

# FCS 2020 Crisis Call Analysis

DDA-3 April 13, 2021

### **Overview**

- 1. The Ask
- 2. Data Cleaning Process
- 3. Data Analysis
- 4. Key Insights
- 5. Q&A



# The Ask

### **Business Questions**

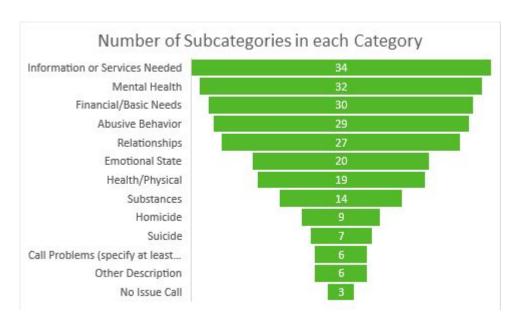
- Examine call volume and identify surge times/seasons/events
- 2. Analyze trends in call content
  - a. Most common issues
  - b. Average count of issues per call
- 3. Assess regional and demographic trends in call content and call volume
- 4. Determine count and success rate of imminent risk calls
- Identify potential savings in avoided ER visits and psychiatric treatment



# **Data Cleaning Process**

### Methodology used for data findings

- Our area of focus are the 2020 Crisis Issues columns provided by FCS.
- FCS agents select issues from categories during each call which are aggregated into columns.
- By using a string method in python, Crisis Issues columns were separated and each sub issue was set in its own respective column.
- Columns denote values of 1 when the issues were present and values of 0 when they were not.
- We added total columns for each sub issue and two columns if the calls were of Imminent Risk (IR) and how many Imminent Risk issues were present in each call.



### **Before:**

CRISIS Issues - Emotional State	CRISIS Issues Financial/Basic Needs	CRISIS Issues - Health/Physical	CRISIS Issues - Homicide	CRISIS Issues - Information or Services Needed	CRISIS Issues - Mental Health	CRISIS Issues - No Issue Call	CRISIS Issues - Other Description	CRISIS Issues - Relationships	CRISIS Issues - Substances	CRISIS Issues Suicide
Anxious/Stressed; Job Stress; Lonely	NaN	NaN	NaN	NaN	Medical Related Anxiety	NaN	NaN	NaN	NaN	NaN
Anxious/Stressed	NaN	NaN	NaN	NaN	Anxiety/Panic	NaN	NaN	Parent-Child; Peer Group/Friend; Therapist/Med	NaN	NaN
Anxious/Stressed; Parenting Stress; Overwhelmed	NaN	NaN	NaN	NaN	Other Mental Health	NaN	NaN	Parent-Child; Other Relationships	NaN	NaN
Anger/Hostility	NaN	NaN	NaN	NaN	Anxiety/Panic; Paranoia	NaN	NaN	NaN	NaN	NaN
Anger/Hostility; Overwhelmed	NaN	NaN	NaN	NaN	Other Mental Health	NaN	NaN	Crisis Counselor; Conflict With Other	NaN	NaN
9225					***	3755	575.1			
Anxious/Stressed; Overwhelmed; Scared; Moving	NaN	NaN	NaN	NaN	Bipolar Disorder (diagnosed)	NaN	NaN	NaN	NaN	NaN
Anxious/Stressed; Lonely; Sad/Depressed	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN

# **After:**

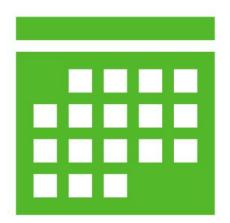
Chronic Suicidal Thoughts/Ideations	CURRENT SUICIDAL INTENTION/PLAN/ATTEMPT IN PROGRESS	Suicide History/Previous Attempts	Grief due to Suicide Loss	Information about SOSL support group	Third party concerned about anothers suicide risk	CURRENT THOUGHTS/IDEATIONS	Total Suicide Issues	Total Number of Issues	IR Call	Number of Imminent Risk Issues
0	0	0	0	0	0	0	0	4	No	0
0	0	0	0	0	0	0	0	2	No	0
0	0	0	0	0	0	0	0	7	No	0
0	0	0	0	0	0	0	0	5	No	0
0	0	0	0	0	0	0	0	3	No	0
Per 6	Rent.	803.4		0.00		(***)	•••	***		***
0	0	0	0	0	0	0	0	8	No	0
0	0	0	0	0	0	0	0	3	No	0
0	0	0	0	0	0	0	0	4	No	0
0	0	0	0	0	0	0	0	1	No	0
0	0	0	0	0	0	0	0	0	No	0

# **Data Analysis**

# **Analysis by Time**

# **Key Considerations**

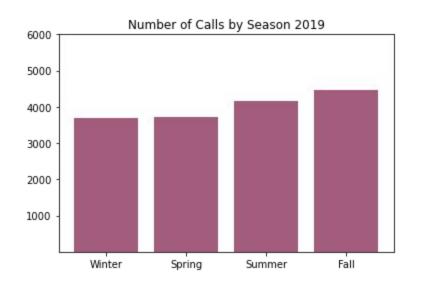
- Identify peaks in call volume based on:
  - Season
  - Holidays or current events
  - Times of day
  - Days of week
- Compare 2020 call volume to 2019
- Examine imminent risk call volume

