

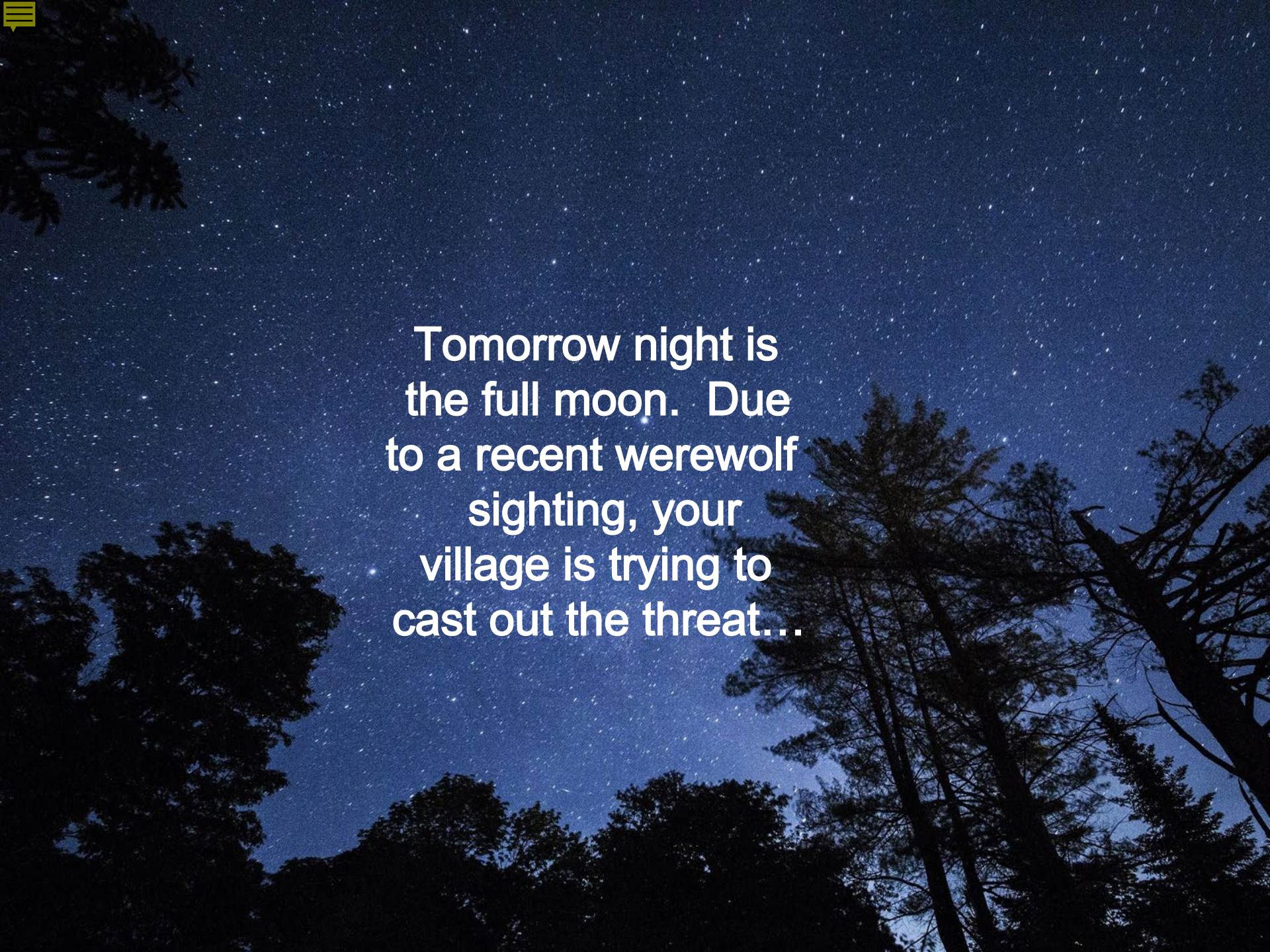


# Werewolves & Addicts:

## An Exploration of Math Modeling and Stigma

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The University of Tennessee





Tomorrow night is  
the full moon. Due  
to a recent werewolf  
sighting, your  
village is trying to  
cast out the threat...



