

Action-Packed Applied SyS

12:45 PM EST | December 7th, 2022 | 2022 SyS Symposium

Moderator:

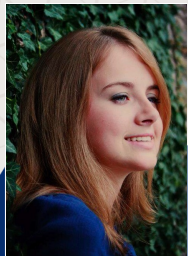
- Kathleen Rees, MSPH – Washington County Department of Health and Human Services

Presenters:

- Gabriel Ann Haas, MPH – Kansas Department of Health and Environment
- Sandra Gonzalez, PhD, MPH – Division of Public Health, Nebraska DHHS; College of Education and Human Sciences, University of Nebraska-Lincoln
- Osaremhen Ikhile, MPH – Tennessee Department of Health
- Darryl Clay Nevels, PhD, MS – Tennessee Department of Health



Council of State and Territorial Epidemiologists



Gabriel Ann Haas, MPH
Kansas Department of Health and Environment

Sandra Gonzalez, PhD, MPH
Division of Public Health, Nebraska DHHS; College of Education
and Human Sciences, University of Nebraska-Lincoln



Initial Explorations into Long COVID Using SyS Data

Gabriel Ann Haas, MPH

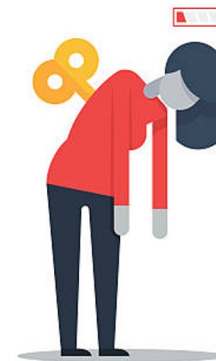
Kansas Department of Health and Environment

Sandra Gonzalez, PhD, MPH

Nebraska Department of Health and Human Services /
University of Nebraska-Lincoln

What is Long COVID?

- **Long COVID goes by many names including what the CDC and WHO call Post-COVID Conditions (PCC).**
 - They define a PCC as “individuals with a history of probable or confirmed SARS-CoV-2 infection, usually 3 months from the onset of COVID-19, with symptoms that last for at least 2 months and cannot be explained by an alternative diagnosis”.
- **Common symptoms include lingering shortness of breath, extreme fatigue, weakness, and cognitive dysfunction but the full list of symptoms attributed to PCCs is long.**
- **The biggest barrier to diagnosis and management is the vague, non-specific nature of symptoms.**



What is Public Health doing so far?

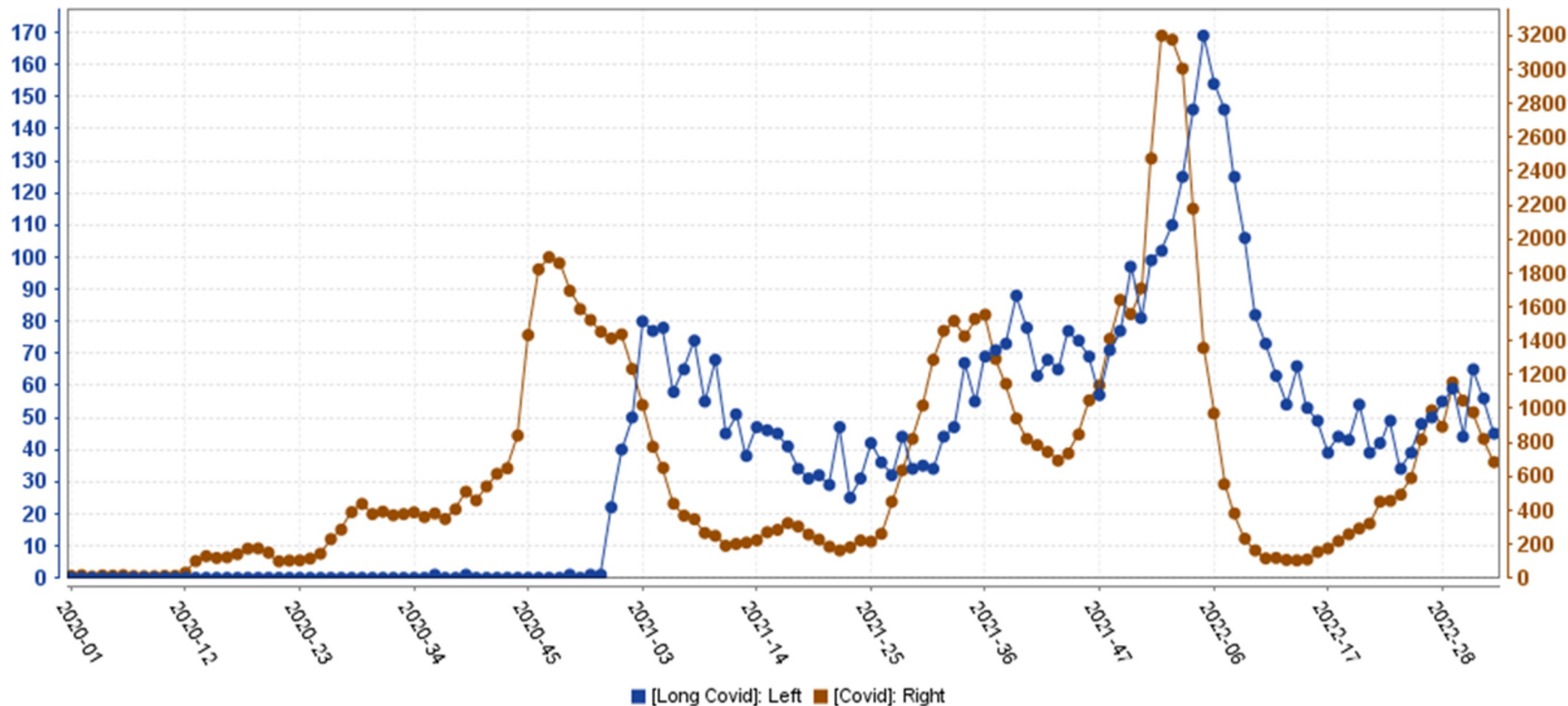
- **Several states have followed up on their COVID-19 patients with a survey asking about their infection history, symptoms, and co-existing conditions with plans to publish their findings.**
- **There have been questions about making Long COVID reportable but the logistics of this are difficult given the lack of a more specific case definition.**
- **A prospective study published this past May in MMWR, found that 20-30% of those with COVID end up developing incident conditions requiring further medical care. Incidence was higher in those aged 65+.**
 - Incident conditions highlighted in the article included kidney failure, diabetes, heart attacks, strokes, and blood clots in addition to fatigue, sleep disturbances and musculoskeletal pain.

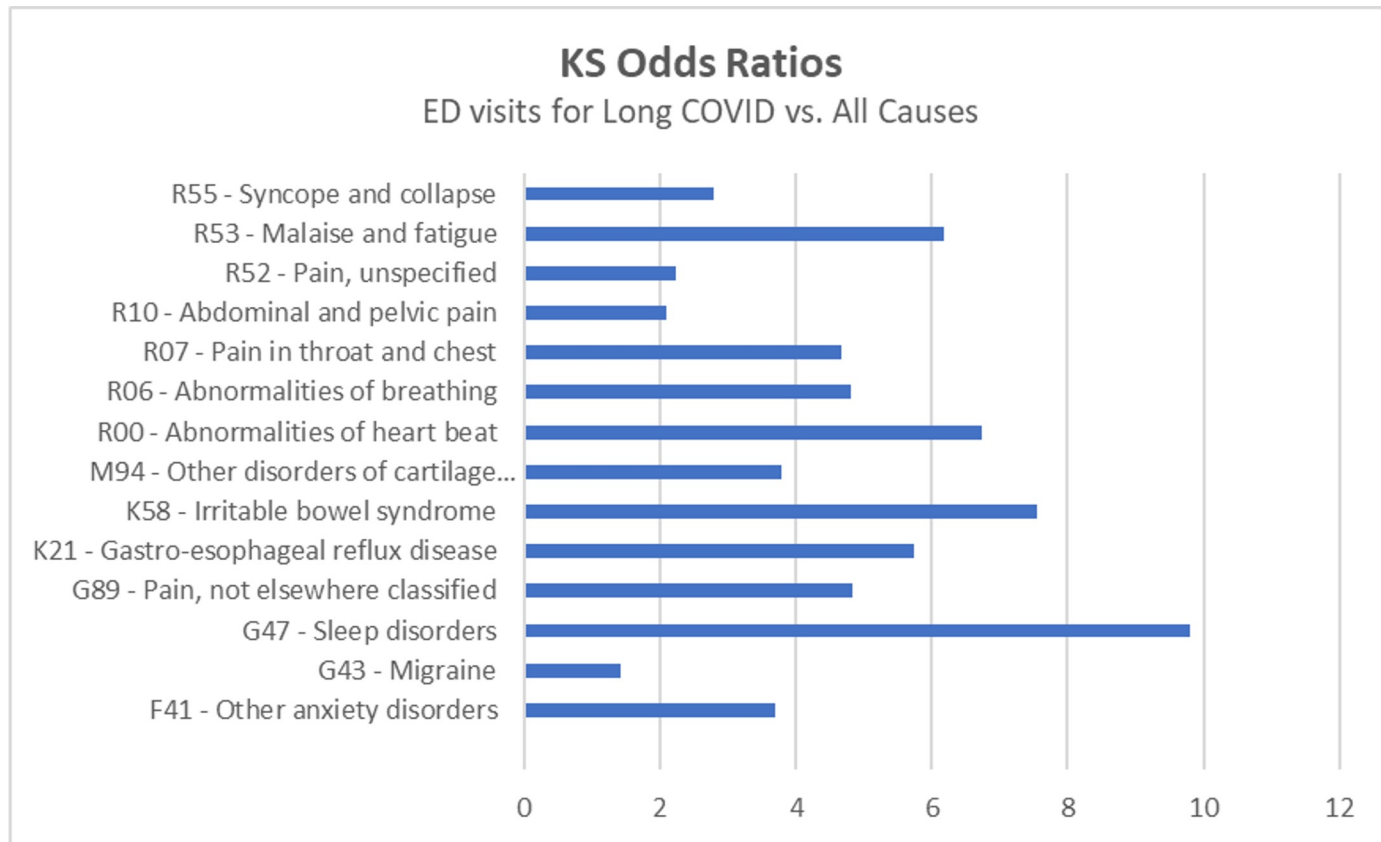
<https://www.cdc.gov/mmwr/volumes/71/wr/mm7121e1.htm>