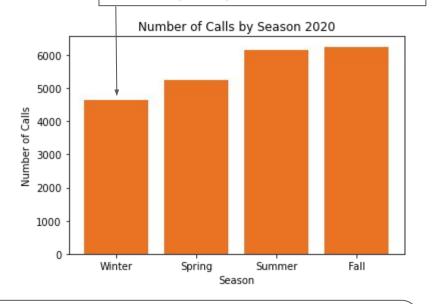




### Calls by Season 2019 vs 2020

- Death of Kobe Bryant
- First US case of COVID-19
- Beginning of election year



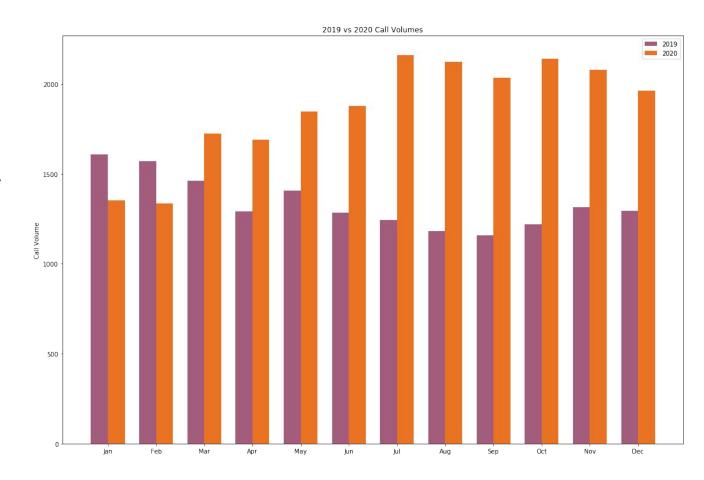


All seasons in 2020 had higher number of calls compared to 2019

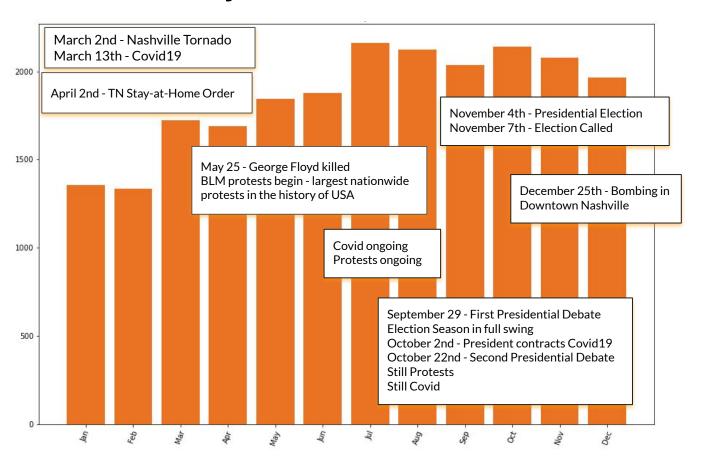
Fall 2020 had 69% increase in calls compared to Fall 2019

#### Call Volume 2019 vs. 2020

- 2020 call volume greatly exceeded 2019 call volume from March through December.
- Increased call volume was not tied to discrete events, but rather increased throughout 2020 from March onward



### 2020 Call Volume by Month



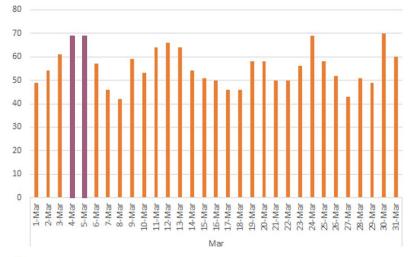
#### Call Volume Increase due to severe weather

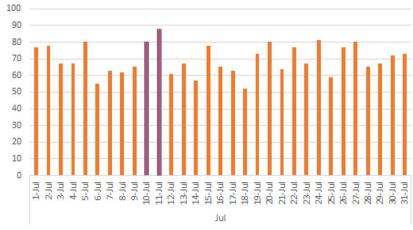
Severe storms and at least one tornado on March 2, 2020 triggers an increase in call volume between March 4th and March 5th

Due to severe weather impacting 20 county jurisdictions on **Friday**, **July 9**, **2020** we see an increase in calls on July 10th and July 11th.







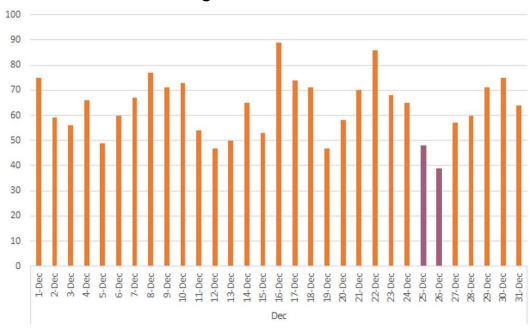


#### Call Volume decrease due loss of cell service

On **Friday, December 25, 2020 6:30AM** Anthony Quinn Warner detonated a vehicle bomb in downtown Nashville, Tennessee, United States, killing himself, injuring eight people and damaging dozens of buildings in the surrounding area.

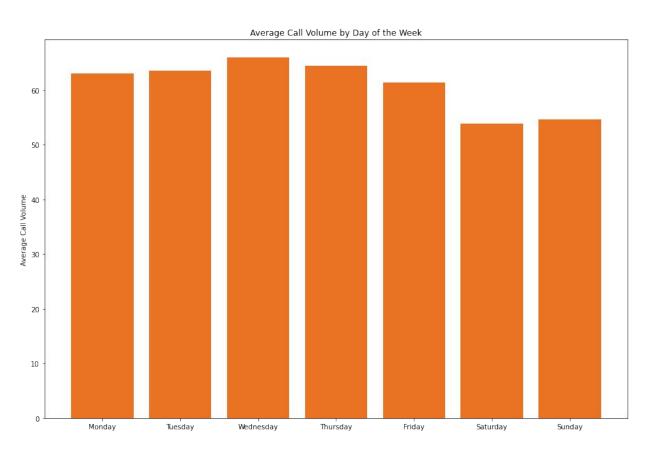
It took place at 166 Second Avenue North between Church Street and Commerce Street at 6:30 am, adjacent to an AT&T network hub, resulting in days-long communication service outages.





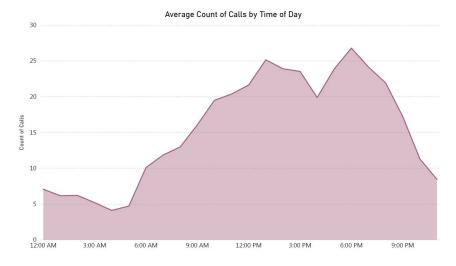
## **Average Count of Calls by Day of the Week**

- Average weekday call volume: 64 calls per day
- Average weekend call volume: 54 calls per day
- Weekday call volume exceeds weekend call volume by 18.5 %

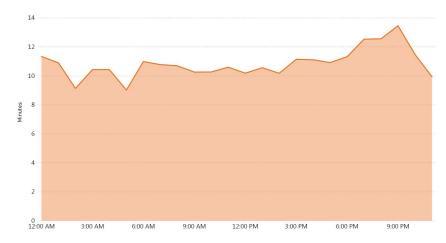


# Calls by Time of Day

- Most calls fall between 6:00 AM and 9:00 PM, with peaks around 12:00 PM and 6:00 PM
- Calls average 10 minutes in length, regardless of time of day



