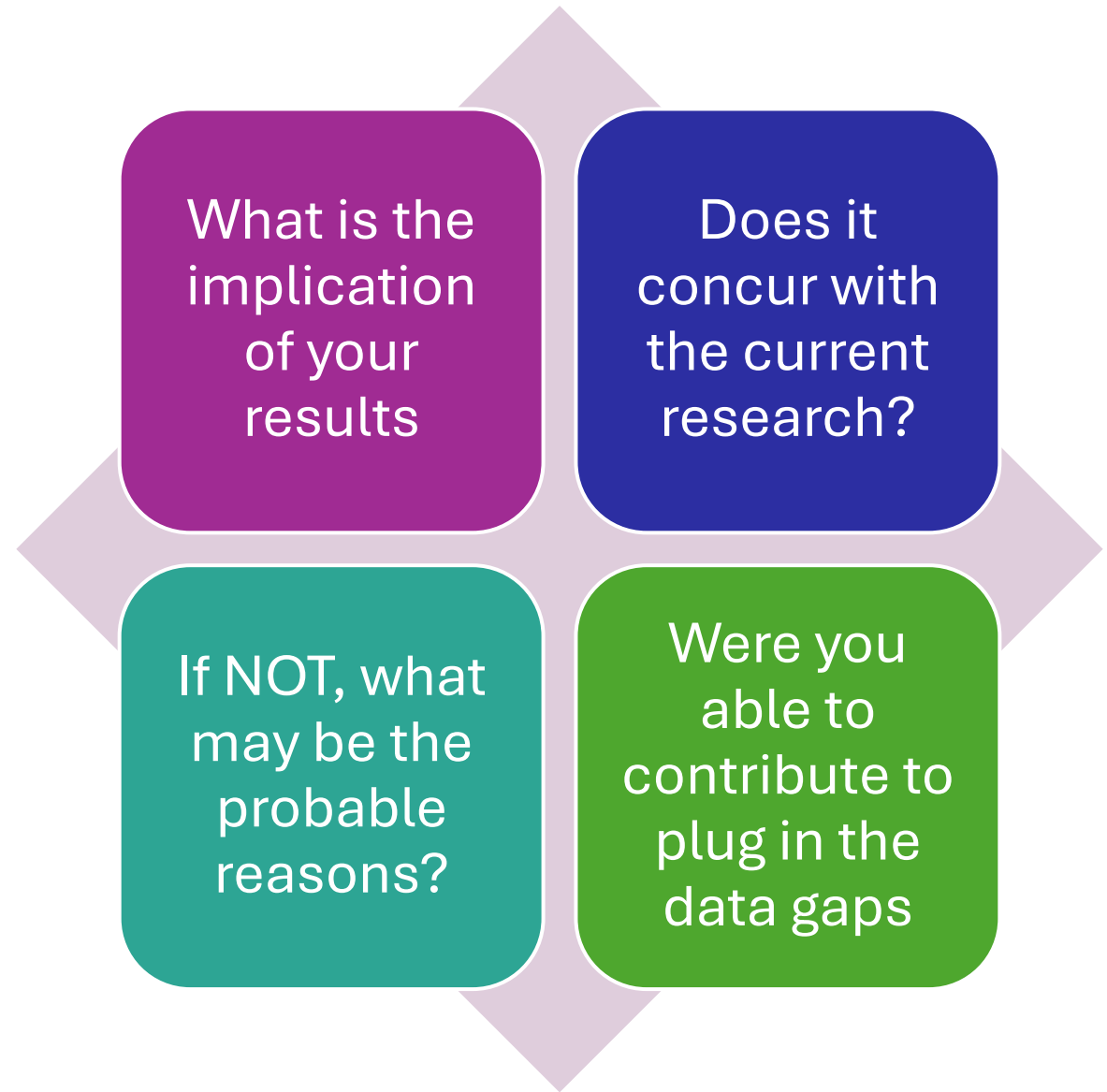
- Understanding of Software-generated Analysis Results
- Summarizing software results
- Creating reference tables with statistical significance
- For example, what is actually meant by $p < 0.05$ (enough evidence to support test significance)?
- What's the implication of a Type I error in your research (False Positive)? Assuming an effect when it is not there. Or punishing an innocent in legal terms.



