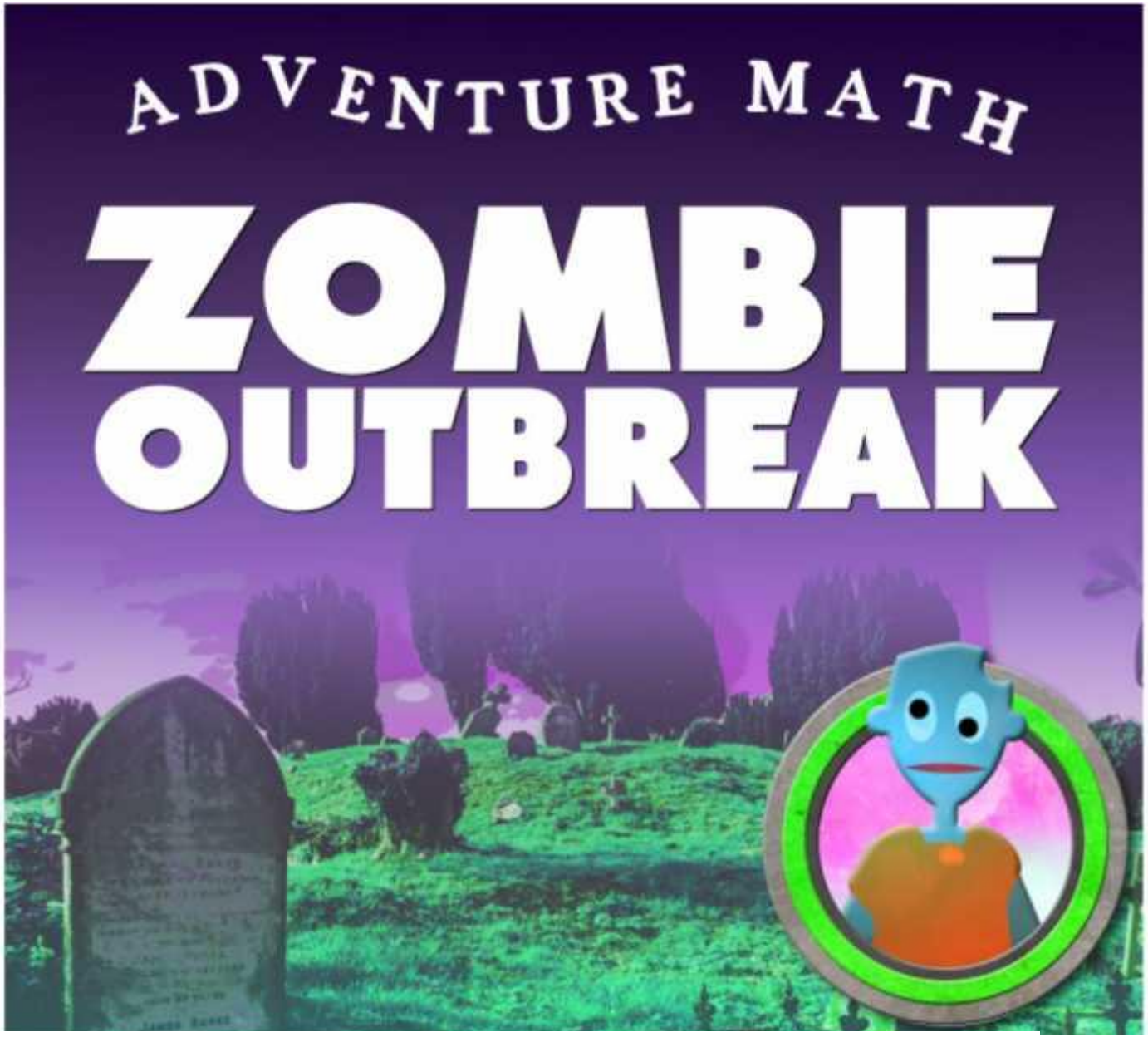

ADVENTURE MATH
ZOMBIE
OUTBREAK

ZOMBIE OUTBREAK

The Project:

Students pretend to be epidemiologists investigating a zombie outbreak occurring in the United States. Students apply their statistical skills to determine:

- Where the virus is originating
- Which patients are likely to become zombies
- Which symptoms are most common

Students practice:

-Creating dot plots and bar graphs
-Describing the distribution of data
-Determining mean and mode
-Evaluating the usefulness of the measure of central tendency based on the data's distribution

Printing:

- Print pg 3-8 for each student.
- Print a set of data for each student or each pair of students
- Print both maps for each student or each pair of students. (The maps will help students figure out which region each state belongs in.)