- When is the PCC code being used and how exactly is Long COVID presenting in Emergency Departments? Which symptoms might we prioritize for surveillance or include in a case definition or syndrome?
- We gathered a list of diagnosis codes for symptoms mentioned in the current literature, and looked to see if these diagnosis codes were associated with either mention of “Long COVID” or a diagnosis code for either a Post-COVID condition (U09.9) or History of COVID infection (Z86.16). We excluded visits w/ current infection status.
- We then calculated the Odds Ratio for each diagnosis code in the PCC group compared to visits for all causes from June 2021 - June 2022 in both Kansas and Nebraska data.
 - Subgroup analysis by age group and gender were performed for the 5 diagnosis codes with the highest odds ratios in both states.

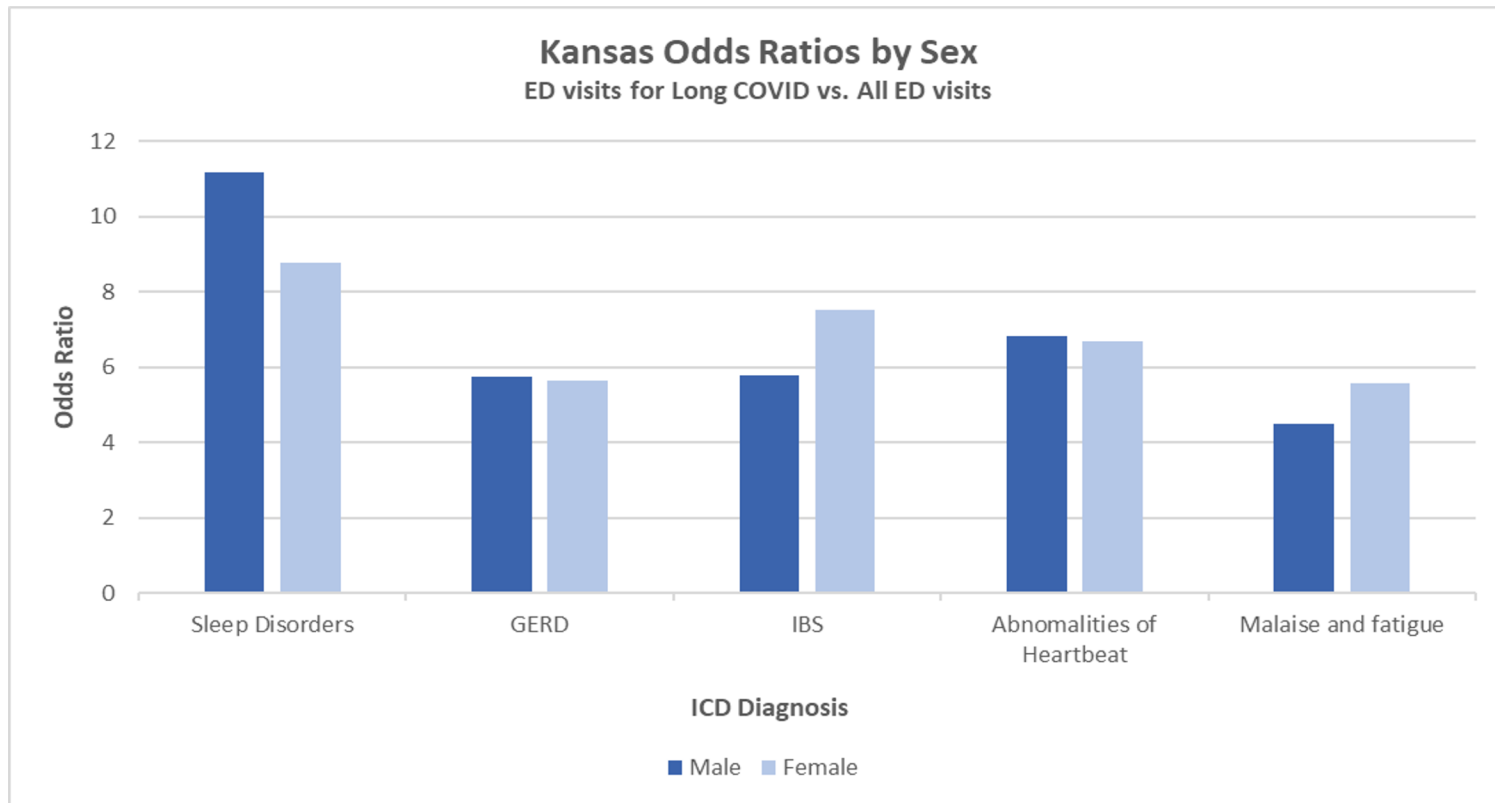
Long COVID vs. COVID in KS EDs

Long Covid vs. Covid in KS EDs

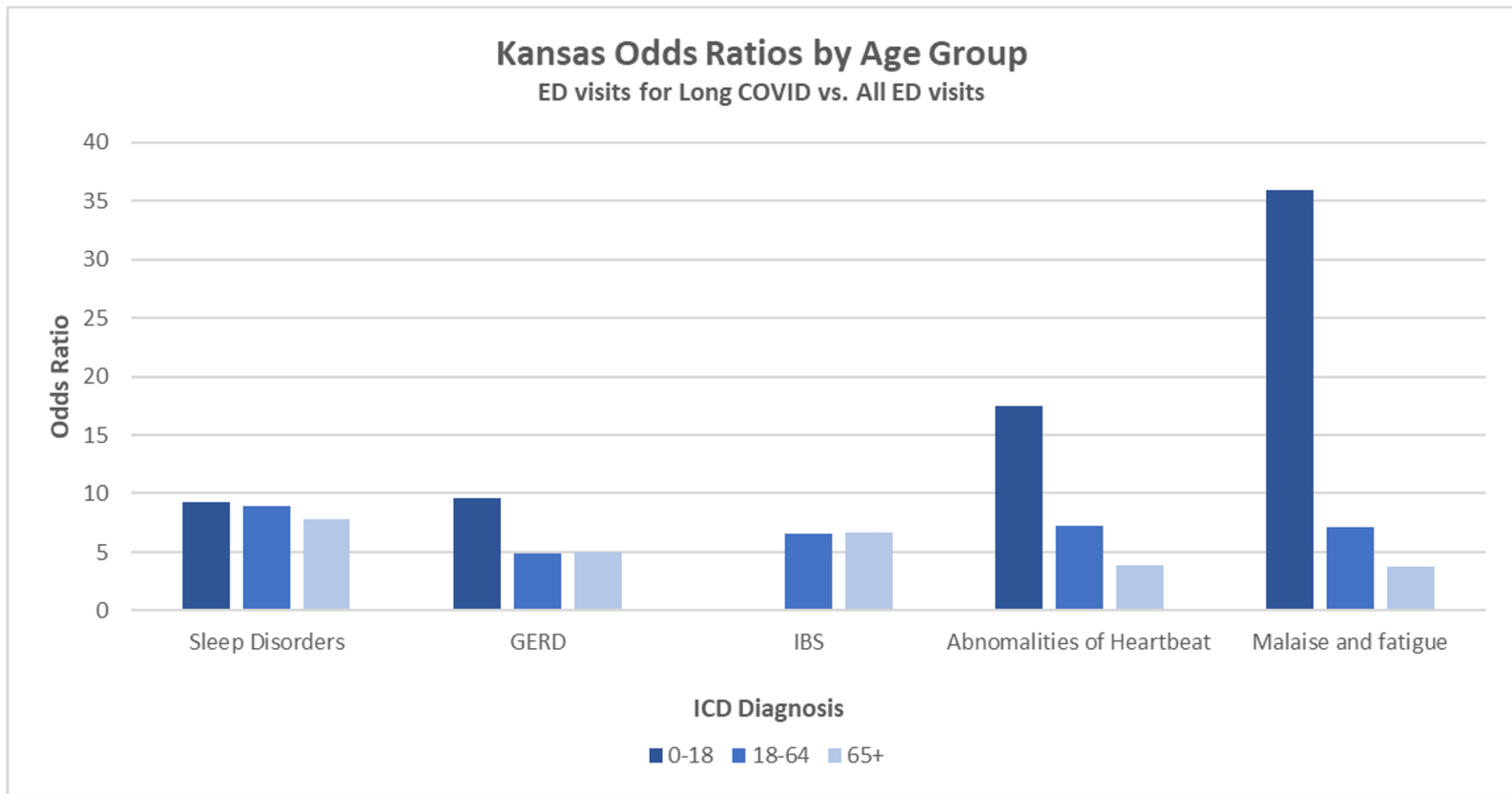




KS Subgroup Analysis

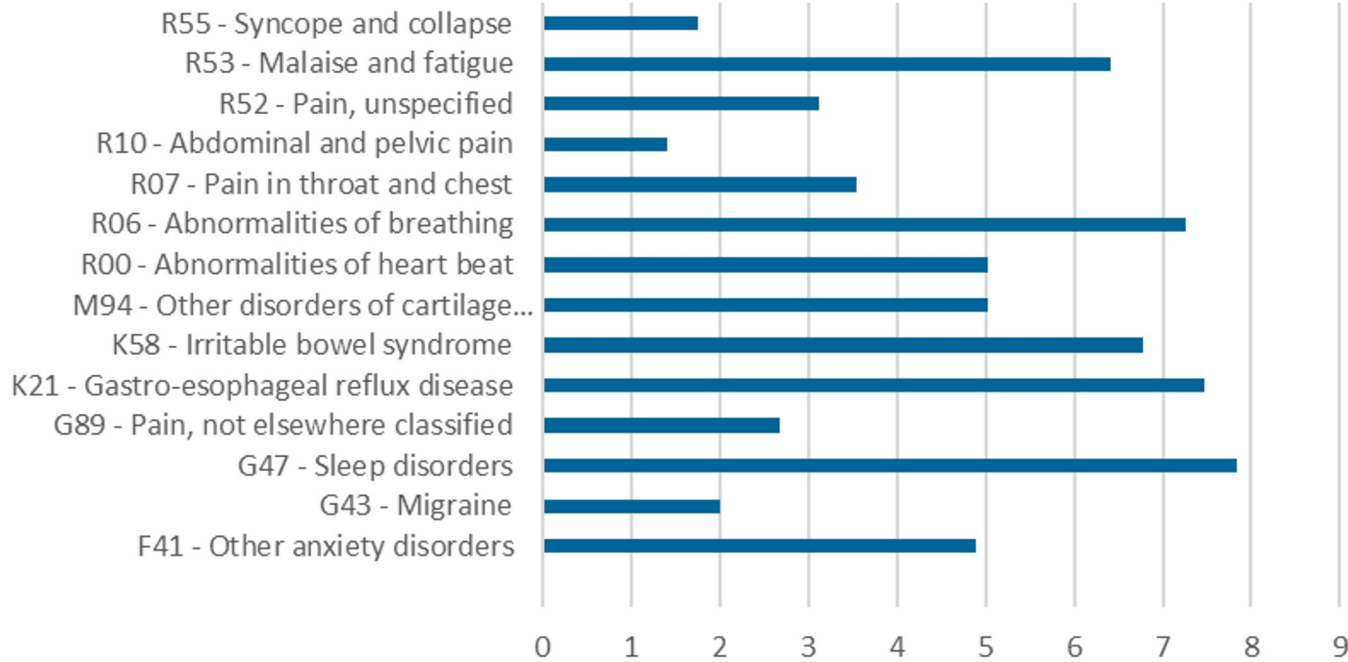


KS Subgroup Analysis



NE Odds Ratios

ED visits for Long COVID vs. all other visits



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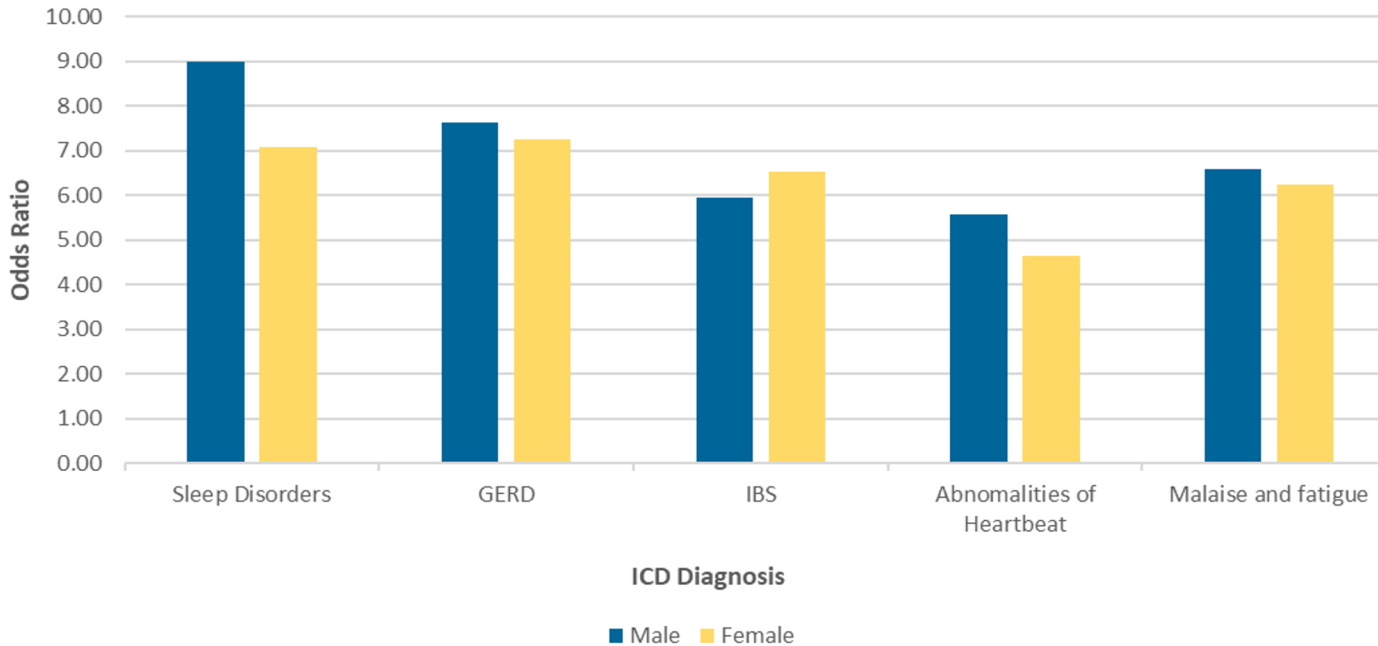
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Nebraska Odds Ratios by Sex

