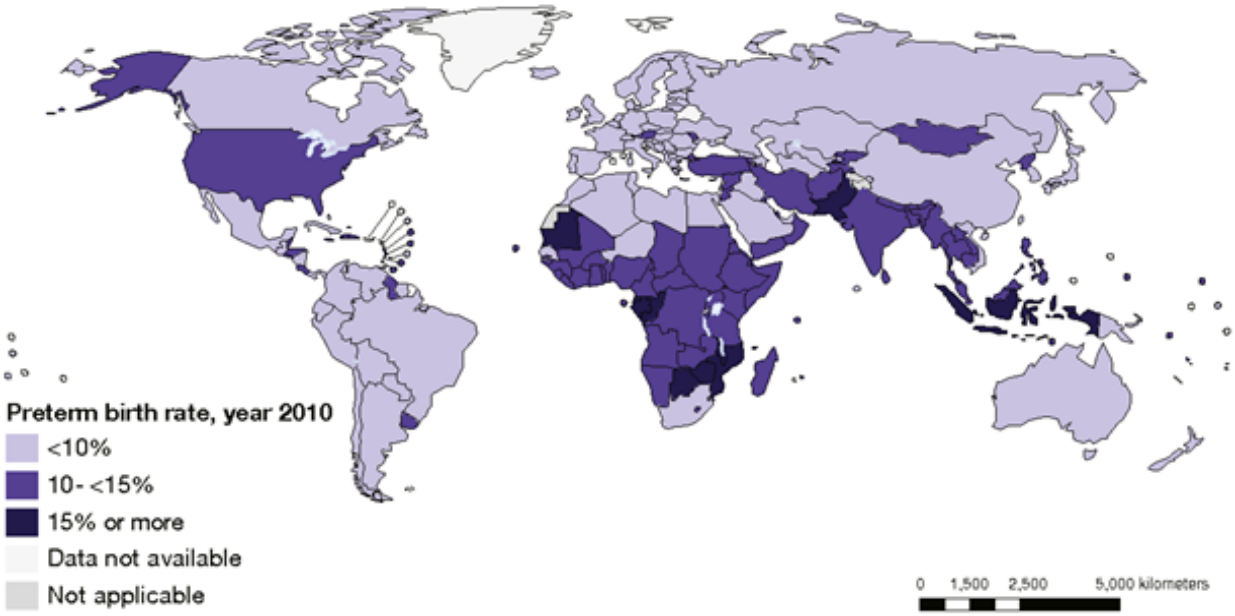
Lesson 1: Preterm Infant Problem

1) Examine the chart below and record at least four observations in the box. Be sure to include as much information as possible.



From **Born too Soon: A Global Action Report on Preterm Birth** published 2012 by the WHO

Students should identify: The primary focus should be the data provided in the map. For example, the map has countries/areas with high and low pre-term birth rate. The map also includes a distance scale, date, organization that created the map (WHO), this is a map of the world, the range of the scales (both for birth rate and distance),

Students may question: What is WHO? Why is some data not applicable? Why is some data not available?

Teacher Note: It may be helpful for students to have access to a world map in which the countries are labeled. This page should be given to each individual student. Each student should record at least four observations. In small groups, each student should share one of their observations. Other group members should write down any new observations that they do not already have on their page. The teacher should then have each group share their observations with the entire class during whole class discussion. Teacher/student leader create a whole class list of observations.

2) Now examine this chart and record at least four observations in the box. Be sure to include as much information as possible.