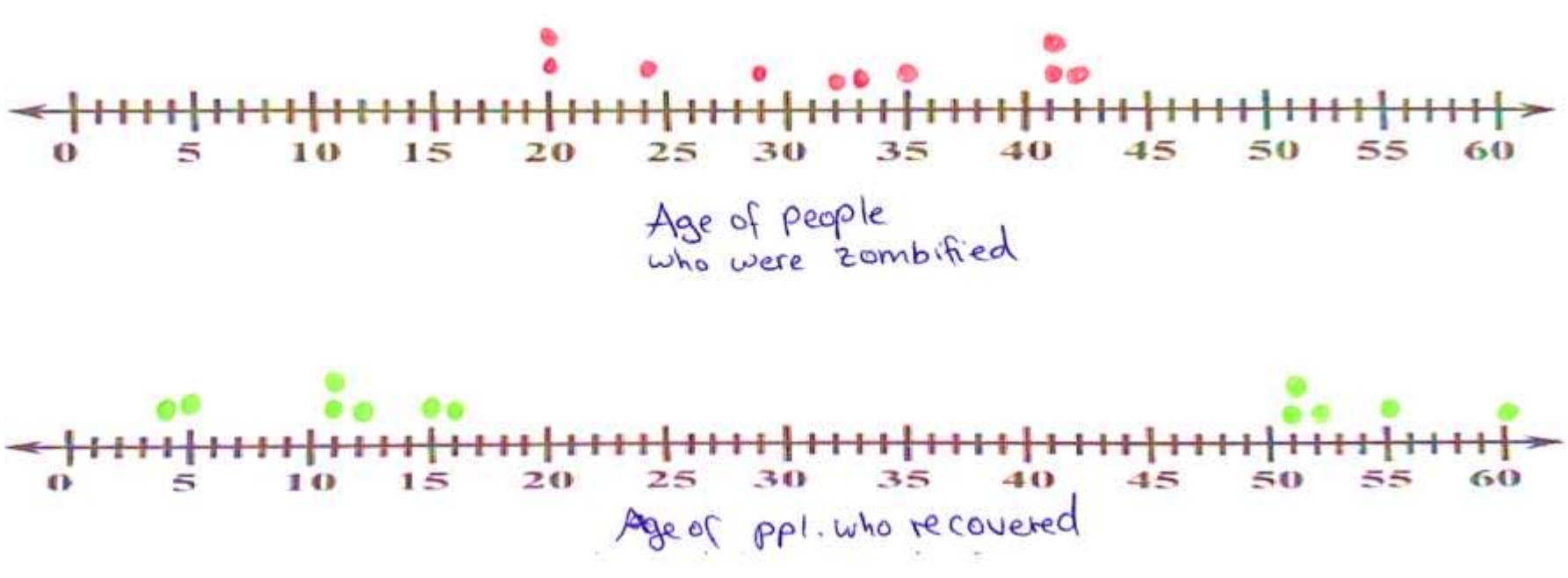
Tips:

- Start by explaining what epidemiologists do (get the kids to say the word aloud a few times!)
- Dramatically introduce the Virus X Outbreak
- Explain that the students are going to be epidemiologists investigating the outbreak
- Introduce the materials:
  - Data set with *actual* information about the infected patients.
  - Maps of the United States
  - An analysis packet
- Let students know that the CDC is counting on them for a thorough analysis completed quickly

Thanks so much for your purchase! I hope you and your students enjoy this activity. Don't forget to leave feedback to earn TPT credits! Please let me know how it goes and whether you have any suggestions for improvement.

1. Who recovers and who becomes zombified?

a) It's difficult to analyze the data in list form. Start your analysis by creating two dot plots on the number lines shown below. Make one dot plot for the ages of the people who became zombies and another dot plot for the ages of people who recovered. Be sure to write a title for each dot plot .



b) Compare the dot plots. What do you notice? What conclusions can you draw?