ED visits for Long COVID vs. All ED visits



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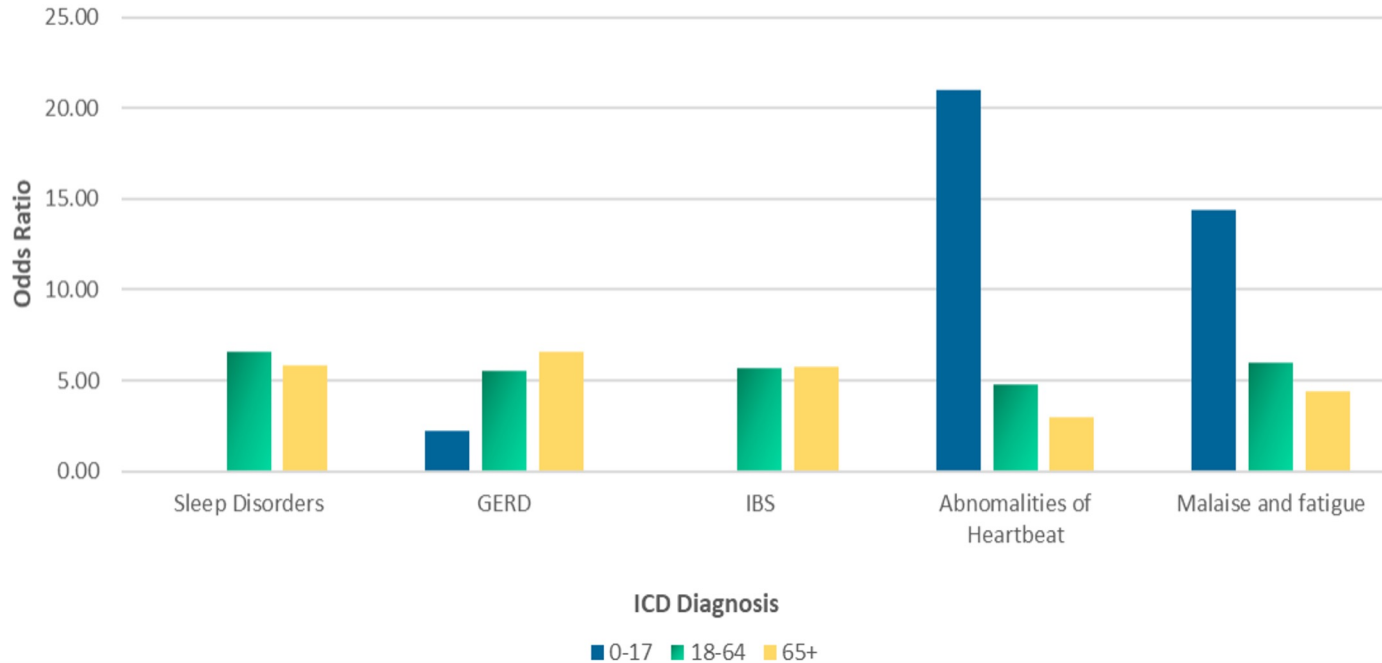
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Nebraska Odds Ratios by Age Group

ED visits for Long COVID vs. All ED visits



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Summary & Conclusions

During June 2021 - June 2022

- ❑ KS and NE had a similar proportion of Long COVID to COVID-19 ED visits (**KS 7.21%, NE 10.26%**).
- ❑ Peaks in visits for Long COVID followed peaks in visits for COVID-19.
- ❑ For both KS and NE, **sleep disorders were the most overrepresented symptoms among male and female Long COVID – related ED visits.**
- ❑ For both KS and NE, **abnormalities of heartbeat and malaise and fatigue were the most overrepresented symptoms among pediatric Long COVID – related ED visits (0-17).**

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Conclusion

Syndromic surveillance can help to understand which Long-COVID symptoms are more overrepresented among people with history of COVID who have visited the ED.

This may help to better understand the codes used for Long COVID ED visits, the conditions associated to Long COVID, and the consistency in presentations across jurisdictions.

Finally, understanding Long COVID related conditions may help provide ways to more reliably track syndrome-based trends over time.

Thank You!

Please direct further questions to:
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Syndromic Surveillance of Risk Factors for Violent Maternal Deaths (Homicide and Suicide)

Osa Ikhile, MPH; Ibitola Asaolu, DrPH MPH; Tina Evans, MPH; Rachel Heitmann MS.

INTRODUCTION

- Pregnancy and postpartum period are critical period for women as they have an increased risk of suicide and homicide.
- To address pregnancy-associated suicide and homicides among maternal population, the Tennessee Department of Health's Prevention of Violent Maternal Death program routinely monitors outpatient data to **assess risk factors** for maternal homicide and suicide to **inform statewide prevention and response** efforts.



OBJECTIVES

To report trends in of **risk factors** for **homicide and suicide** among Tennessee women of reproductive age using Emergency Department visit data.

METHODS

- **Population:** Women of reproductive age, 10-50 years
- **Time:** January 2022 to August 2022
- **Risk Factors:** we queried Chief complaint and Discharge Diagnosis Categories (CC and DD) for intimate partner violence (IPV), Firearm injury and Suicidal behavior.
- **Data source:** Centers for Disease Control and Prevention (CDC)'s Electronic Surveillance Systems For the Early Notification of Community-Based Epidemics (ESSENCE).

RESULTS (Overall)

- There were 226 IPV-related ED visits, 13,409 suicide related ED visits and 430 firearm-related ED visits from January to August 2022.
- Compared to other regions, women of reproductive age, 10-50 years showed an increase in IPV, suicide-related behavior and firearm-related ED visits in three regions of Tennessee (Madison, Davidson, and Shelby).
- The average age of women with suicidal behavior was 25.6 years, with most residing in Davidson, Rutherford, and Shelby counties.

RESULTS (Overall)

- The average of women experiencing IPV is **31.5 years**, with most of them residing in Shelby (48.9%), Davidson (8.9%), and Madison (7.1%) counties.
- The mean age of women who come to EDs for firearm injuries was **28.8 years** and most of them reside in Shelby (38.4%), Davidson (13.3%), and Hamilton counties (4.9%).
- Mid-Cumberland region had the highest presentation for suicidal behavior. Risk factors for suicide included substance use and mental illness.

Suicidal Behavior

Key takeaways and trends in Suicide related behavior (ideation/attempt):

- There were **13,409** suicide-related cases reported between January and August 2022 among women aged 10-50.
- The average age of women with suicidal behavior was **25.6 years**, with most residing in Mid-Cumberland (22%), Davidson (12%) East Tn (11%) counties.
- Non-Hispanic **White** (75%) women were more represented than other races/ethnicities among those reporting for suicide ideation/intent/attempt cases

Data Source: Electronic Surveillance System for the Early Notification of Community based Epidemics (ESSENCE)

Suicidal Behavior

Suicide related behavior by Age group:

N=13,408

Age group	Percent(%)
05-17 years	35%
18-44 years	57%
45-60 years	8%

Data Source: Electronic Surveillance System for the Early Notification of Community based Epidemics (ESSENCE)

Suicidal Behavior

Suicide related behavior by race/ethnicity:

NH Black	NH White	NH/AI	Others
2421	10104	38	578

NH = Non-Hispanic,

NH/AI= Native Hawaiian/American Indian

Suicide related behavior by contributing factors:

Substance use, psychiatric issues including schizophrenia, anxiety & depression, PTSD

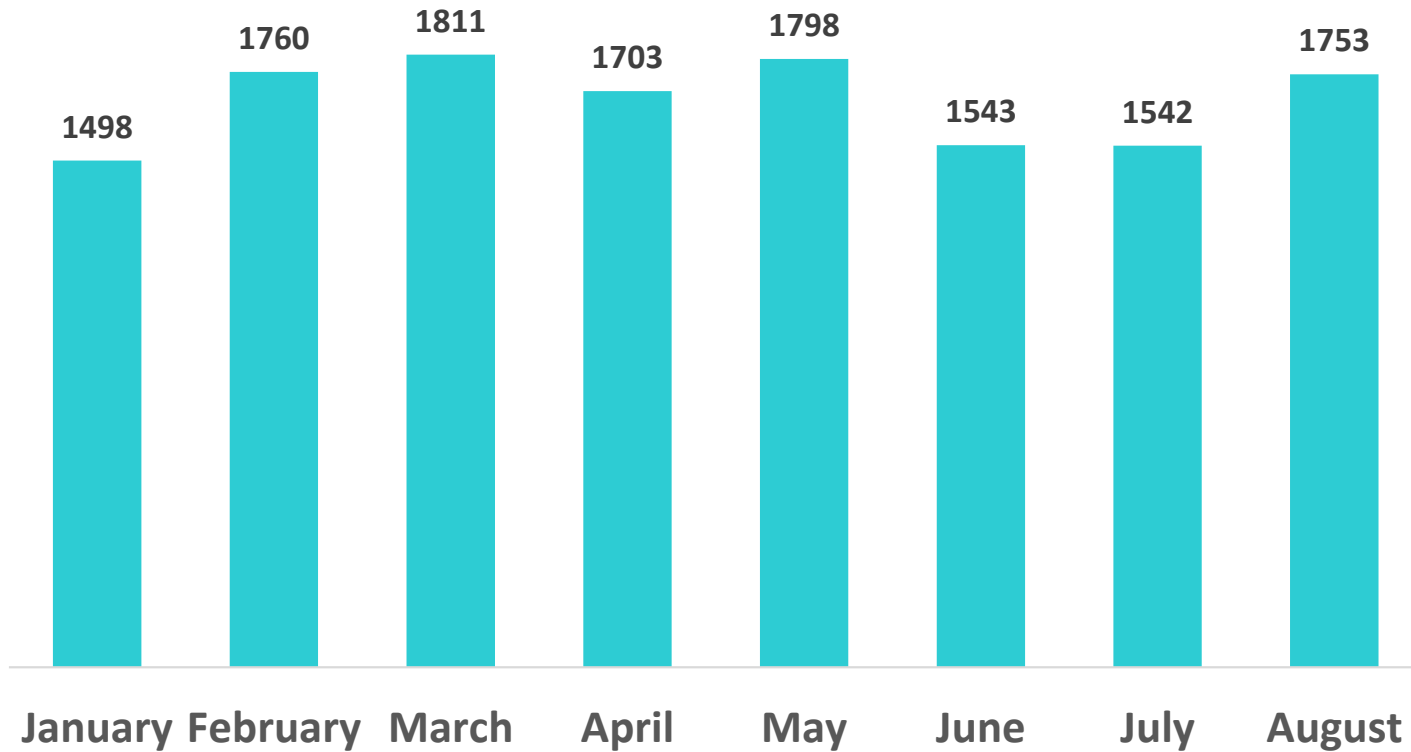
Suicide related behavior by means of injury:

Overdose, hanging, sharp injury, gunshot wound, jump from a bridge

Data Source: Electronic Surveillance System for the Early Notification of Community based Epidemics (ESSENCE)

Suicidal Behavior

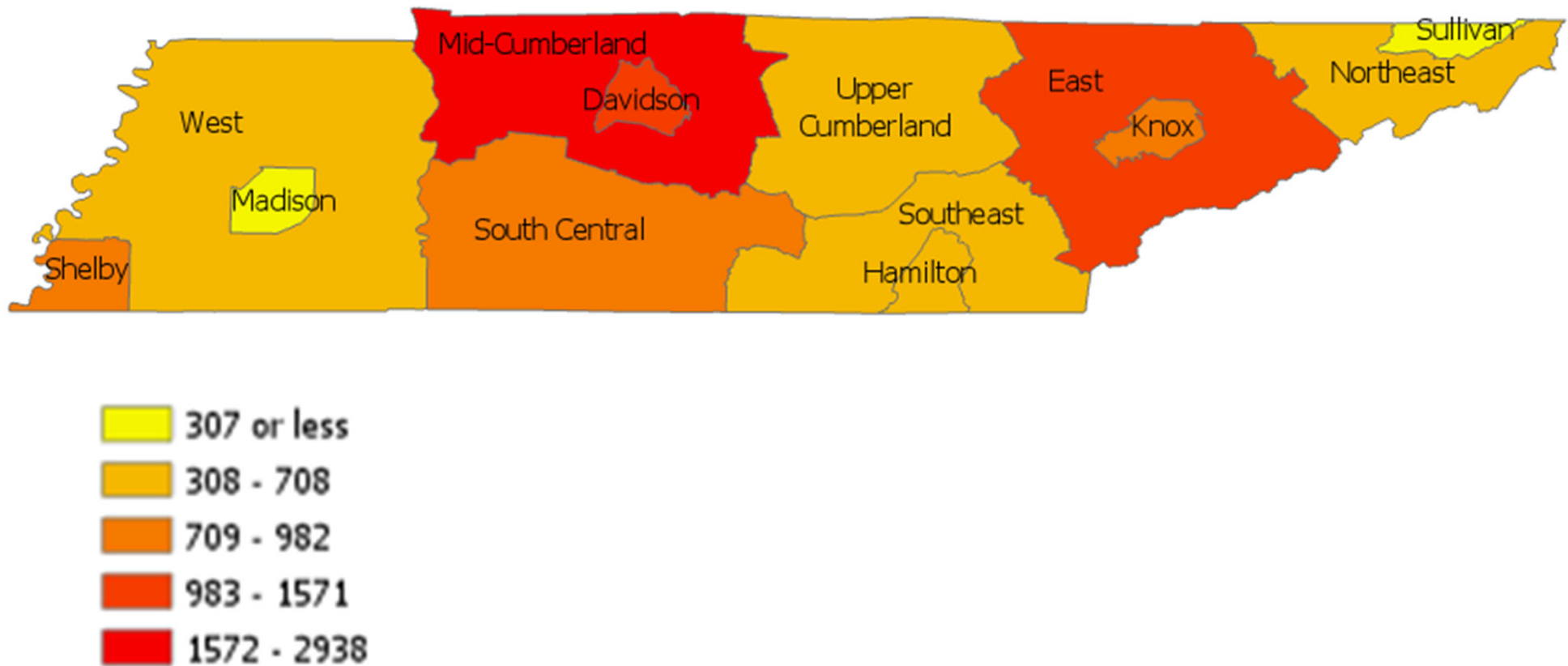
Monthly Suicide Behavior trend:



Data Source: Electronic Surveillance System for the Early Notification of Community based Epidemics (ESSENCE)

Suicidal Behavior

Suicide related behavior by region:



Data Source: Electronic Surveillance System for the Early Notification of Community based Epidemics (ESSENCE)

Intimate Partner Violence (IPV)

Key takeaways and trends in intimate partner violence:

- There were **226** incidents IPV reported between January and August 2022 among women aged 10-50.
- Non-Hispanic **Black** individuals were more represented (58%) among IPV cases than other races/ethnicities
- The average of women experiencing IPV is 31.5 years, with most of them residing in **Shelby** (48.9%), Davidson (8.9%), and Madison (7.1%) counties

* Numbers <11 are not displayed according to the Tennessee department of health guidelines for release of aggregate data to the public.

Data Source: Electronic Surveillance System for the Early Notification of Community based Epidemics (ESSENCE)

Intimate Partner Violence (IPV)

IPV by Age group:

Age group	Percent(%)
18-44	85
45-60	12

* Numbers <11 are not displayed according to the Tennessee department of health guidelines for release of aggregate data to the public.

Data Source: Electronic Surveillance System for the Early Notification of Community based Epidemics (ESSENCE)

Intimate Partner Violence (IPV)

IPV by race/ethnicity:

NH Black	NH White	Other race
132	80	12

NH = Non-Hispanic,

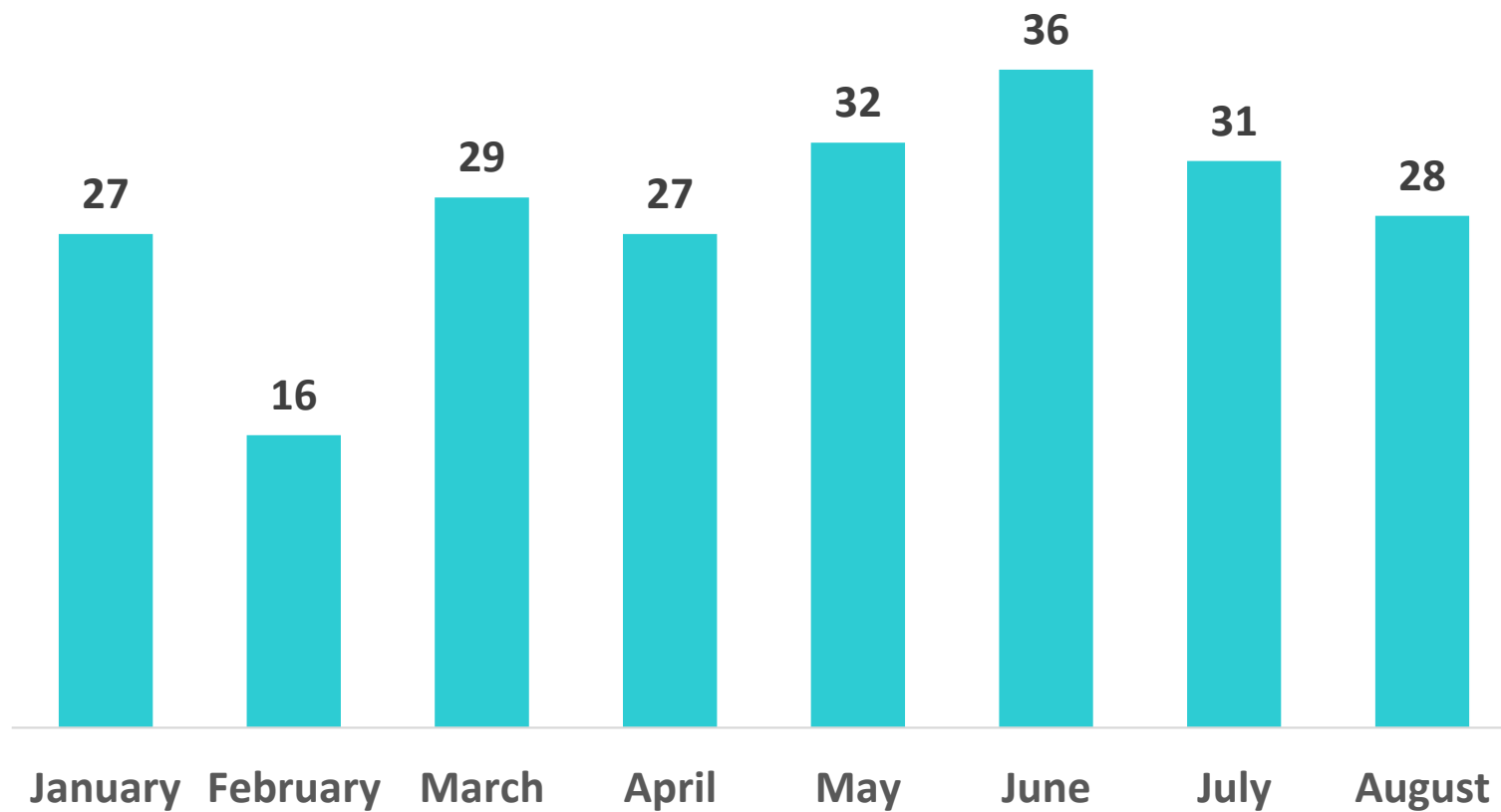
IPV perpetrator: Boyfriend, ex-boyfriend, spouse, husband, domestic partner