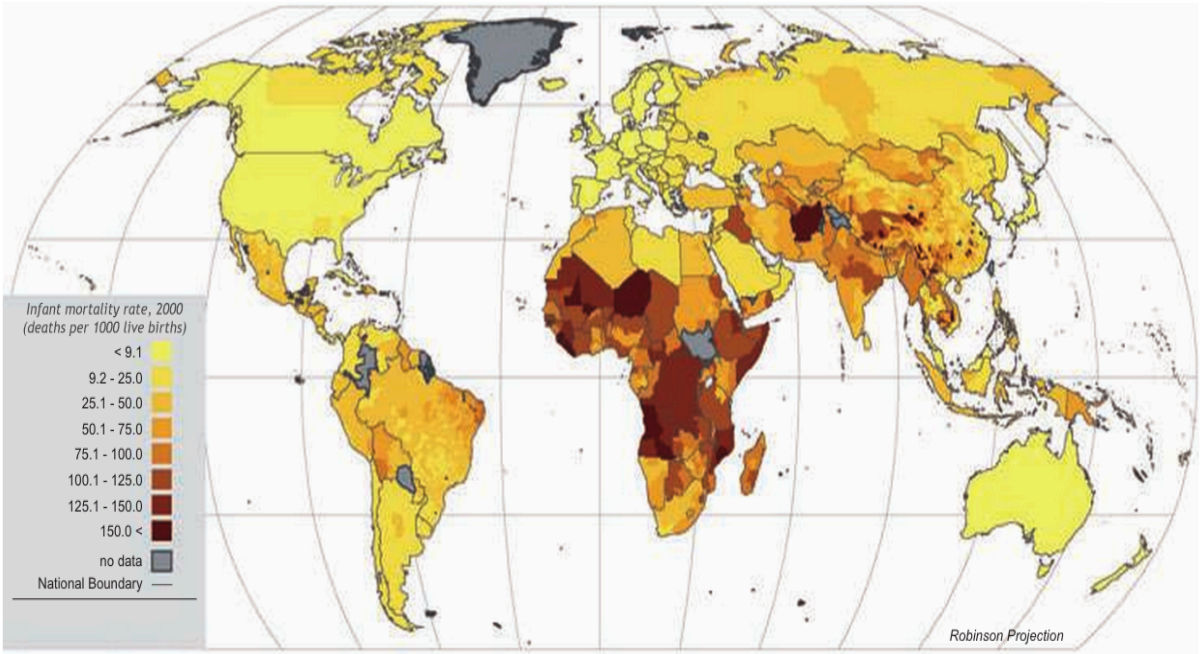


Figure 2. Subnational IMR map. This figure is available in colour online at www.wiley.interscience.com/journal/psp.

Students should identify: The primary focus should be the data provided in the map. For example, the map has countries/areas with high and low mortality rate. They will also notice the map date, this is a map of the world, the range of the scale, etc.
Students may notice this is a Robinson Projection.

Students may question: Why is some data not available?

Teacher Note: This page should be given to each individual student. Each student should record at least four observations. In small groups, each student should share one of their observations. Other group members should write down any new observations that they do not already have on their page.
The teacher should then have each group share their observations with the entire class during whole class discussion. Teacher/student leader create a whole class list of observations.
The students will then work in small groups to complete the next two boxes which require comparing the two separate charts. Once the students have written observations and questions in their small groups, the teacher should lead a whole group discussion about their responses. Ultimately the students should be able to identify that a high preterm infant rate does not always correlate with a high mortality rate and they should question why this is the case.

3) Look at the data of both of the graphs. What inferences can you make about the relationships between the graphs? How are they similar and different? What is the relationship between preterm birth and mortality?

Students should answer these questions in their small groups.

They should identify that while there is a high degree of overlap in preterm births and infant mortality, there is not a perfect correlation. The United States stands out as an anomaly

4) Write down the questions you now have about your observations/conclusions from the charts.

Students should complete this section with their small group.

They should question why there was not a direct relationship between preterm rates and mortality.

They should also wonder why some mortality rates are lower than others..

Review the information about Preemie and Full-term babies and use it to complete the questions below.

Preemie	Full-Term
Lack of sucking and swallowing reflex can make feeding difficult for them	Developed sucking and swallowing reflexes allow for gain in body weight
Their thin skin can cause major loss of warmth	Skin maintains body temperature
May not have enough body fat to regulate their body temperature	Has enough body fat to regulate their body temperature

5) In your own words and using all the information above, create a one sentence statement that details the difficulties preemies face.