Answers will vary. Note that people were zombified are between the ages of 20 and 42. People who recovered are younger or older than that.

c) Find the mean age of people who become zombies. Show your work.

$$\frac{20+29+20+33+24+41+41+42+35+32}{10} = \frac{317}{10} = 31.7$$

d) Find the mean age of people who recovered. Show your work.

$$\frac{52+11+5+16+15+4+51+55+51+11+60+12}{12} = \frac{343}{12} = 28.58$$

Summarize:

What do you notice about the means that you just found? Do both statistics give a good picture of the data or are they maybe misleading?

The mean age of people who recovered is not a good measure of central tendency for this example, because all data from the set is a lot greater or smaller than the mean.

When you compare both means, one might think that people who recovered and people who become zombies are typically similar in age, which is not actually the case.

If you had to give an interview to the press, would you share the information about the means? Explain .

Answers might vary.

2. Where is the VIRUS X originating?

a) Epidemiologists also want to figure out the source of the virus - they need to figure out where it's coming from. Use the data and the maps to create a bar graph showing where the infected people were traveling from. Tip: Use the maps to figure out the regions

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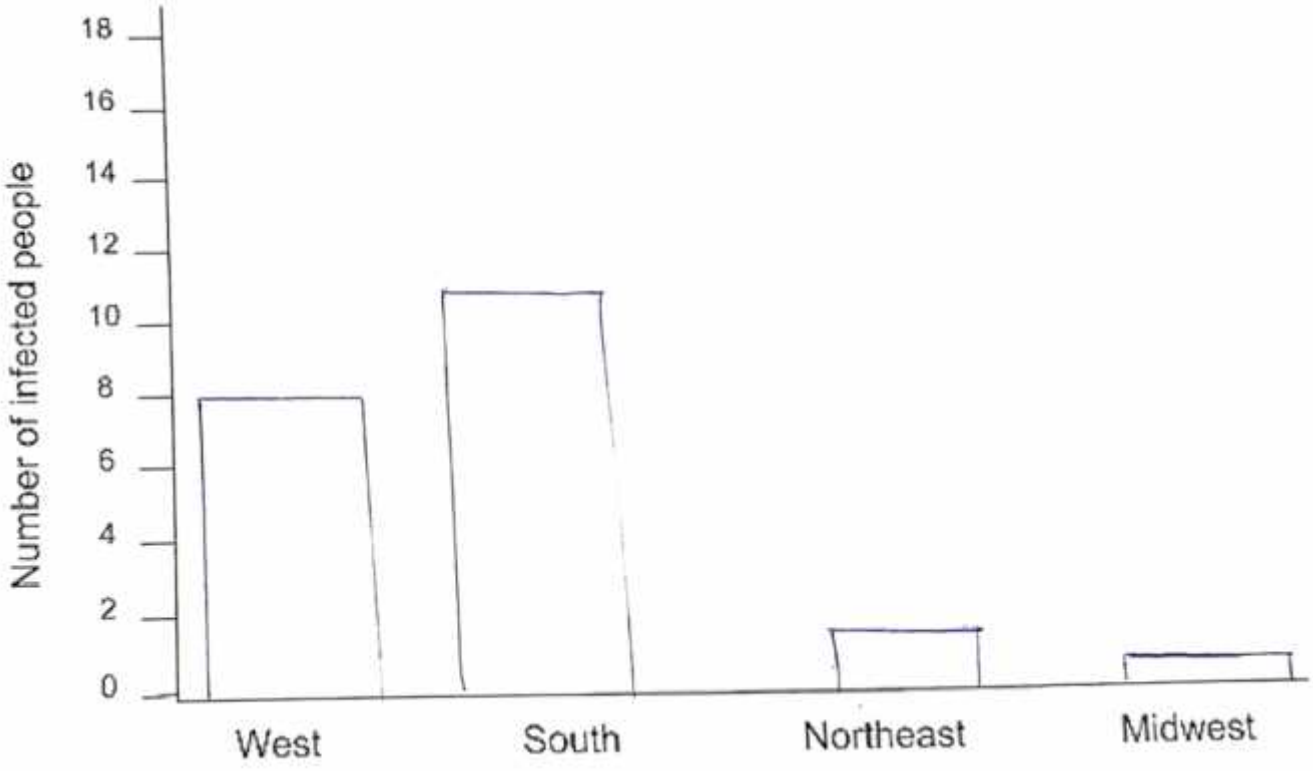


b) What conclusions can you draw from the data?

Most people come from the West or South.

3. How can doctors diagnose VIRUS X?

a) Determine the most common symptoms experienced by people who become zombies by creating a frequency table.

