### Warm Up

Let's put the pieces together to model how insufficient supply could have affected energy transfer into certain communities in Texas when temperatures dropped.

# With your class

- Which subsystems of the electric grid should we include in our models?
- At what scale or scales?
- How will we bound our system to show energy loss?

### Warm Up

- Open up your wire simulation on Google Classroom
- Answer in your notebook...
  - How could we use this simulation in our model of the Texas Blackouts?
  - Which variables in the simulation relate to the Texas Blackouts? Why?

#### **Revise our original models**

# - Pass back old models

- You have 10 minutes to revise your model. How can you include concepts from class?
- Large group/class model

Slide H

#### **Analyzing Data**

# With your class



Discuss the following hypothesis:

During the Texas power crisis of February 2021, people were less likely to lose power in counties where there were more hospitals.

### Make a prediction:

Do you think the data will support this hypothesis? Why or why not?

Slide I

#### **Orient to CODAP**

# With your class



Orient to the CODAP data analysis tool together.

- 1. Is there a correlation between the 2 variables we chose to look at?
- 2. What conclusions can we make about our hypothesis from this analysis?
- 3. Does this analysis tell us anything about what caused the crisis?

Slide J

#### **Analyzing Data**



What else do you predict might be different about the counties that lost a lot of power versus those that did not lose as much power?



Slide K

#### Looking at Data Across Texas

# With your group

Our data set also includes a number of other variables from every county in Texas that might correlate with % out.

#### Use the data analysis handout to:

1. Choose another variable that might correlate.

2. Develop and test a hypothesis using

Data from census.gov, and the Texas Department of Health and Human Services

Slide L

#### Limitations of Our Data Set

# With your class



The conclusions that scientists can make are limited by the available data.

What limitations might be introduced by the fact that our data are grouped by county?

What other limitations did you notice?

Slide M

#### **Looking Closer**



What patterns do you predict we would see if we could "zoom into" the counties where some people, but not all, lost power?



Slide N

### Looking Closer



Slide O

# Looking Closer



Slide P

# Looking Closer



#### **Physics Agenda and Warm Up**

- Warm Up: Open up your Texas County Data Assignment on your Chromebook
- Agenda: Texas County Data Review, Texas Blackout Podcast
- Assessment: Today/Tomorrow
  Communication In Class
- Tomorrow: Assess Each Other's Models, Class Model, Case Studies

### Navigate

Next time, we will hear from an expert whose research group used satellite data to do the same kinds of analyses we did, but with a smaller-scale data set.

# **Turn and Talk**

How do you predict these analyses will look similar to ours? How do you predict they will be different? Why?

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