IPV by means of injury:

Strangled, Being Hit/slapped/kicked, Sexual Assault, poisoned by partner, pushed out of moving vehicle, attacked with a sharp object

Data Source: Electronic Surveillance System for the Early Notification of Community based Epidemics (ESSENCE)

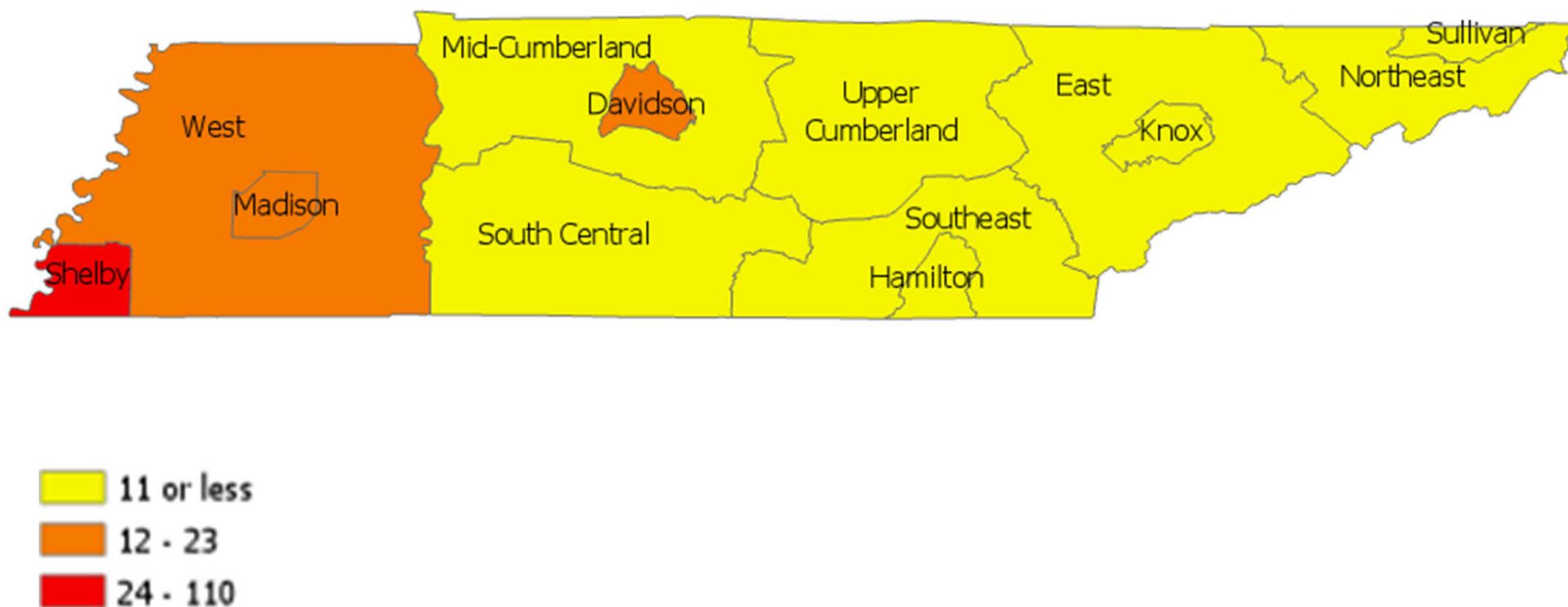
Monthly IPV trend:



Data Source: Electronic Surveillance System for the Early Notification of Community based Epidemics (ESSENCE)

Intimate Partner Violence (IPV)

IPV by region:



Data Source: Electronic Surveillance System for the Early Notification of Community based Epidemics (ESSENCE)

Firearm Injury

Key takeaways and trends in Firearm injury:

- There were **430** Firearm cases reported between January and August 2022 among women aged 10-50.
- Non-Hispanic **Black** individuals had a **larger (47%)** proportion of Firearm injury than other race/ethnic groups
- The mean age of women who come to EDs for firearm injuries was **28.8 years** and most of them reside in **Shelby (38.4%)**, Davidson (13.3%), and Hamilton counties (4.9%).

* Numbers <11 are not displayed according to the Tennessee department of health guidelines for release of aggregate data to the public.

Data Source: Electronic Surveillance System for the Early Notification of Community based Epidemics (ESSENCE)

Firearm injury

Firearm injury by Age group:

Age group	Percent(%)
05-17 years	9%
18-44 years	85%
45-60 years	6%

Data Source: Electronic Surveillance System for the Early Notification of Community based Epidemics (ESSENCE)

Firearm injury

Firearm injury by race/ethnicity:

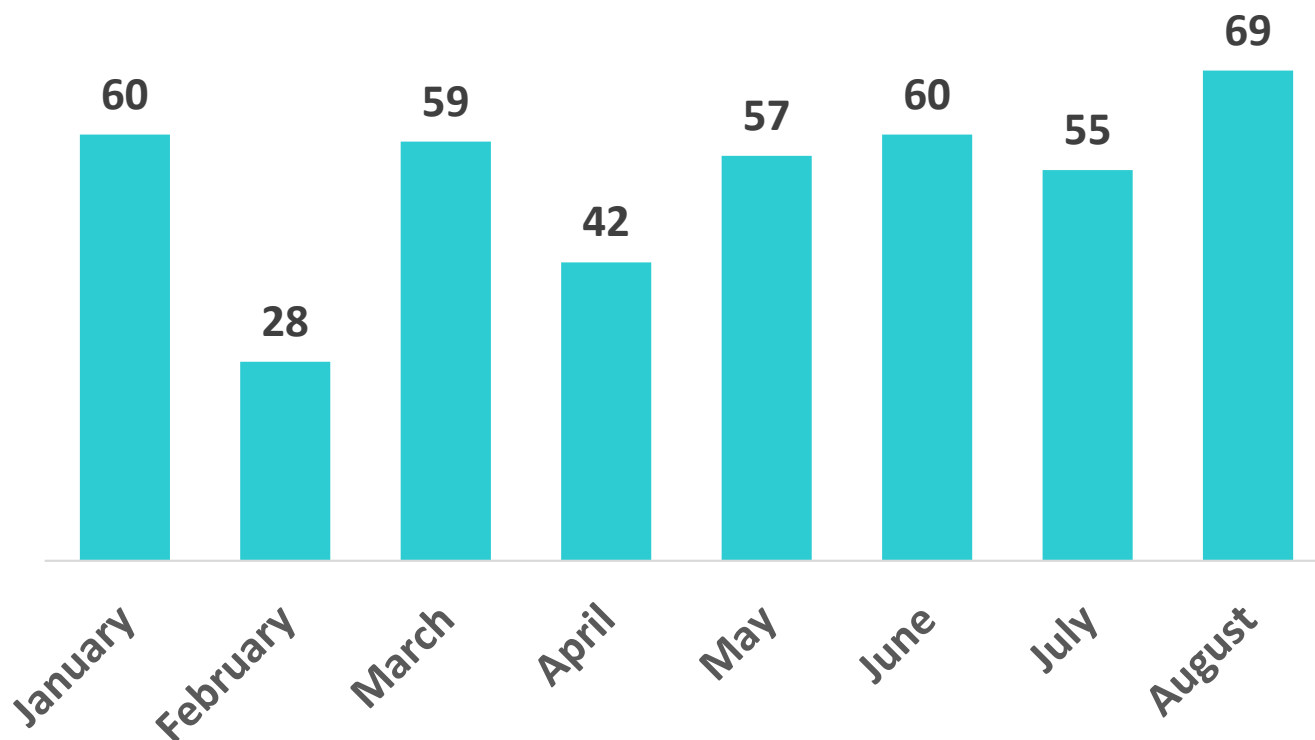
NH Black	NH White	Other race
295	79	13

NH = Non-Hispanic

Data Source: Electronic Surveillance System for the Early Notification of Community based Epidemics (ESSENCE)