Symptom	# of people who became zombies
stomachache	2
headache	8
fever	6
cough	1
nausea	3

4. Press release

Write a short article that can be published on the CDC's website explaining everything you've discovered about the Virus X so far.

Answers will vary.

5. A New Victim: Dana Watson

A new patient has come to you for assistance. Answer her questions using the data to support your answers.

Dana: *"Hello, my name is Dana. I'm 31 years old, and I'm from South Carolina. I've had a variety of symptoms: headaches, a fever, and a rash. Do you think I will recover or become a zombie?*

Doctor:
Based on the patient's name age, symptoms, and origin, she will most likely become a zombie.

Dana: *"Since I'm probably going to become a zombie how many days do you think it will take?*

Find the range the mean, median, and mode of days it will take. Then draw a box-and-whisker plot. (Use the workspace below to show your work). How do the means of days before recovery and zombification compare?

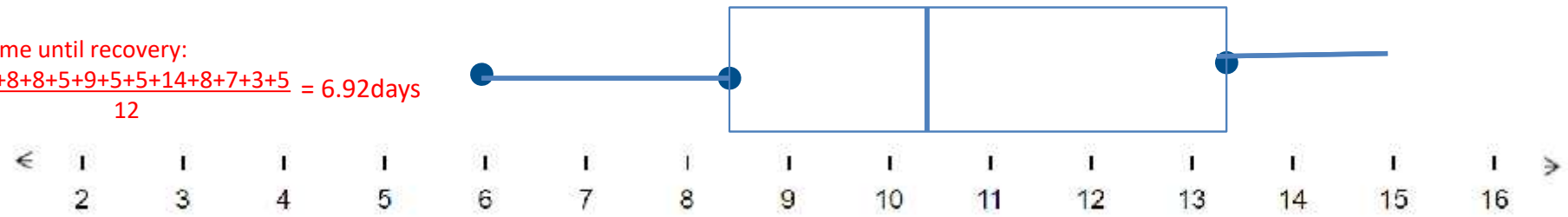
Workspace: Time until zombification:

$6+8+9+9+10+11+12+13+14+15 = \frac{107}{10} = 10.7$ days

Median: 10.5
Mean: 10.7
Mode: 9

Range: 15-6= 9
Lower quartile: 8.5
Upper quartile: 13.5

Time until recovery:
$\frac{6+8+8+5+9+5+5+14+8+7+3+5}{12} = 6.92$days



In average, it takes 6.92 days before a person recovers and it takes 10.7 days for a person to before becoming a zombie. What will the doctor tell Dana? Provide her with a detailed overview of what to expect.