Results

- Converting Statistics Results in your Research Context
- Translating results for a general audience is an art that requires linguistic skills (and an English major can be an asset here 😊).
- AI generative help here: suggestions??

Discussion



Summary and Abstract

Understanding the difference between Summary and Abstract

Conclude your results in a few major bullets that resonate with your audience

Relate the numbers using a relatable example, for example, 1/7000 text and driving fatalities: One person out of the JSU student population?

References

Use

Use current peer-reviewed citations using [APA](#) formatting or the Journal recommendation you are pursuing.

Use

Use software to arrange your citations both in text and in the reference list.

Be

Be careful with validation if you are using AI

Abstract



Prepare a concise 250-word abstract at the completion of your manuscript.



One approach is to highlight a few lines under each section that critically describe the gist of that section



Compile all those excerpts and convert them into a cohesive one-paragraph abstract.



Abstract must not be a summary of your results but an overview of the entire manuscript.



It should be a prelude to your paper and entice readers to dig deep.

Select Presentations

- **Ahmad**, H.A., Foster, D., 2025. Impact of Socioeconomic Factors on Suicide Rates Among AA Males in MS. 2025 RCMI Consortium National Conference, Hyatt Regency Bethesda, Bethesda, MD USA, Mar 16-19. Abstract # 02.04.01.
- [Ahmad](#), H.A., Akil, L., Ghosh, S., 2023. Multi-dimensional effects of COVID-19 on minority populations and food safety in southern USA. 2023 RCMI Consortium National Conference, Bethesda Marriott Hotel, Bethesda, MD USA, April 12-14. Abstract # C51119

IMPACT OF SOCIOECONOMIC FACTORS ON SUICIDE RATES AMONG AA MALES IN MISSISSIPPI

H. Anwar Ahmad, Destiny Foster*

INTRODUCTION

- ❖ In 2022, suicide was the third leading cause of death for Black or African Americans ages 10 to 24.
- ❖ The death rate from suicide for Black or African American males was more than four times higher than for Black or African American females in 2021.
- ❖ The overall suicide rate for Black or African Americans was 50% lower than that of the non-Hispanic white population in 2021.
- ❖ Black or African Americans living below the poverty level, as compared to those over twice the poverty level, were twice as likely to report serious psychological distress in 2015–2016.
- ❖ This study investigates the trends in suicide rates among African American males in Mississippi counties and its correlation with socioeconomic factors like poverty, unemployment, and income disparity, as well as access to mental health.

METHODOLOGY

Data Source: The study used county-level data from Mississippi, focusing on variables such as poverty rate, median income, unemployment rate, education level, mental health service access, population size, and death rate per 100,000 African Americans.

Statistical Analysis:

- ❖ **Correlation Analysis:** To identify relationships between suicide rates and the selected variables.
- ❖ **Regression Analysis:** To explore predictive relationships between variables and suicide rates.

❖ **Claiborne** County had the highest AA population rate of 84.4 %, while Tishomingo County had the lowest, 1.3%.

❖ **Lincoln** County had the highest death rate of 2341/100,000, while Stone County had the lowest, 1009/100,000.

❖ **Tishomingo** County, with the lowest AA population rate, had the highest suicide rate of 79/100,000, while Pike County had the lowest, 2/100,000.

CORRELATION ANALYSIS OF MS COUNTY WIDE DATA ON SOCIOECONOMIC AND SUICIDE

Poverty Rate: $r = -0.121$, suggesting a higher poverty rate does not significantly increase suicide risk for African American males in these counties.

Median Income: $r = -0.076$, indicating minimal influence of income disparities on suicide rates.

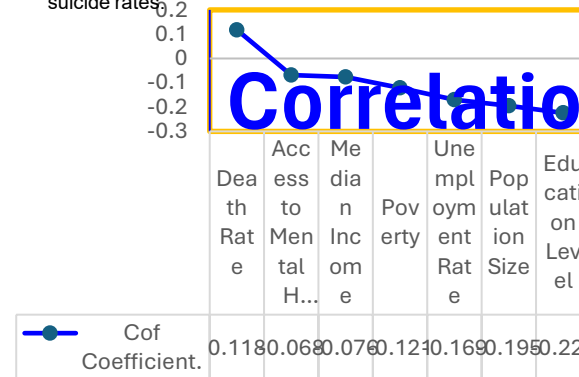
Unemployment Rate: $r = -0.169$, suggesting that unemployment may have an impact on suicide rates, potentially due to the psychological stress of job loss.