Firearm Injury

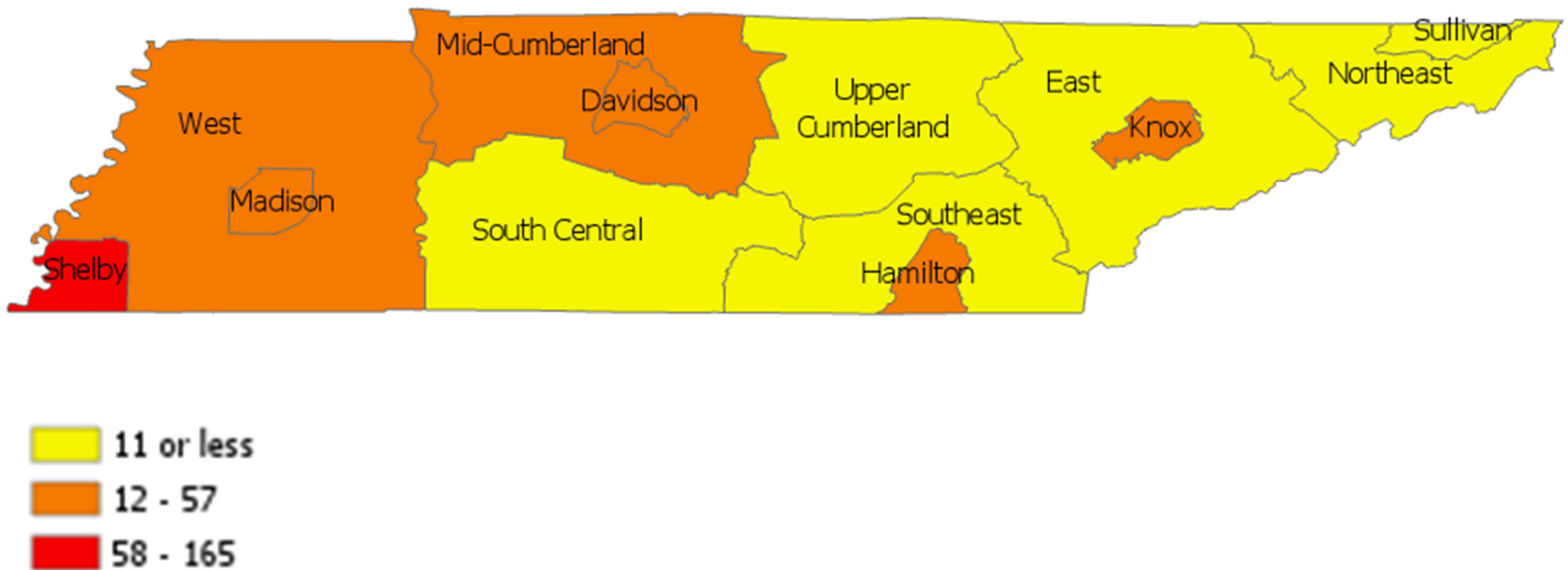
Monthly Firearm injury trend:



Data Source: Electronic Surveillance System for the Early Notification of Community based Epidemics (ESSENCE)

Firearm Injury

Firearm injury by region:



Data Source: Electronic Surveillance System for the Early Notification of Community based Epidemics (ESSENCE)

Implications for Prevention

- Trainings on Domestic Violence
 - Emphasis on most vulnerable populations
- Trainings on Danger Assessment
 - To prevent homicides from aggravated IPV
- Targeting our prevention efforts on homicide to West TN
- Collaboration with partners (e.g., home visiting, CHANT, rape prevention, and suicide prevention programs)

CONCLUSION

- We identified risk factors for violent maternal deaths, from January 2022 to August 2022 among women of reproductive age, 10-50 years.
- Syndromic surveillance offers near real-time surveillance of ED visits and can aid in the prevention of IPV, firearm injuries, and subsequently suicides and homicides.

Program Information

- This program is supported by the U.S. Department of Health and Human Services (HHS) as part of a financial assistance award totaling \$300,000 with 100 percent funded by HHS. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by HHS, or the U.S. Government
- The contents are solely the responsibility of the authors and do not necessarily represent the official views of HHS.
- For more information, visit [Domestic Violence Prevention \(tn.gov\)](http://DomesticViolencePrevention.tn.gov)
- For questions, contact:

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THANK YOU



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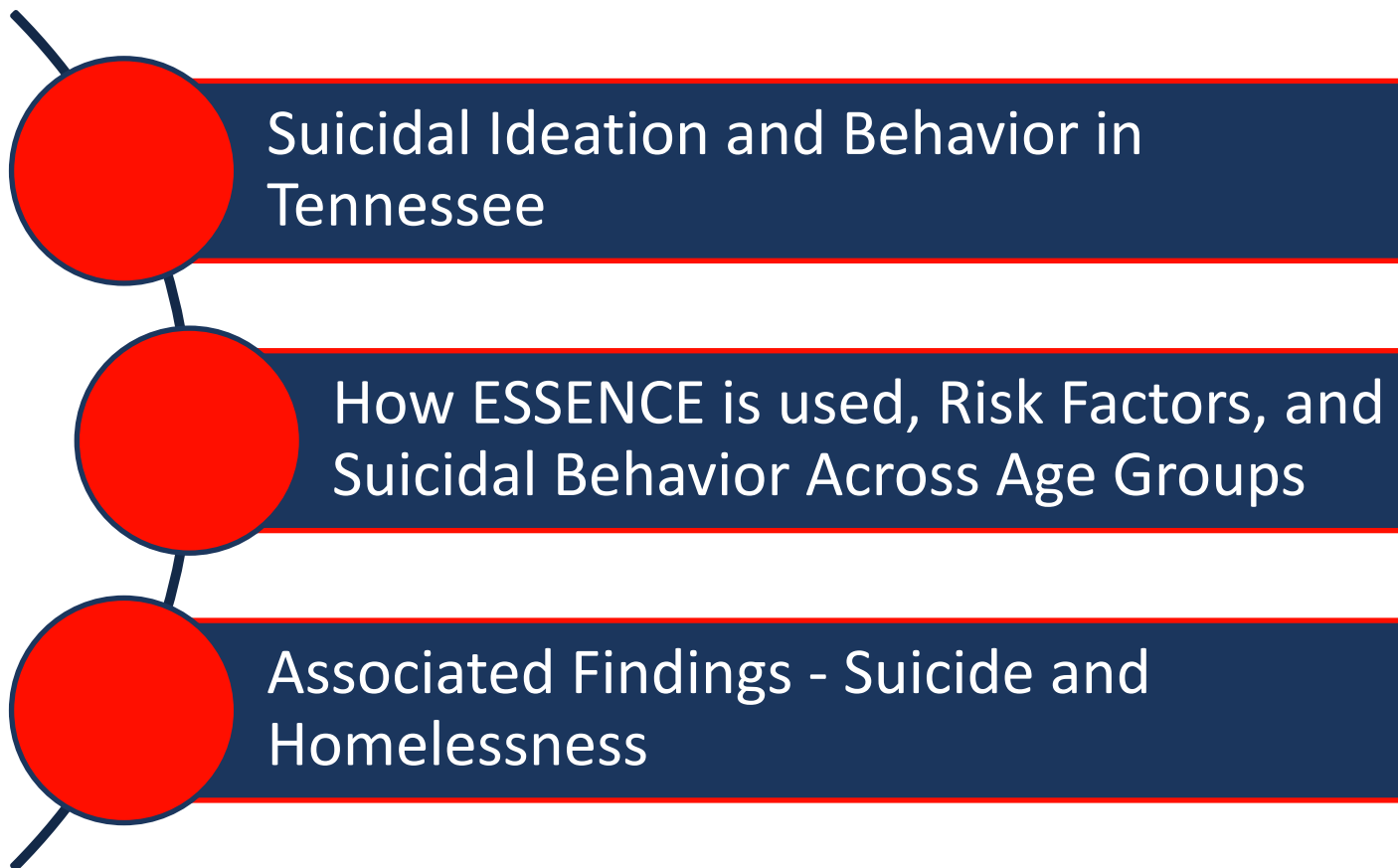


Syndromic Surveillance to Identify Suicidal Behavior and Homelessness in Tennessee

Darryl Nevels, PhD

Suicide Program Prevention Epidemiologist

Presentation Overview



Suicide Prevention

- In 2020 - 1,220 Tennesseans died by suicide.
- Suicidal attempts, intentional self-harm, suicidal ideation, and other risk factors, including homelessness.
- ESSENCE queries include Chief Complaint and Discharge Diagnosis Categories (CC and DD) for SDC Suicide-Related Behavior.
- Expansion across the life-span indicated homelessness is a common risk factor.