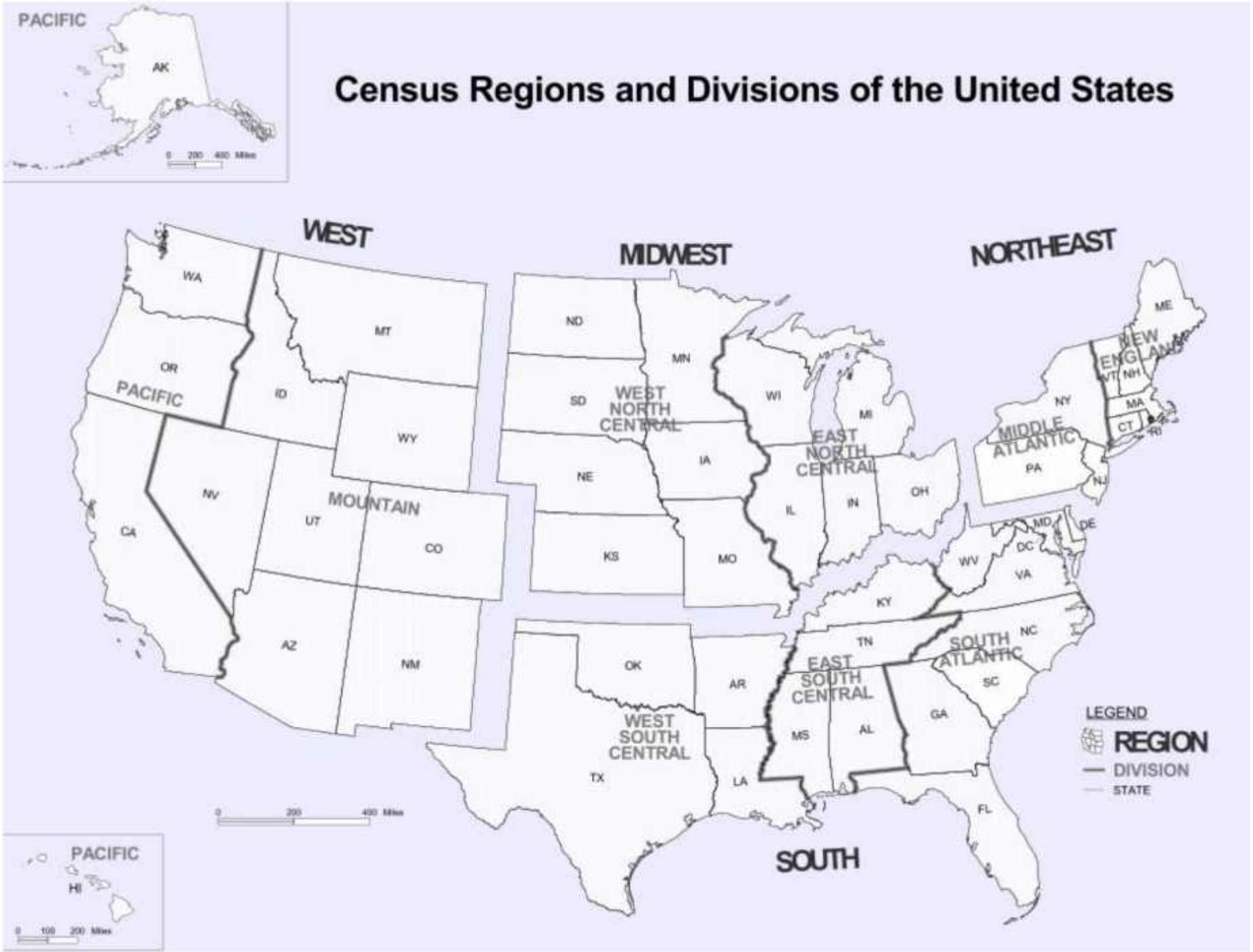
Doctor:

Virus X Patient Data

Compiled from patients quarantined at the Portland International Airport

Name	Age	Symptoms	State	Days of illness before recovery or zombification	Zombified or Recovered
Ada	52	fever, headache	Georgia	6	Recovered
Skye	20	stomachache, headache	Wisconsin	11	Zombie
Anthony	11	stomachache, fever	Florida	8	Recovered
Samuel	5	fever,cough	Mississippi	8	Recovered
Ruth	29	fever, headache	Tennessee	13	Zombie
Jonathan	16	nausea, headache	Washington	5	Recovered
Eric	20	cough, fever	Florida	9	Zombie
Mia	15	fever, headache	Wyoming	9	Recovered
MInaya	4	fever, headache	Texas	5	Recovered
Giovanni	51	fever, headache	Alabama	5	Recovered
James	33	nausea, headache	Arizona	15	Zombie
Juliet	24	fever, headache	Oregon	12	Zombie
Naomi	41	nausea, headache	South Carolina	10	Zombie
Fatima	55	stomachache, fever	New York	14	Recovered
Andre	41	stomachache , headache	Montana	6	Zombie
Tyshawn	42	fever, headache	Arizona	9	Zombie
Christopher	51	stomachache, fever	Florida	8	Recovered
Jahmilia	11	fever,cough	Idaho	7	Recovered
Daniel	35	fever, nausea	Florida	8	Zombie
Mahmoud	60	fever, cough	California	3	Recovered
Gabrielle	12	nausea, cough	Georgia	5	Recovered
Katie	32	headache, fever	Pennsylvania	14	Zombie


Washington
Oregon
California
Idaho
Nevada
Montana
Wyoming
Utah
Arizona
Colorado
New Mexico
North Dakota
South Dakota
Nebraska
Kansas
Oklahoma
Texas
Minnesota
Iowa
Missouri
Arkansas
Louisiana
Wisconsin
Illinois
Michigan
Indiana
Ohio
Kentucky
Tennessee
Mississippi
Alabama
Georgia
Florida
South Carolina
North Carolina
Virginia
West Virginia
Pennsylvania
New York
New Hampshire
Vermont
Massachusetts
Maine
Rhode Island
Connecticut
New Jersey
Delaware
Maryland
Alaska
Hawaii


Census Regions and Divisions of the United States
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