Access to Mental Health Services: $r = -0.068$, pointing to negligible association, possibly due to barriers to using available services.

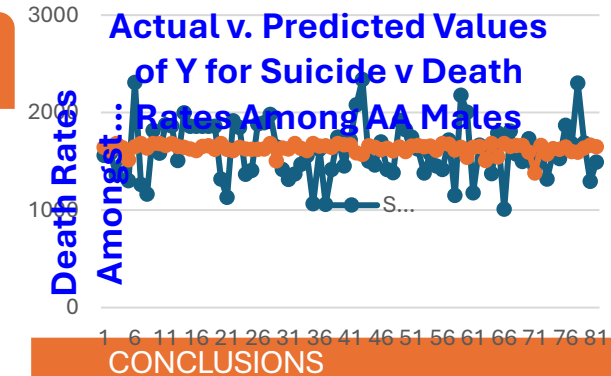
Education Level: $r = -0.224$, indicating that higher educational attainment in counties may correlate with slightly lower suicide rates.

Population Size: $r = -0.195$, indicating higher suicide rates in smaller, rural counties, possibly due to social isolation and lack of resources.

Death Rate: $r = 0.118$, suggesting that counties with higher overall mortality rates among African Americans may also experience higher suicide rates.



REGRESSION ANALYSIS



CONCLUSIONS

- ❖ The weak correlations observed across all variables point to the complexity of factors influencing suicide rates among African American males in Mississippi.
- ❖ These results suggest that socioeconomic stressors, while important, may not be the sole determinants of suicide rates in this population.
- ❖ Structural inequities, cultural influences, and regional disparities likely play a critical role. For instance, persistent poverty and lack of economic opportunity create chronic stress that could exacerbate mental health issues.
- ❖ Yet, the weak correlation suggests that communities may display adaptive resilience despite these challenges.
- ❖ Addressing systemic inequities, expanding mental health access, and developing culturally sensitive interventions are essential steps toward reducing suicide rates and improving mental health outcomes for African-American males in Mississippi.

ACKNOWLEDGMENTS

This research was supported by the National Institutes of Health/National Institute on Minority Health and Health Disparities Grant # 1U54MD015929-01 through the RCMI Center for Health Disparities Research at JSU.

MULTI-DIMENSIONS EFFECTS OF COVID-19 ON MINORITY POPULATIONS AND FOOD SAFETY IN SOUTHERN USA

H. Anwar Ahmad, Luma Akil, Shinjita Ghosh*

INTRODUCTION

- ❖ The SARS-CoV-2 virus responsible for the COVID-19 pandemic continues to spread worldwide, with over half a billion cases linked to over 6 million deaths globally. COVID-19 has impacted populations unequally based on income, age, race, sex, and geographical location.
- ❖ The COVID-19 pandemic has created a severe upheaval in the USA, with a particular burden on the state of Mississippi, which already has an exhausted healthcare burden.
- ❖ The COVID-19 pandemic has dramatically affected the food system from production to consumption.
- ❖ This project aimed to characterize COVID-19 incidence and death rate trends in six states of the southern region of the USA and to understand the demographic and racial differences in its incidence and death rates.
- ❖ The study also analyzed (1) county-level COVID-19 cases, deaths, and vaccine distribution in MS and (2) to determine the correlation between various social determinants of health (SDOH) and COVID-19 vaccination coverage.
- ❖ This study further determined the impact of the COVID-19 pandemic on the spread of foodborne diseases and the factors that may have

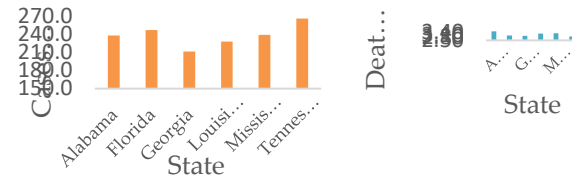
DATA COLLECTION

- ❖ Data for the study were collected from various sources, including the COVID-19 Data tracker of the CDC and the Mississippi Department of Health, for the following southern states: Alabama, Florida, Georgia, Louisiana, Mississippi (82 counties), and Tennessee.
- ❖ The cumulative Mississippi COVID-19 and socio-demographic data variables were grouped into feature and target variables. The statistical and exploratory data analysis was conducted using Python 3.8.5., including the Pearson Correlation.
- ❖ The food safety data were collected from The Foodborne Diseases Active Surveillance Network (FoodNet) for 2015-2020.