Suicide-Related ED Data Provided



Available Data

Suicide Related ED Alerts for
Children Under 18 and Adult
Age Groups: 18-24, 25-44,
45-64, and 65+

Age Groups, Race, Location,
and Gender of Patients

Risk Factors for All Ages



Data Currently Unavailable Due to Release Guidelines

Specific Count of ER Visits
in Each County

Any Information with
Counts Less than 11
Individuals or Populations
Less than 20,000



Next Steps for Suicide Syndromic Surveillance & Prevention

Increase Identification of
Risk Factors

Monthly Reporting and
Mapping

Quarterly Data Briefs

Suicide-Related Syndromic Surveillance: ESSENCE

ESSENCE tracks patient chief complaints and discharge diagnoses from 124 unique hospitals reporting across the State of Tennessee. Information is received from participating emergency departments within 24 hours of a patient encounter and alerts are on a 28-day baseline.

CC and DD Category (Chief Complaint and Discharge Diagnosis)	SDC Suicide-related v1
Detector (Varies for Time Queries)	Regression/EWMA 1.2

Algorithm Info: <https://www.cdc.gov/nssp/documents/essence-training-presentation-phi-conference.pdf>

Suicide-Related Syndromic Surveillance: ESSENCE

Basic Query:

- Suicide Related, County/Region, Age, Gender, Race, Key Words

The screenshot displays the ESSENCE Query Wizard interface. On the left, the 'Available Query Fields' list includes 'ER Data by Patient Location' as the data source and various fields like 'DDI Percent Last Year', 'Diagnosis Type', and 'CC and DD'. The 'Selected Query Fields' panel on the right contains 'Geography System' (Region), 'Medical Grouping System' (ESSENCE Syndromes), 'Age Range' (Between 25 and 44), and 'CC and DD Category' (SDC Suicide Related v1). A red box highlights the 'Start Date' (13Nov22) and 'End Date' (19Nov22) fields. A large blue arrow points from the 'Selected Query Fields' panel towards the central query builder area. The bottom navigation bar includes buttons for 'Table Builder', 'Time Series', 'Data Details', 'Text Analysis', 'Graph Builder', 'Overview', 'Adv Qry', and 'Explain Qry'. A 'MyFilter:' field and a 'Create' button are also visible.

Suicidal Risk Factors and Behavior Ages 25-44

Risk Factors:

- Excessive alcohol use
- **Homelessness**
- Recently released from prison
- Separation from a biological child
- Polysubstance abuse (e.g., cocaine, cannabis, and methamphetamines)
- Not having access to prescription medication
- Issue and stress at work



Suicidal Behavior:

- Intentional overdosing on prescription/non-prescription medications.
- Intentionally swallowing sharp objects, threats of suicide by firearm, overdosing on narcotics, jumping from heights, and running into traffic.

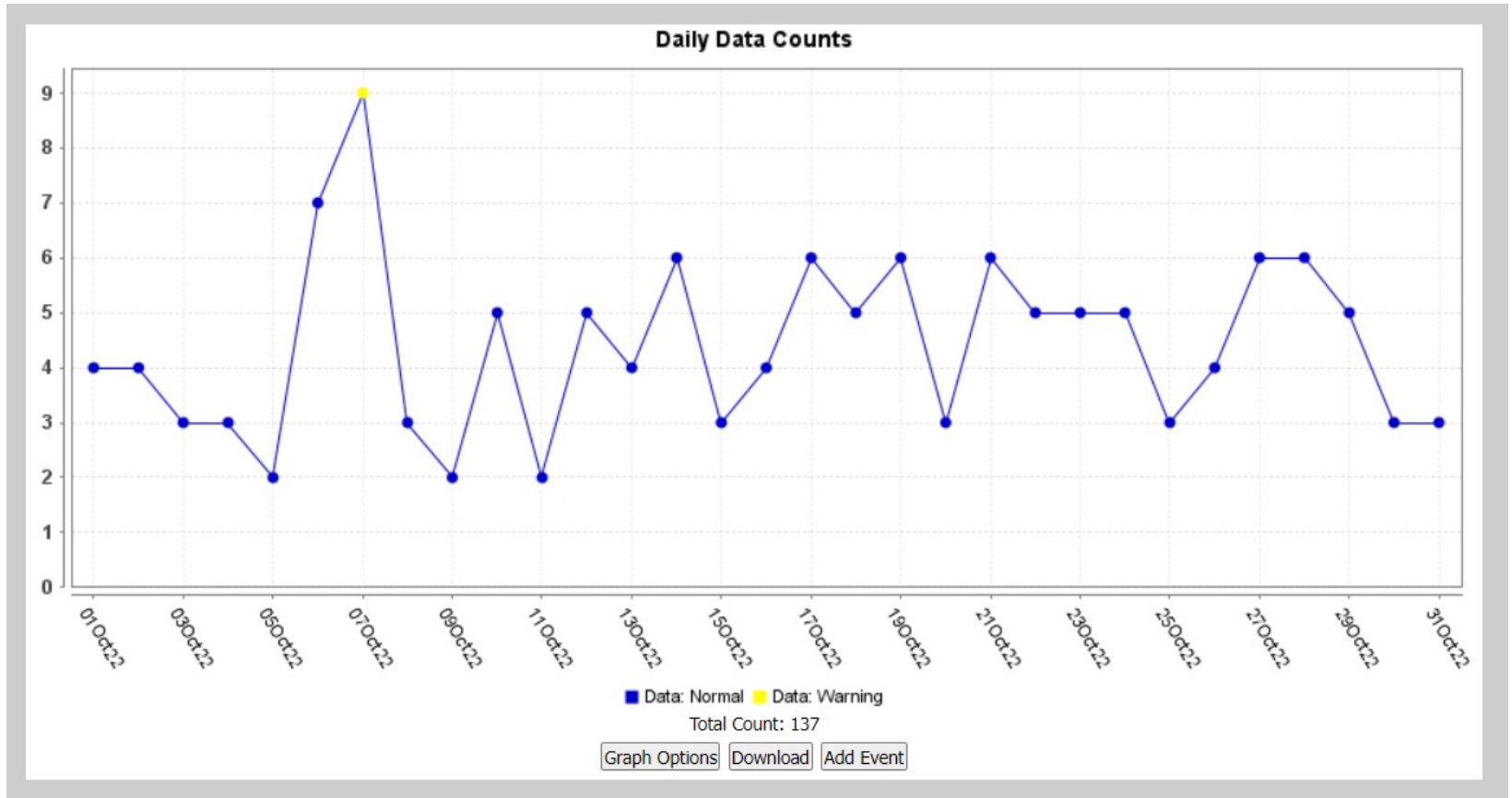
What Does Homeless Really Mean?

- Triage Notes to understand explanations of homelessness in CC and DD Categories.
- Common Comments in Triage Notes:
 - General loss of a home/apartment
 - Inability to afford rent/mortgage
 - Kicked out of residence due to an altercation with family
 - Mental health issues and asked to leave a group home or nursing facility
 - Inability to stay at a location due to illicit drug use
 - Loss of home due to natural disaster or fire



Trends in Suicide Alerts and Homelessness

Example of the month of October 2022 querying for “Suicide” and “Homelessness”



How To Receive Weekly ESSENCE Alerts

ESSENCE ALERT SIGN-UP

Sign Up To Receive ESSENCE Alerts (Counties A-K)

If you are interested in being notified when an ESSENCE Alert is generated for your county, sign up below. You may sign up for as many counties as you like; if you would like to sign up for counties in both columns, you must enter your email twice.

*** Email**

Sign Up To Receive ESSENCE Alerts (Counties L-Z)

If you are interested in being notified when an ESSENCE Alert is generated for your county, sign up below. You may sign up for as many counties as you like; if you would like to sign up for counties in both columns, you must enter your email twice.

*** Email**

<https://tspn.org/initiatives-outreach/essence/essence-alert-sign-up/>

What Happens After an Alert?

Action After a County, Metro, or Region Receives an Alert

Internal and external partners will use ESSENCE alerts to help target prevention efforts in near real-time within areas of the state seeing increases of suicide-related behavior. Responses to alerts include spreading awareness of suicide through dissemination of the statewide crisis line and promoting suicide prevention programs and services available across the state.



Links to Data Request and Infographics



Data Request Form: <https://www.surveygizmo.com/s3/5819792/TDH-Data-Request-Form>
For more information, go to www.preventsuicidetn.com

[Annual Suicide Report Link](#)

[Data Request Link](#)

[Prevent Suicide Link](#)

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TDH Suicide Prevention Program Website: www.preventsuicidetn.com

Questions? & Thank You!



Questions?

National Syndromic Surveillance Program

Community of Practice

Resources that Advance the Science and
Practice of Syndromic Surveillance



2022

Syndromic Surveillance Symposium

December 6–8, 2022



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