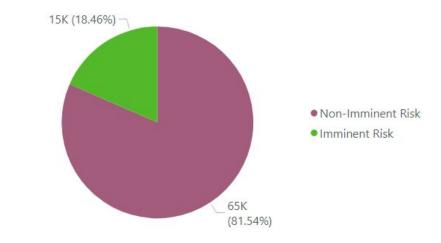




#### **Imminent Risk Call Volume**

- Total Minutes spent with Non-Imminent Risk Calls - 65,276 minutes
- Total Minutes spent with Imminent Risk Calls - 14,781 minutes

Minutes Spent with Non-Imminent Risk and Imminent Risk



# **Analysis by Call Content**

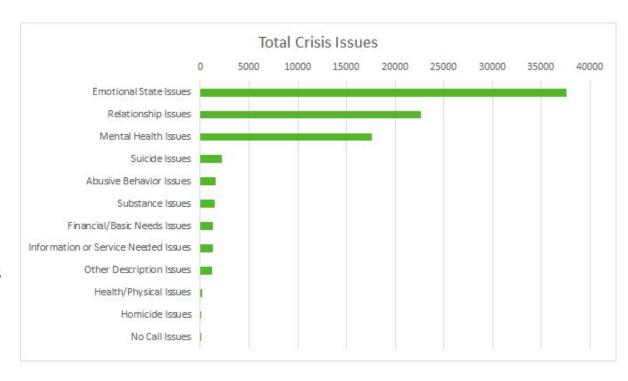
## **Key Considerations**

- What issues are most common?
- What kinds of issues (crisis categories) are most prevalent?
- Are there differences in issues reported in 2019 vs. 2020?
- What issues are imminent risk callers reporting?

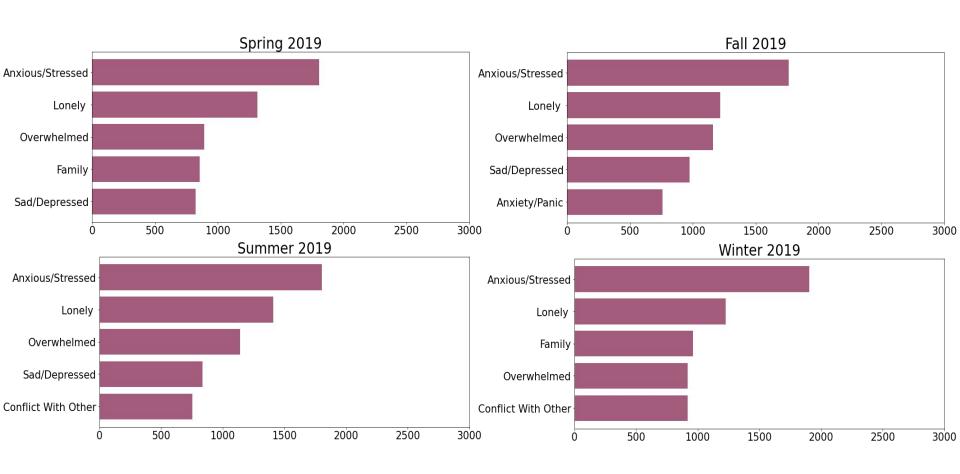


### **Issue Count by Crisis Category**

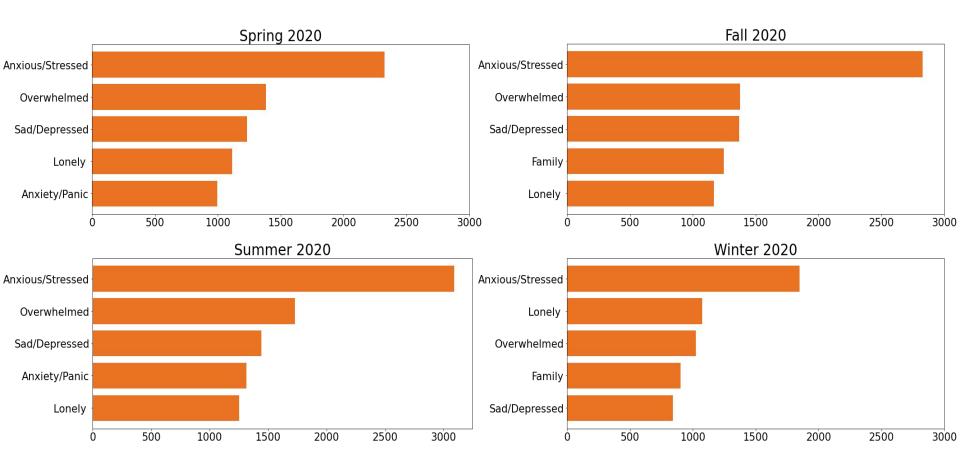
- Top 3 Crisis Categories:
  - Emotional State: 37,613 issues reported
  - Relationship Issues:22,689 issuesreported
  - Mental Health
    Issues: 17,652 issues
    reported



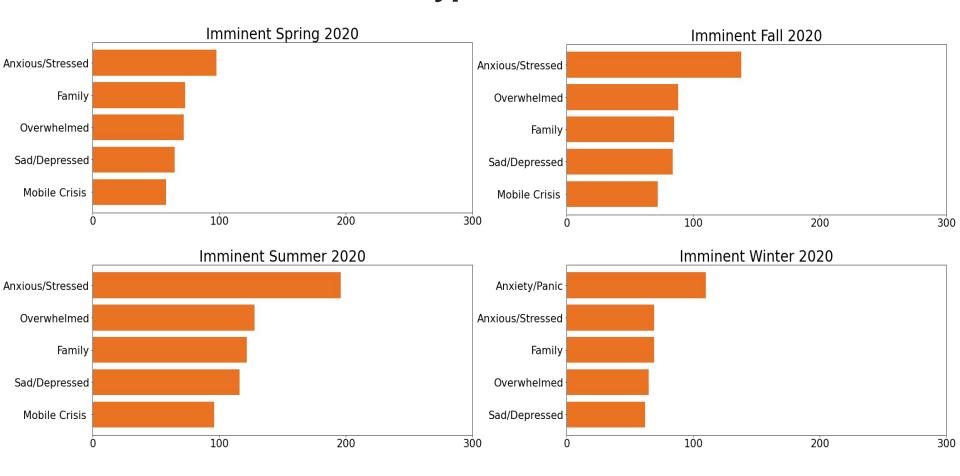
#### **Most Prominent Issues 2019 v 2020**