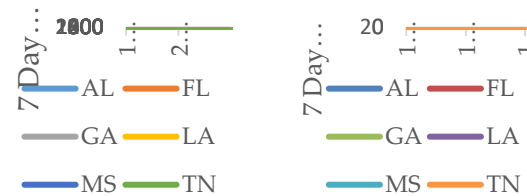
RESULTS

- ❖ Significant geographical variations in COVID-19 cases and death rates were observed among various races and ethnic groups.
- ❖ Most cases were observed among the Hispanic and Black populations, and the highest death rates were found among non-Hispanic Blacks and Whites.
- ❖ Asians had the highest vaccination coverage, 77%, compared to 52%, 46%, 42%, and 25% for African Americans, Whites, Hispanics, and American Indians/Alaska Natives, respectively.
- ❖ COVID-19 cases and deaths were positively correlated with per capita income and negatively correlated with the percentage of persons without a high school diploma (age 25+).
- ❖ A significant decline in the incidences of foodborne diseases, 25% and 60% was observed, with a geographical variation between California and other Study-States.

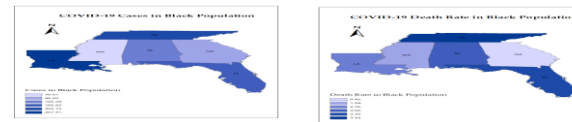
COVID-19 CASES AND DEATHS BY STATES



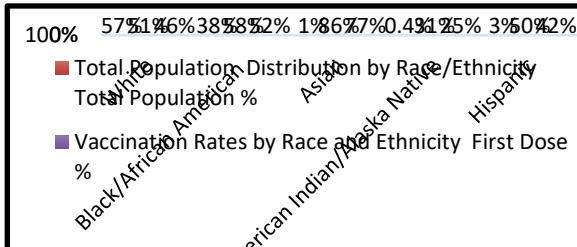
TIME SERIES ANALYSIS



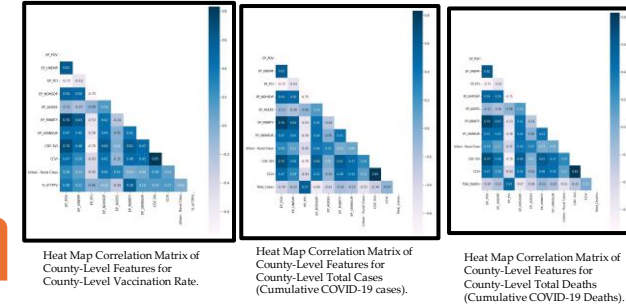
COVID-19 CASES AND DEATHS IN AA POP.



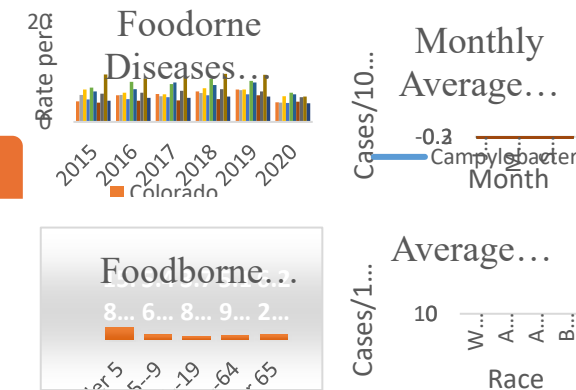
VACCINATION RATE IN MS POPULATION



CORRELATION ANALYSIS



FOODBORNE DISEASES DURING THE PANDEMIC



CONCLUSIONS

Covid-19 had multidimensional adverse effects, on minority and economically marginalized populations in the southern USA, except for the higher vaccination rates among African Americans. It had a positive impact on reducing the incidence of foodborne illnesses.

