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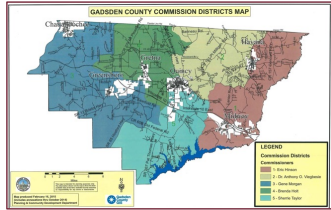
# Social and Behavioral Crisis Intervention Using a Simulation-Based Response Efficacy Modeling Tool



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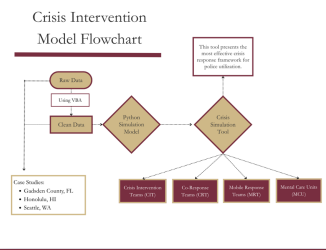
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## Introduction



- With **mental health** challenges intensifying, the **problem of social and behavioral crises** has rapidly grown.
- The goal of our research is to help Gadsden County **crisis intervention specialists** determine the most effective **police response model of response** and to provide a framework that similar rural communities can use.

- 3 **primary components** to our research:
  1. **Gathering data** : CAD logs, distance and driving relationships, etc.
  2. **Cleaning the raw data**- Used VBA to format it in a manner that is able to be passed through the **Python-based simulation model**.
  3. **Utilizing results** of simulation to develop an **R-based Crisis Simulation Tool** that can return the best response model



## Methodology

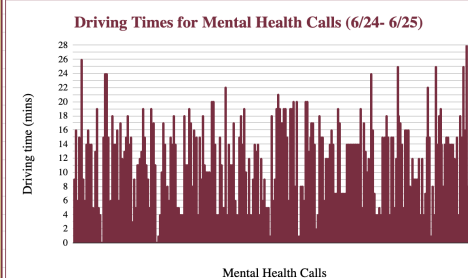
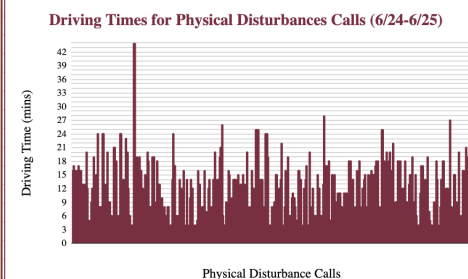
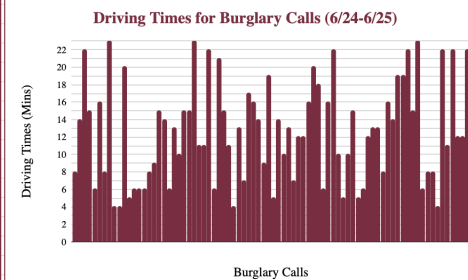
Incident Number	Date/Time	Complaint	Location	Disposition Codes	Offense Number
11/09/2024 18:18:20	MENTALLY ILL PERSON	514 RUSTLING PINES BLVD	13-0 Y		
PUnit: 0035 GARNER E	BURNT: 0047				
11/10/2024 7:49:52	MENTALLY ILL PERSON	150 FIRST ST	24-0 K		
PUnit: 0409 JACKSON					
11/10/2024 0:44:51	MENTALLY ILL PERSON	16 LEASCH LP	53-0 DR		
PUnit: MEDS EM523					
11/09/2024 23:32:50	MENTALLY ILL PERSON	16 LEASCH LP	24-0 U		
PUnit: 0029 MITCHELL T					

A	B	C	D	E	F	G	H	I	J
Incident Number	Primary Police Unit	# of Units	Was med sent?	Date	Time	Complaint	Location	Disposition Codes	Offense Number
11/09/2024 18:18:20	PUnit: 0035 GARNER E	2	0	11/09/2024	18:18:20	MENTALLY ILL PERSON	514 RUSTLING PINES BLVD	13-0	Y
11/10/2024 7:49:52	PUnit: 0409 JACKSON	1	0	11/10/2024	07:49:52	MENTALLY ILL PERSON	150 FIRST ST	24-0	K
11/10/2024 0:44:51	PUnit: MEDS EM523	1	1	11/10/2024	00:44:51	MENTALLY ILL PERSON	16 LEASCH LP	53-0	DR
11/09/2024 23:32:50	PUnit: 0029 MITCHELL T	1	0	11/09/2024	23:32:50	MENTALLY ILL PERSON	16 LEASCH LP	24-0	U

- CAD data received from Gadsden County Sheriff's Department was originally formatted as a scanned image in a PDF format
  - We initially converted them to text formatting on an Excel file
- Then, we wrote some VBA (Visual Basics for Applications) scripts through Microsoft Excel to transform and clean the data in a more consistent format
  - With descriptive headings, split up data in cells into unique columns, etc.
- The main methodology for writing this script was utilizing String identification, such as finding instances of words like "CAD" to identify the Incident Number, performing summative procedures to total the unit counts, and trimming off excess text in cells.

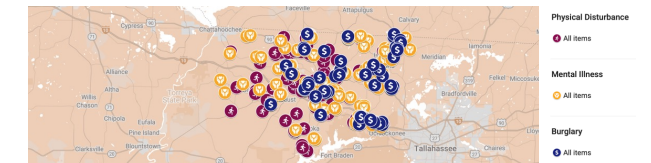
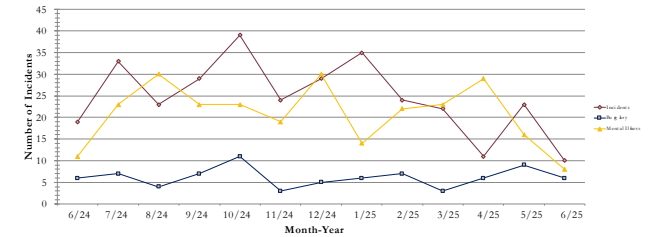
## Results

### Driving Times in Minutes Based on Crisis/Incident Type



Call Type	Average Driving Time (mins)	Average Driving Distance(miles)
Physical Disturbance	12.13	7.44
Mental Illnesses	11.67	7.64
Burglary	12.63	8.12

### Incidents by Month-Year (6/24 - 6/25)



## Conclusion

- This research project focused on analyzing crisis call data from Gadsden County. Key findings include variations in average driving times, with burglary calls exhibiting the **longest** average driving time at **12.63** minutes and average distance at 8.12 miles, while mental illness calls had the **shortest** average driving time at **11.67** minutes.
- Beyond response metrics, a comprehensive analysis of monthly incident counts revealed **seasonal fluctuations** in the occurrence of all crisis types.
- The **trends** we have found resulting from our data analysis provide a foundation for **identifying patterns** in community crisis response needs. Our results can be used by Gadsden County law enforcement to structure their crisis intervention program.

## Discussion & Future Implications

Our research has built a foundation for the White Lab to continue doing research on the Gadsden County crisis calls. Furthermore, the code and methods we have used to perform this project can be replicated by scientists for other locations in the United States. Ultimately, our research adds to the work being done to improve crisis call response in the United States and will not only help the citizens but will also improve the work of officers.

## Acknowledgements / References

Special thank you to: Gadsden County Sheriff's Department, Alexis Andaverde, Amiya Brown, Alex Osbourne, Toni Levisman, Julia Krostich.  
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Dunnett, S., Leigh, J., & Jackson, L. (2018). Optimising police dispatch for incident response in real time. *Journal of the Operational Research Society*, 70(2), 269–279. <https://doi.org/10.1080/01605682.2018.1434401>