# Overview

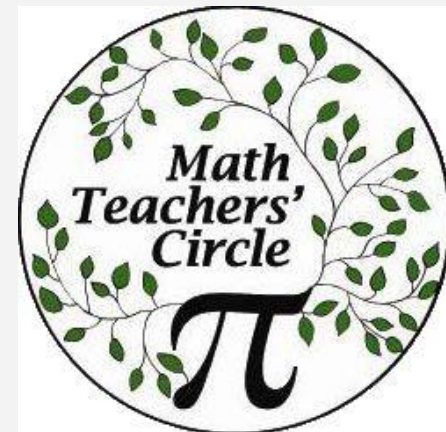
My [JMM slides can be found at this link](#)--please read the speaker notes as they are essential to the facilitation of the game (and including the warnings like, "Make sure you debrief!").

- Modification of *One Night Ultimate Werewolf* (Bezier Games)
- Explore :
  - **Math modeling through a game**
  - **Math can be messy**



# Version 1.0

- Run at NC Network of MTCs summer workshop
- Later run by a participant and faculty member at a small liberal arts school



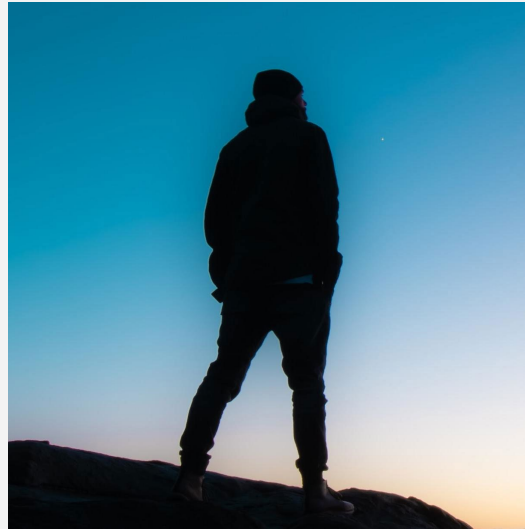
# Roles

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Werewolf



Villager



Apothecary





# Gameplay

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1. Night: Everyone goes to sleep, and some characters will get information.

1. Day: Everyone wakes up. Players discuss, persuade, or lie to achieve their goals.

1. Vote:

a. Privately write the name of the person you want to cast out.

b. The Apothecary *may choose* to treat someone instead. If so, write “treat (name).”

c. Simultaneous revealing of cards

# Juggling Priorities

- ▣ 3 cards aren't in play, so you can't be certain if there is a Werewolf or an Apothecary at all.
- ▣ There are variations in the villagers.
- ▣ Players have good reasons to lie!