#### **Most Prominent Issues 2019 v 2020**



### **Most Prominent Issue Types for Imminent Risk Calls**



# Geographic Analysis

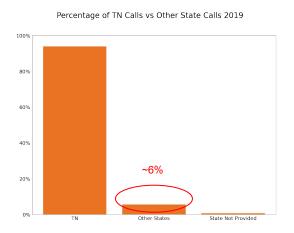
## **Key Considerations**

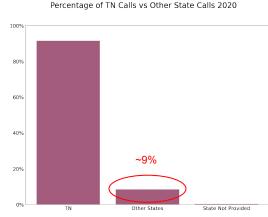
- How many callers are from out of state?
- What counties in Tennessee have the highest call volume?
- Which counties have the highest volume of imminent risk calls?

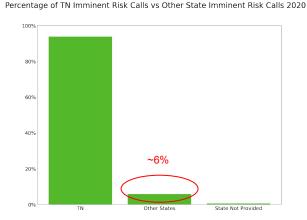


#### TN Calls vs Other State Calls

- For **2019**, roughly **6%** of **all calls** answered were from other states/unknown
- For **2020**, roughly **9%** of **all calls** answered were from other states/unknown
- In 2020, roughly 6% of all imminent risk calls answered were from other states/unknown







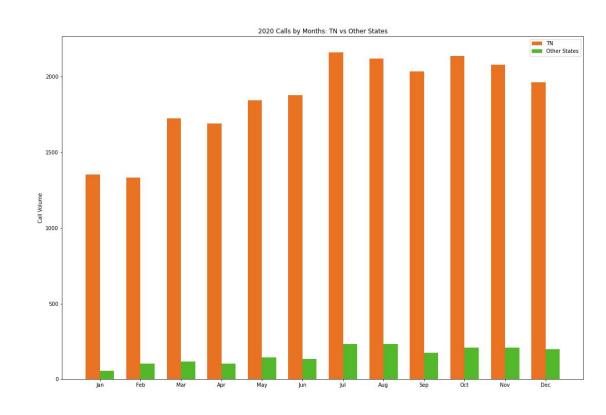
### 2020 Calls by Months: TN vs Other States

- Out of state call volume increased throughout the year, with July and August seeing the highest peaks of out of state calls (231 each in July and August, versus 144 in May and 135 in June)
- Top 3 out of state locations:

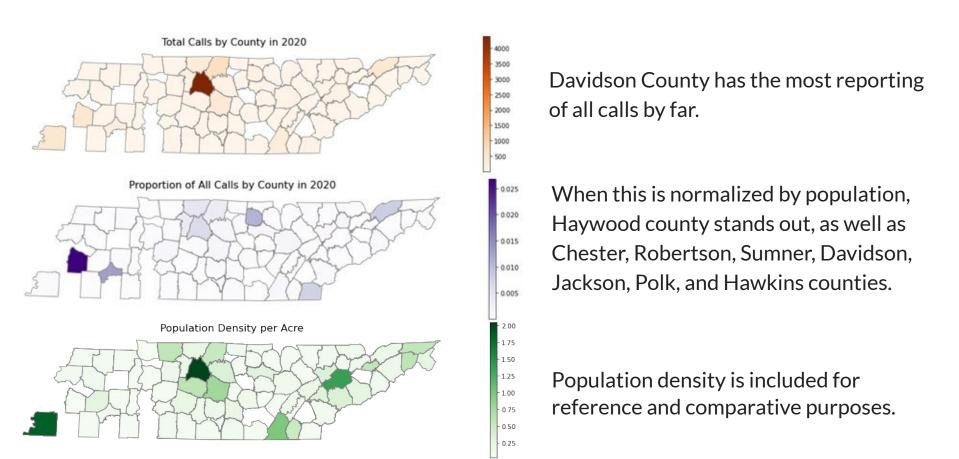
• Wisconsin: 350 calls

Texas: 227 calls

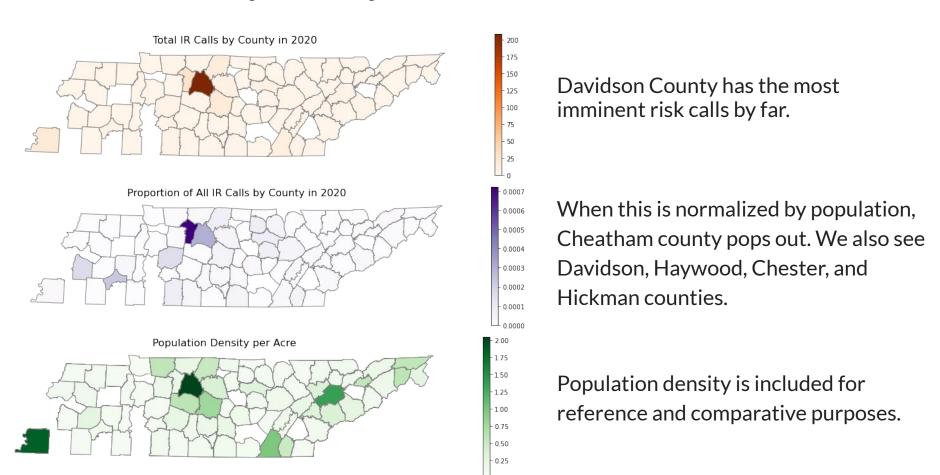
Minnesota: 132 calls



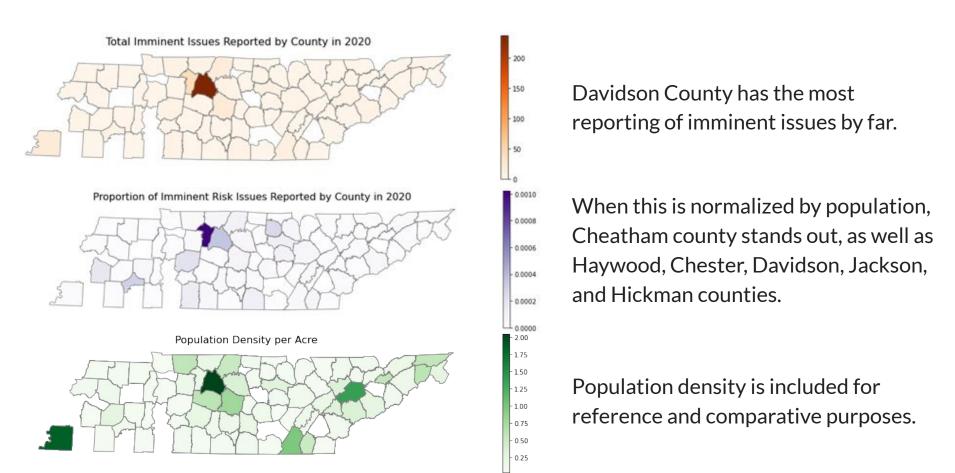
# **Tennessee by County: All Calls**



# **Tennessee by County: All Imminent Risk Calls**



# **Tennessee by County: Imminent Risk Issues Reported**



# Demographic Analysis

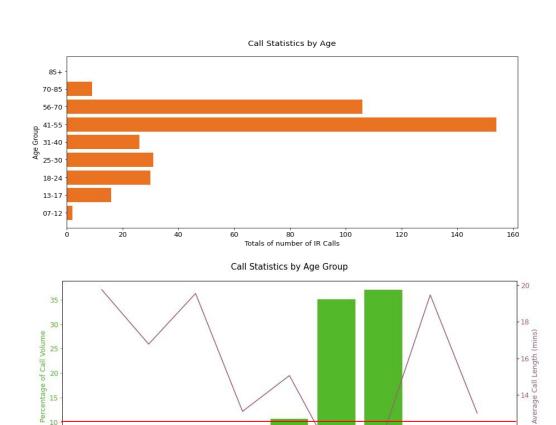
### **Key Considerations**

- Who is calling?
  - Age
  - Ethnicity
  - Gender Identity
  - Marital Status
  - Employment Status
- How do crisis issues differ among these groups?
- How are imminent risk calls distributed among these groups?
- 34% of callers did not supply ANY demographic info;
  53% of callers supplied 1 of 9 demographic data points; 62% of callers supplied 2 of 9 demographic data points



# **Demographics - Age**

There is a large spike in the 41
 - 55 and 56 - 70 age groups,
 which account for over 70% of the identified callers.



25-30

41-55

56-70

31-40

Age Group

13-17

18-24

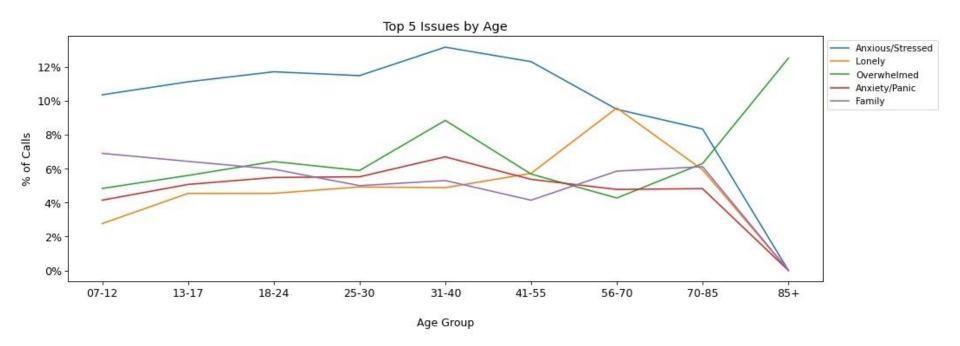
07-12

Overall Avg Call Length

85+

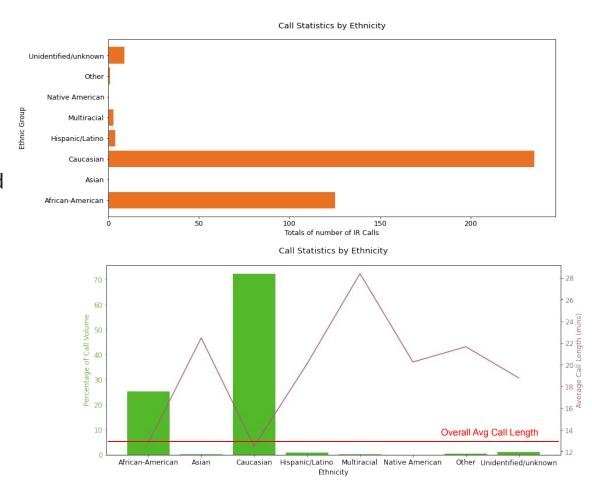
70-85

# **Demographics - Age**

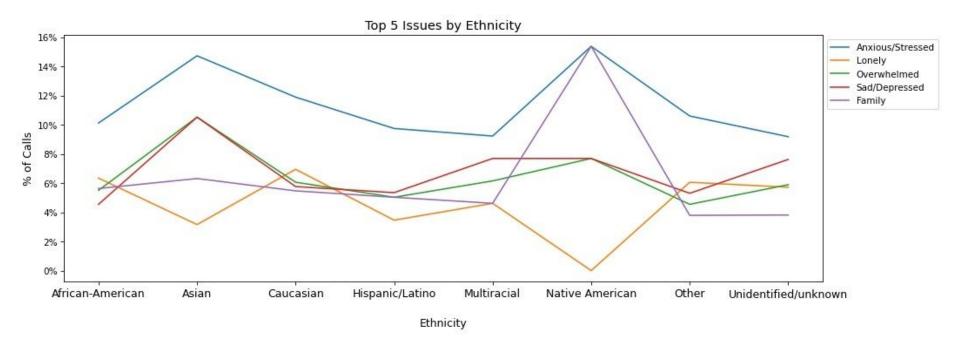


### **Demographics - Ethnicity**

- Caucausian and African-American callers combined for almost all of the callers (> 95%).
- Other ethnic groups combined accounted for less than 5% of the identified callers.