ACKNOWLEDGMENTS

This research was supported by the National Institutes of Health/National Institute on Minority Health and Health Disparities Grant # 1U54MD015929-01 through the RCMI Center for Health Disparities Research at Jackson State University.

Publications

Open Access Article

COVID-19 Progression: A County-Level Analysis of Vaccination and Case Fatality in Mississippi, USA

by Shinjita Ghosh ¹, Hafiz A. Ahmad ¹ , Luma Akil ²  and Paul B. Tchounwou ^{1,*}  

¹ Department of Biology, NIH-RCMI Center for Health Disparities Research, Jackson State University, Jackson, MS 39217, USA

² Department of Behavioral and Environmental Health, School of Public Health, Jackson State University, Jackson, MS 39217, USA

* Author to whom correspondence should be addressed.

Int. J. Environ. Res. Public Health **2022**, *19*(24), 16552; <https://doi.org/10.3390/ijerph192416552>

Submission received: 25 September 2022 / Revised: 5 December 2022 / Accepted: 6 December 2022 / Published: 9 December 2022

(This article belongs to the Special Issue **Proceedings of the 2022 Research Centers in Minority Institutions (RCMI) Consortium National Conference**)

Download 

Browse Figures

Versions Notes

Abstract

The COVID-19 pandemic has created a severe upheaval in the U.S., with a particular burden on the state of Mississippi, which already has an exhausted healthcare burden. The main objectives of this study are: (1) to analyze

- [Ghosh, S., Ahmad, H.A., Akil, L., Tchounwou, P.B. \(2022\). COVID-19 Progression: A County-level Analysis of Vaccination and Fatality in Mississippi-USA. *Int. J. Environ. Res. Public Health*, 19, 16552.](https://doi.org/10.3390/ijerph192416552)
<https://doi.org/10.3390/ijerph192416552>. PMID: **36554432**, PMCID: [PMC9779808](https://pubmed.ncbi.nlm.nih.gov/PMC9779808/)

Select Publications

- [Ogungbe](#), O.V., Akil¹, L., and [Ahmad](#), H.A. (2019). Exploring Unconventional Risk-Factors for Cardiovascular Diseases: Has Opioid Therapy Been Overlooked? *Int. J. Environ. Res. Public Health*, 16(14), 2564.
<https://www.mdpi.com/1660-4601/16/14/2564>

Exploring Unconventional Risk-Factors for Cardiovascular Diseases: Has Opioid Therapy Been Overlooked?

by [Oluwabunmi Ogungbe](#) ¹ , [Luma Akil](#) ² and [Hafiz A. Ahmad](#) ^{3,*} 

¹ Department of Epidemiology and Biostatistics, School of Public Health, Jackson State University, Jackson, MS 39213, USA

² Department of Behavioral and Environmental Health, School of Public Health, Jackson State University, Jackson, MS 39213, USA

³ Department of Biology, Jackson state University, Jackson, MS 39217, USA

* Author to whom correspondence should be addressed.

Int. J. Environ. Res. Public Health **2019**, *16*(14), 2564; <https://doi.org/10.3390/ijerph16142564>

Submission received: 30 May 2019 / Revised: 7 July 2019 / Accepted: 12 July 2019 / Published: 18 July 2019

(This article belongs to the Special Issue **Selected Paper from the 15th International Symposium on Recent Advances in Environmental Health Research**)

Download 

Browse Figure

Versions Notes

Abstract

Approximately 2150 adults die every day in the U.S. from Cardiovascular Diseases (CVD) and another 115 deaths are attributed to opioid-related causes. Studies have found conflicting results on the relationship between opioid therapy and the development of cardiovascular diseases. This study examined whether an association exists between the use of prescription opioid medicines and cardiovascular diseases, using secondary data from the National Hospital Ambulatory Medical Care Survey (NAMCS) 2015 survey. Of the 1829 patients, 1147 (63%) were male, 1762 (98%) above 45 years of age, and 54% were overweight. The rate of cardiovascular diseases was higher

Thanks



QUESTIONS?



SUGGESTIONS



COLLABORATION