# Goals

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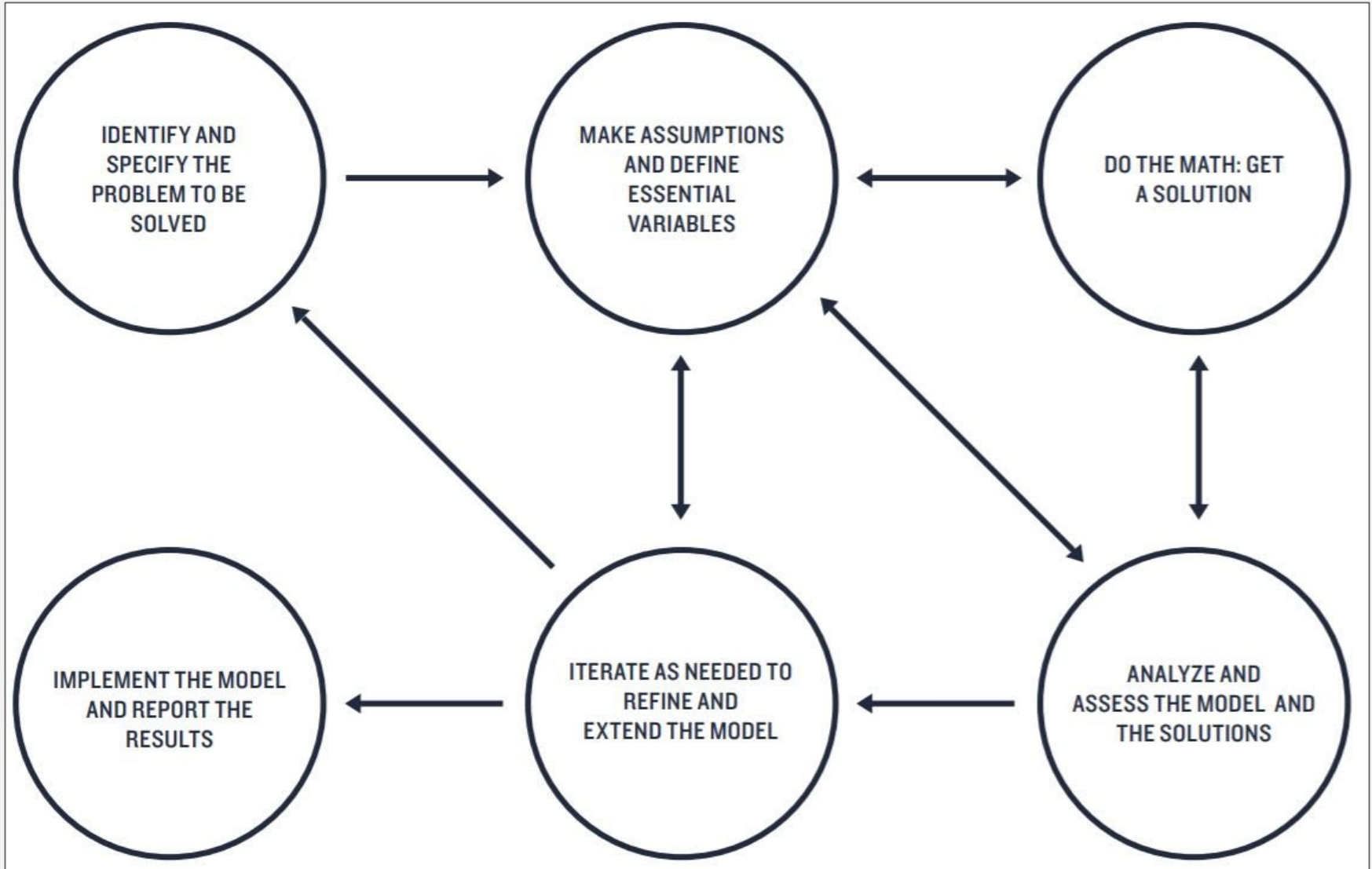
Based on your role card, take a moment to think about what your strategies might be.

Guiding questions:

- ☐ What is a good reason to lie about your role?
- ☐ How might you get other players to vote for a specific person?