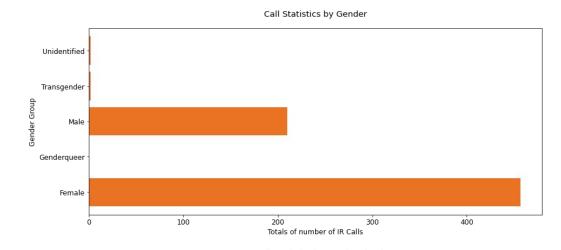


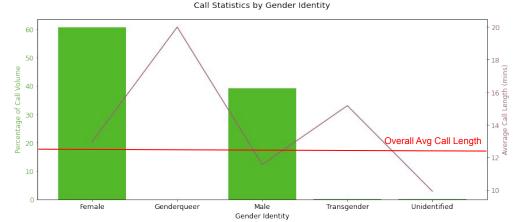
## **Demographics - Ethnicity**



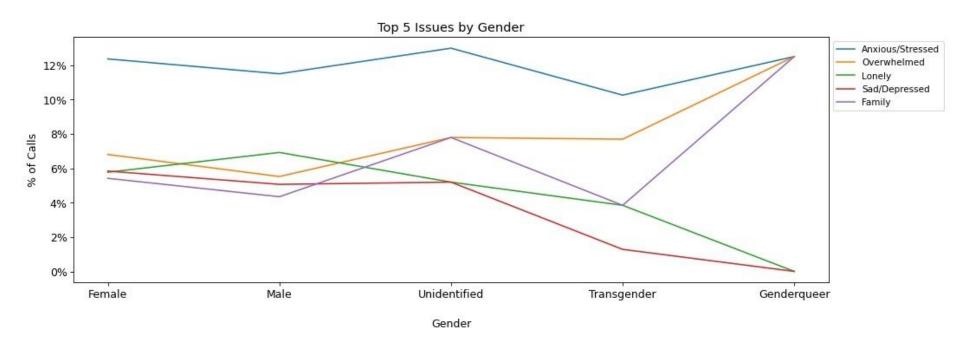
#### **Demographics - Gender Identity**

- Female callers were a larger share than male callers at a 3:2 ratio.
- Genderqueer, transgender, and unidentified callers made up less than 5% of callers.



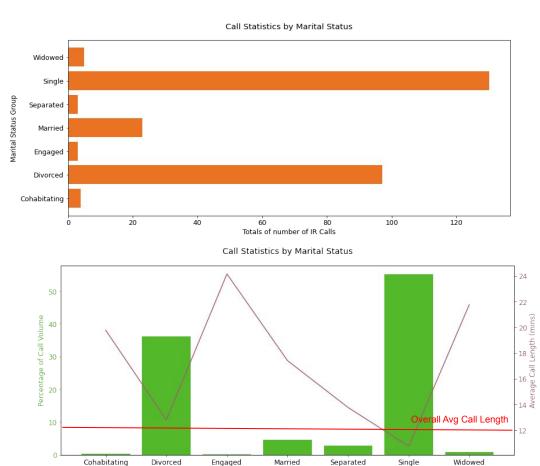


#### **Demographics - Gender Identity**



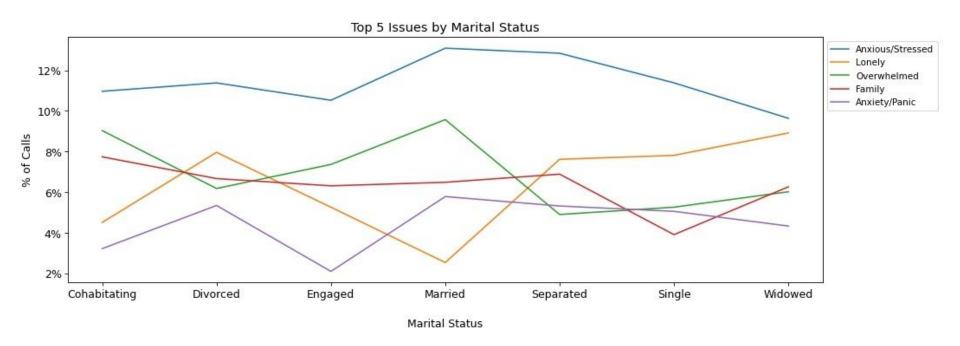
#### **Demographics - Marital Status**

 Single and divorced callers accounted for the significant majority of callers, combining for over 90%.



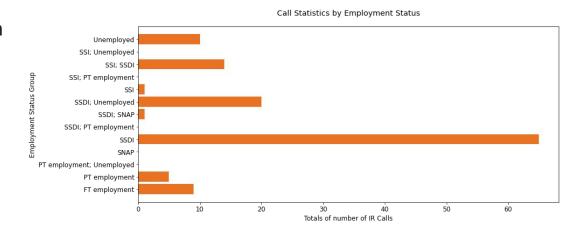
Marital Status

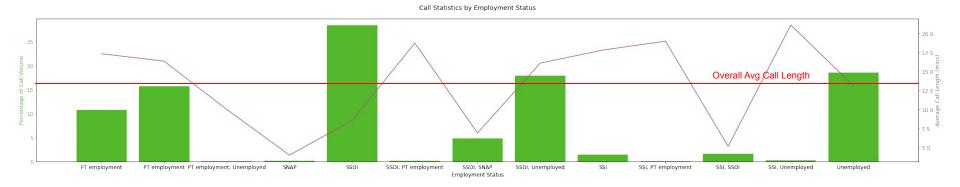
#### **Demographics - Marital Status**



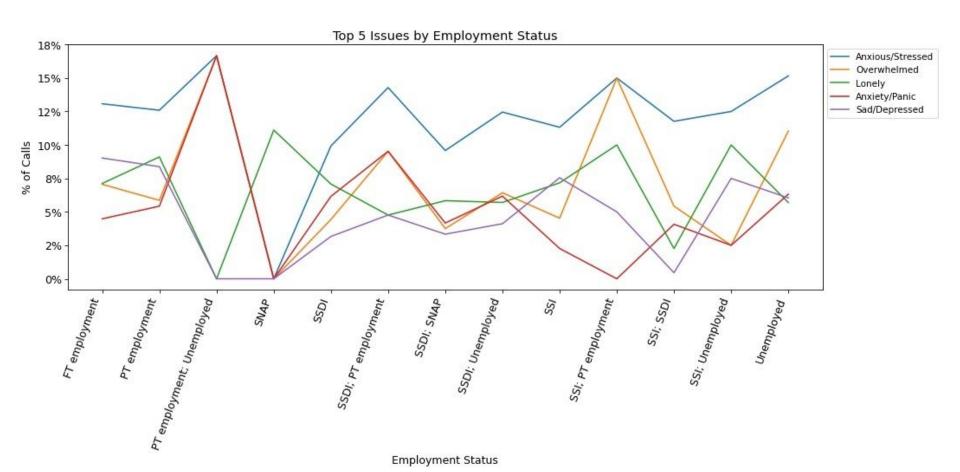
### **Demographics - Employment Status**

 Roughly 55% of callers rely on some form of Social Security Disability Insurance (SSDI).