Students should have time to individually review the chart and write notes in their own words. Volunteers may then share their responses with the class. Anticipated student response: Preemies have difficulty eating, which makes it difficult to have body fat, they lose warmth through their skin

6) What seems to be the common theme in the difficulties faced by preemies?

The common theme in difficulties faced by preemies is staying warm

7) What is a possible solution to the theme or problem you identified?

If students have difficulty understanding this question, you may ask them what can be done to keep the babies warm. This is a brainstorm, so as long as the emphasis is on keeping the babies warm, student answers should be accepted.

8) Questions: What new questions do you have about the data sources (maps and infographic)? Fill out the table below with your questions, the evidence we need to gather, and ways to obtain that evidence.

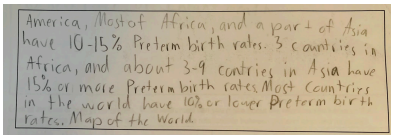
Questions	Evidence/Investigation Ideas
Why are the babies not being kept warm? How can we keep the babies warm? What do babies need to survive?	Online research about babies Interviews with medical professionals Experiments

Pick a few of your questions to write on post-it notes. One question per note.

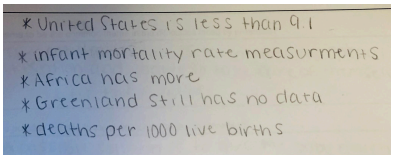
This is a crucial part of the unit. The student post-its will be used to generate the DQB (driving question board.) These are the questions that will be answered during the unit. It is helpful to organize student questions into categories. This can be done by having the students place their post-its on a board and then conducting a class sorting activity where the group works on categorizing the post-its. It can also be accomplished by having one student place their post-it on the board and then ask students with similar post-its to place them on/beside that post-it.

Assessment:

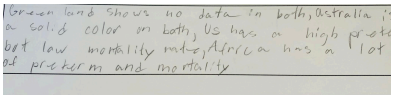
1) Examine the chart below and record at least four observations in the box. Be sure to include as much information as possible.

	Rubric	Sample response
Proficient (2):	Student has at least four observations that correlate to the chart	 America, Most of Africa, and a part of Asia have 10-15% Preterm birth rates. 3 countries in Africa, and about 3-9 contries in Asia have 15% or more Preterm birth rates. Most countries in the world have 10% or lower Preterm birth rates. Map of the World *Africa has all of the colors *A lot of the countries have 10-15% *It is a world map *Data is from 2010 *Information is preterm birth rates
Developing (1):	Student has two or less observations that correlate to the chart	*A big country has a lot less data *There are lots of colors *I see a lot of water
Needs improvement (0):	Student has no observations	No response

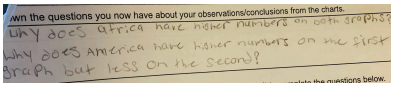
2) Now examine this chart and record at least four observations in the box. Be sure to include as much information as possible.

	Rubric	Sample response
Proficient (2):	Student has at least four observations that correlate to the chart	 *United States is less than 9.1 *infant mortality rate measurments *Africa has more *Greenland still has no data *deaths per 1000 live births *US is less than 9.1% *This measures infant mortality rates *Africa appears to have the highest number *This shoes deaths per 100 live births
Developing (1):	Student has two or less observations that correlate to the chart	*Antarctica isn't there *Kenya looks like it is on fire *There is a lot of yellow
Needs improvement (0):	Student has no response	No response

3) Look at the data of both of the graphs. What inferences can you make about the relationships between the graphs? How are they similar and different? What is the relationship between preterm birth and mortality?