# Math Modeling (GAIMME)



# GAIMME

## Guidelines for Assessment and Instruction in Mathematical Modeling Education (GAIMME)



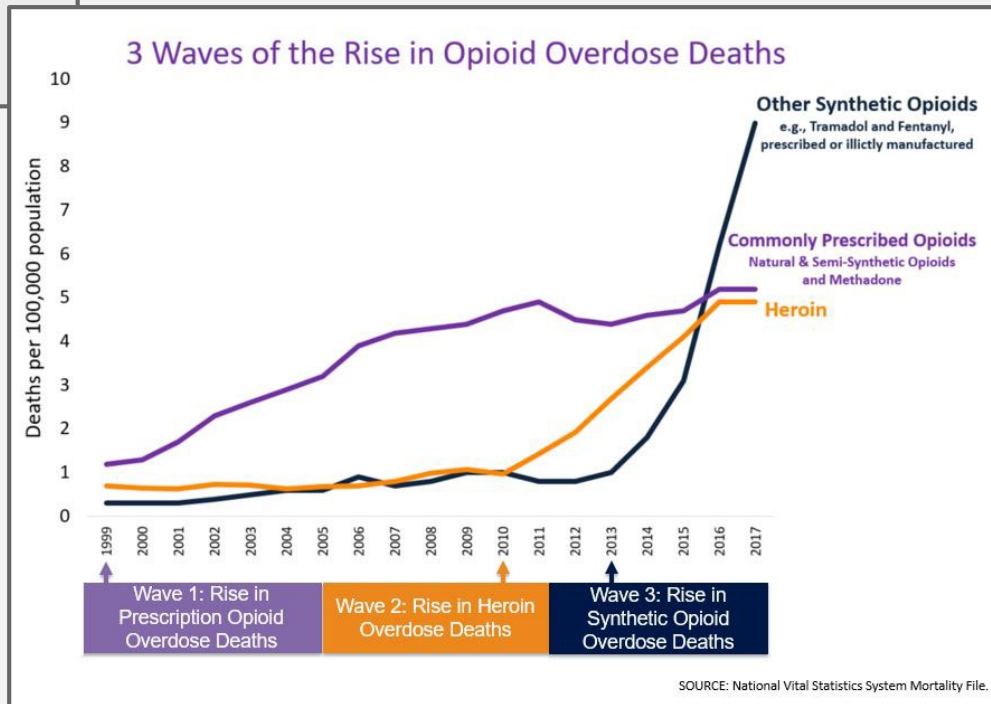
# Modification: Opioid Epidemic



**130**  
AMERICANS

die every day from  
an opioid overdose

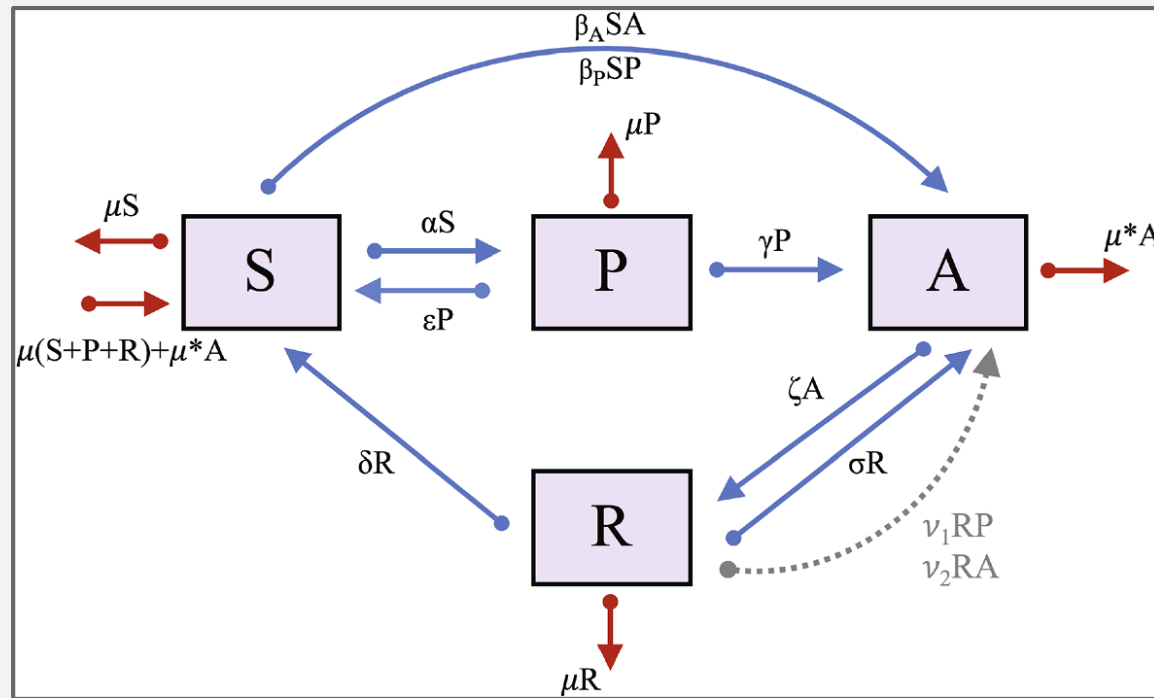
(including Rx  
and illicit opioids).



See <https://www.cdc.gov/drugoverdose/epidemic/index.html>

# Modification: Opioid Epidemic

A related model (Battista, Percy, Strickland 2019)