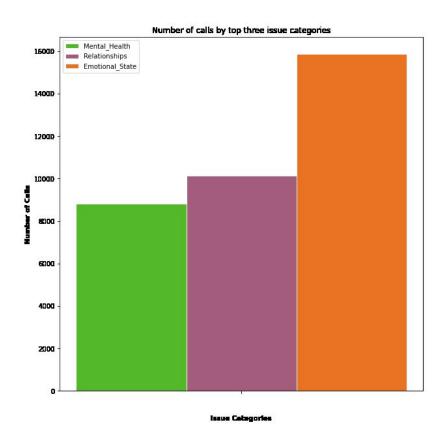




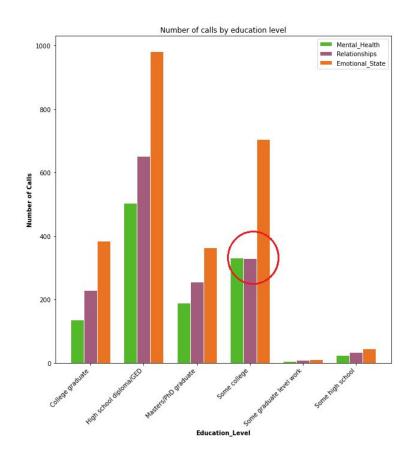
#### **Demographics - Employment Status**

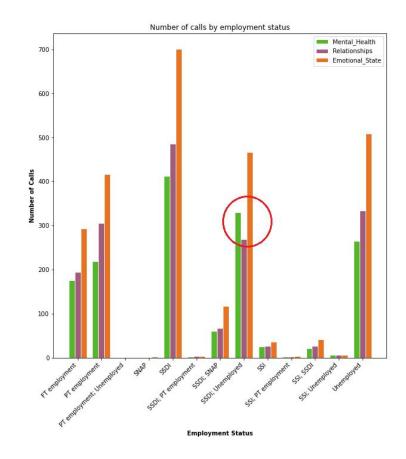


#### **Demographics - Issue Categories**



#### **Demographics - Issue Categories**





# **Analysis of Repeat & One Time Callers**

#### **Key Focus Areas for Analysis**

- Define the two types of callers, repeat callers and one time callers:
  - Repeat callers are individuals who call the center multiple times and have a unique
    Call Number assigned to them. One time callers are individuals who have not
    called the line before and have a -1 assigned to their Call Number.
- Key focus areas:
  - Identify trends or patterns between types of crisis issues for both repeat and one time callers.
  - Explore time of calls made by repeat callers to determine if there are clear high or low volume time periods.
  - Determine how many calls are deemed as "imminent risk" and what the breakout is among repeat and one time callers.
  - Calculate how many minutes are spent on calls classified as "imminent risk" by repeat and one time callers.

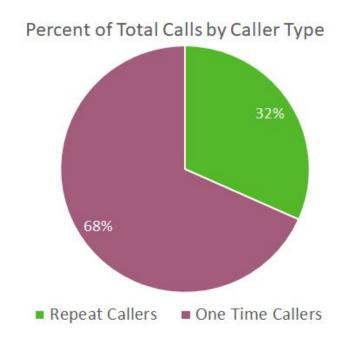
#### **Breakdown of Total Calls by Caller Type**





#### Breakdown of Total Calls by Caller Type

- Repeat callers, or 58 individuals, accounted for 32% of total calls.
- Repeat callers accounted for 30% of total call minutes in 2020.

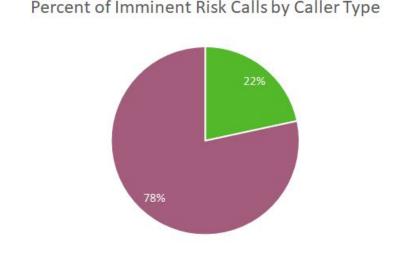




#### Imminent Risk Calls by Caller Type

One Time Callers

Almost 15K total minutes were spent on calls that were categorized as "imminent risk."
 Repeat callers accounted for 22% of these calls.



Repeat Callers



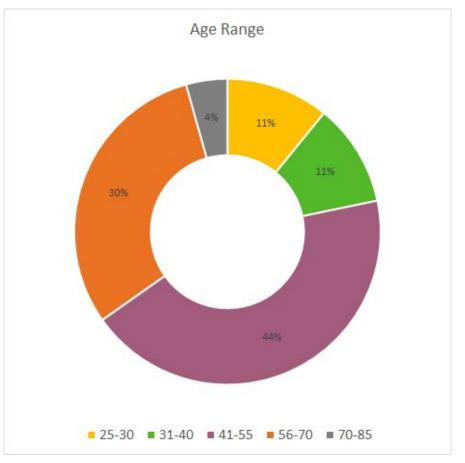




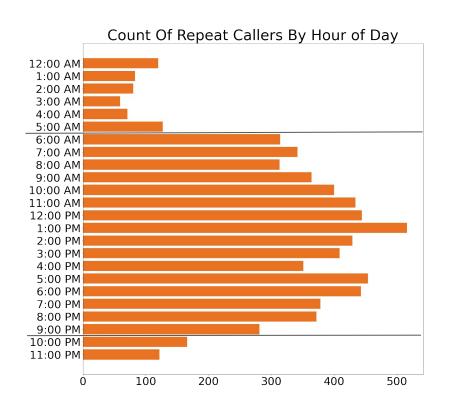


#### **Demographics of Repeat Callers**

- Gender:
  - o 33 female
  - o 21 male
  - 4 unknown
- Race:
  - 35 caucasian
  - o 11 black
  - 12 unknown
- Disability status:
  - o 25 disabled
  - 33 not disabled or status unknown
- Marital Status:
  - 26 single
  - 3 married or cohabitating
  - 12 divorced or separated
  - o 15 unknown