	Rubric	Sample response
Proficient (2):	Student has at least two inferences that are explained and answers what the relationship is between birth and mortality	 Greenland shows no data on both, Australia is a solid color on both, US has a high preterm but low mortality rate, Africa has a lot of preterm and mortality *US has a high preterm birth rate but a low mortality rate; Africa has a lot of preterm births and a high mortality rate *A lot of the preterm births live in the US; Some countries have more preterm babies born that die *Most places that have preterm births usually have many infant deaths
Developing (1):	Student only has a partial answer or leaves out the relationship between birth and mortality	Greenland has no data on both of them. *Africa is dark on both maps *It is about babies
Needs improvement (0):	Student has no response	No response

4) Write down the questions you now have about your observations/conclusions from the charts.

	Rubric	Sample response
Proficient (2):	Student has at least two questions shared	 *Why does Africa have such high rates? *Why does Greenland have no data? *Why do preterm infants in the US usually live? *Why are so many babies born prematurely?
Developing (1):	Student has one question shared	*Why does Russia not have a lot like Africa even though they are a bigger country? *Why is the US solid color on both of the maps?
Needs improvement (0):	Student did not include a question	No response

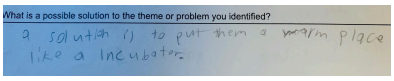
5) In your own words and using all the information above, create a one sentence statement that details the difficulties preemies face.

	Rubric	Sample response
Proficient (2):	Student has a well developed sentence that summarizes the difficulties that preemies face	Because Preemies lack a sucking and swallowing reflex, their skin is thin, and they can't regulate body tempature, they can die easily. *Preemies have problems with taking in food, thin skin that leads to coolness, and loss of body fat that makes it hard for them to keep warm
Developing (1):	Student has a lesser developed sentence that does not concisely explain difficulties that preemies face	*They cannot eat right because they eat by sucking *Feeding can be a challenge for them.
Needs improvement (0):	Student provided no response	No response

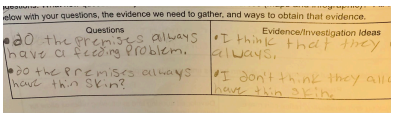
6) What seems to be the common theme in the difficulties faced by preemies?

	Rubric	Sample response
Proficient (2):	Student response includes that maintaining heat is a commonality among preterm infants	The don't produce body heat so they don't produce body fat *Their thin skin can cause a major loss of warmth *They have a difficult time breathing and eating bt also have problems with their skin and especially regulating body temperature
Developing (1):	Student response does not fully indicate that maintaining heat is a commonality among preterm infants	*They don't have the common things that humans need to survive. *The lack of sucking and swallowing reflex which causes them not to eat
Needs improvement (0):	Student does not recognize that maintaining heat is a commonality among preterm infants	No response/incorrect

7) What is a possible solution to the theme or problem you identified?

	Rubric	Sample response
Proficient (2):	Student developed a solution that includes some way of keeping the preterm baby warm	 What is a possible solution to the theme or problem you identified? a solution is to put them a warm place like a incubator. *Maybe to stay in a warmer house or to stay in warm clothes all the time and go to sleep on many blankets *If they are a preemie they should stay at the hospital and they will help the baby with all of its problems
Developing (1):	Student developed a possible solution that doesn't clearly indicate how it keeps the preterm baby warm	*Put them in a blanket *I don't think there is a solution for this *A possible solution is to give the baby a little bit at a time
Needs improvement (0):	Student did not provide a response	No response

8) Questions: What new questions do you have about the data sources (maps and infographic)? Fill out the table below with your questions, the evidence we need to gather, and ways to obtain that evidence.

	Rubric	Sample response
Proficient (2):	Student has at least two questions shared and possible evidence investigation idea	 elow with your questions, the evidence we need to gather, and ways to obtain that evidence. Questions: • do the premises always have a feeding problem. • do the premises always have thin skin? Evidence/Investigation Ideas: • I think that they always. • I don't think they all have thin skin. *How do babies survive if they are preemies *Is there a way to avoid preterm birth? *Will a preemie always have thinner skin?
Developing (1):	Student has one question shared but leaves out a possible evidence investigation idea	*Why does a gray country have no data? *How does a preterm baby survive
Needs improvement (0):	Student has no response or does not set up a clear evidence investigation idea	Student did not create two questions