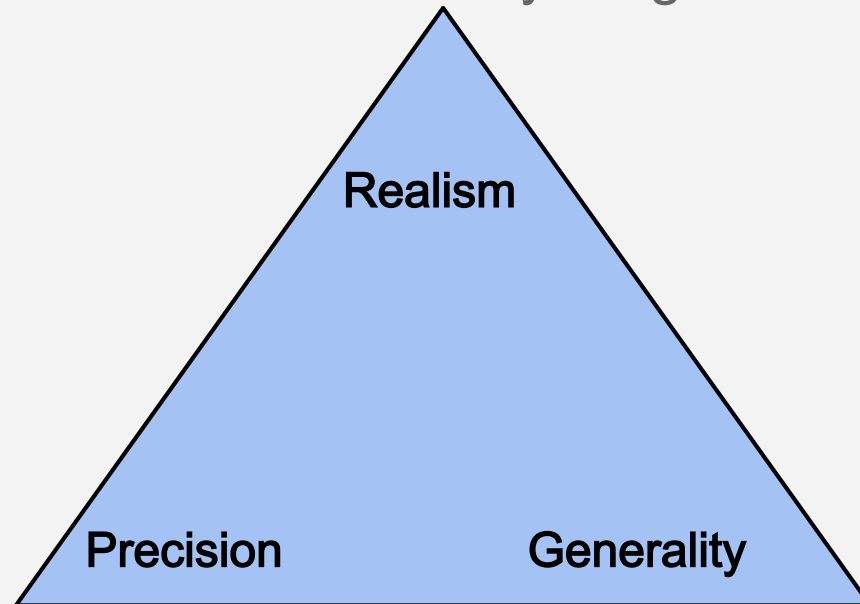
See Battista, N. A., Percy, L. B., & Strickland, W. C. (2019). Modeling the prescription opioid epidemic. *Bulletin of mathematical biology*, 1-32.



# Modification: Opioid Epidemic

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Math modeling is always a tradeoff based on the question you want to answer and your goals!



Modified from Professor L. Gross' (University of Tennessee) lecture slides.

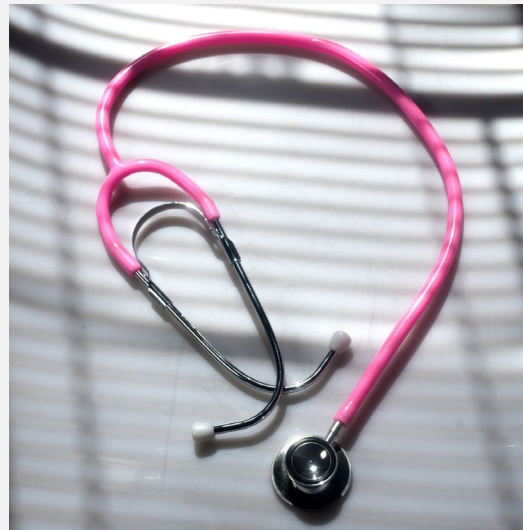
# A Different Exploration & Model

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Werewolf  
→ Addict



Apothecary  
→ Healthcare  
Professional



Villager  
... You're still a  
Villager.



# Stigma

Werewolves	Addicts	Goffman (1975)	Smith (2012)
Werewolf	Addict	Owns	Stigmatized
Villager	Villager	Normals	Stigmatizer
Apothecary	Healthcare Professional	Wise	Supporter (Passive and Active)

See Smith, R. A. (2012). Segmenting an audience into the own, the wise, and normals: A latent class analysis of stigma-related categories. *Communication Research Reports*, 29(4), 257-265.



# Debrief

What happened?  
How do you feel  
about it?

Compare and  
contrast the  
Werewolf and  
Addict scenarios.



# Modifications



How would you change the game/model to explore the dynamics of stigma?

Ideas:

1. Change the priorities (e.g. Alternate Apothecary or Healthcare Professional)
2. Change the ratios (e.g. more stigmatizing Villagers or fewer)

# Initial Feedback



- Some participants have a personal connection to the opioid epidemic and found the second version difficult. Talking about werewolves is an easier way to discuss the problem.
- Participants were highly engaged and wanted to think about different ways for the various characters to win.
- Some participants started writing down data from different rounds.
- It's easy to add in more variations but difficult to simplify the game.

**Goal for a future version: bring this to nursing students to explore the impact of stigma.**



# Reflection

Share your ideas,  
thoughts,  
reactions, and  
suggestions.



***“ Mathematics is for human  
flourishing.”***

***-Dr. Francis Su (former MAA President)***

<https://mathyawp.wordpress.com/2017/01/08/mathematics-for-human-flourishing/>





# Questions and suggestions? Email me!

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## Special thanks to:

- My collaborator, Dr. W. Christopher Strickland, and his work on the opioid epidemic
- Bezier Games for inspiring us with *One Night Ultimate Werewolf*
- The Fefferman Lab for playtesting & insightful comments
- NC Network of MTCs for the first round of “Werewolves and Addicts.”

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