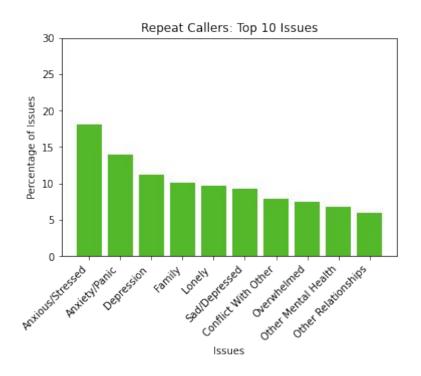
#### Repeat Callers by Hour of Day

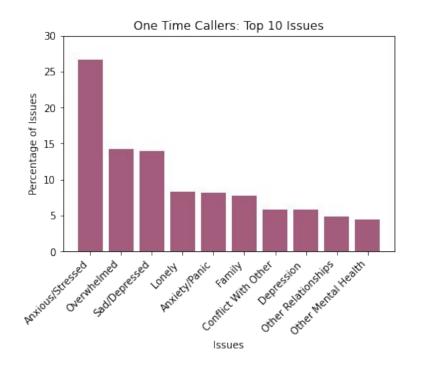


- The bulk of repeat callers call between
  6:00am and 9:00pm
- Most callers seemed to have "normal" sleep schedules
- Our findings suggest an opportunity to increase staffing during the daytime hours, rather than the off-hours of the night.

#### Top 10 Crisis Issues by Caller Type

• The top five crisis issues for the repeat callers and one time callers overlap for the following: Anxious/Stressed, Anxiety/Panic, Depression and Lonely

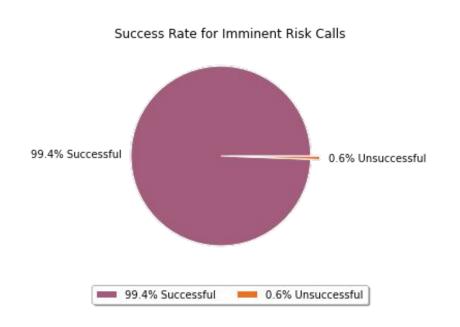




# Imminent Risk & Value/Needs Analysis

#### **High Imminent Risk Success Rate**

Of 934 imminent risk calls identified in 2020, 928 were identified as successful. FCS has a 99.4% success rate for imminent risk calls!





#### If an imminent risk call is unsuccessful:

- Person will likely go to the ER. The average cost for an emergency room visit in the US is ~\$1,400.
- If person is deemed a threat to themselves, they are placed in inpatient psychiatric care for 72 hours.
   Estimated cost is \$800/day or \$2,400 total. There are state psychiatric hospitals providing free care, however, space is usually limited.
- If admittee can't pay for care, **cost is absorbed** by healthcare company or city. **These are real expenses.**

Average cost of ER visit:

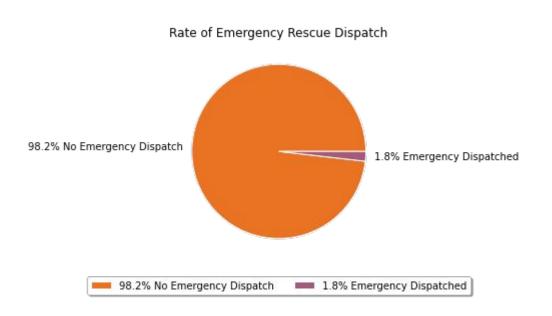
\$1,400

Estimated cost of 3-day inpatient psychiatric care:

\$2,400

#### **Low Emergency Dispatch Rate**

Of 934 imminent risk calls identified in 2020, emergency rescue was dispatched only 17 times. FCS has an emergency rescue dispatch rate of 1.8% for imminent risk calls!



Imminent Risk calls with no emergency rescue dispatch Imminent Risk calls with emergency rescue dispatched

#### Value and Unmet Need

- 917 imminent risk calls with no emergency rescue dispatch \* \$3,800 = \$3,484,600 in healthcare savings created by FCS, making this program incredibly valuable!
- In 2020, 16,620 calls or 36% of calls received, were not answered. Some of these may have rolled to backup locations.
- Based on imminent risk call %, we can estimate that 339 imminent risk calls were among those received but not answered by FCS in 2020.

#### ~\$3.5 million

in potential healthcare savings created by FCS

16,620

Calls Unanswered

339

Estimated Imminent Risk Calls Unanswer<u>ed</u>

## Key Insights

#### **Key Insights**

#### Call volume:

- Higher on weekdays than weekends
- Most calls come between 6:00am and 9:00pm and average about 10 minutes
- Political and weather events created swells in call volume rather than spikes

#### Call content:

- Most common crisis categories are emotional states, mental health & relationships
- The major issues of 2020 (especially COVID) remain ongoing ones. We can
  reasonably predict call volumes will stay high or possibly increase throughout 2021

#### Call location:

 When normalized by population, we see an increase in calls, imminent risk calls, and imminent risk reports from Sumner, Jackson, Polk, Hickman, Cheatham, Hawkins, Haywood, and Chester counties. Davidson county maintains a relatively high concentration in all of these categories when normalized by population.

#### **Key Insights (continued)**

- Caller demographics:
  - Callers were primarily middle-aged (41 70); Caucasian or African-American;
    traditional gender-labeled (Female, Male); Single or Divorced
- Repeat callers:
  - $\circ$  Make up less than 1% of callers but constitute approximately  $\frac{1}{3}$  of call volume (both number of calls and duration of calls)
  - Represent 22% of imminent risk calls, showing that they are among the highest risk callers
- The high rate of unanswered calls allows FCS to make a strong case for increased staffing
- FCS can make a strong case (including to Healthcare companies) for increased funding by showing it saves nearly \$3.5 million/year in avoided ER visits & inpatient psychiatric stays.

## **Questions?**