

Name _____

Investigation 14: How Long Do the Subway Doors Stay Open?

Worksheet 14.2 Scenario

Scenario

If you live in a large city, it is likely you will encounter a subway or similar mass transportation system. People who live in Washington DC frequently use the Metro, the BART in San Francisco, the “L” in Chicago, the MBTA in Boston, the DART in Dallas, or the monorail in Disney World. Mass transportation, however, requires people to make decisions that influence when and where they make their connections. How much time is needed to get to my destination? When should I leave? How long will the doors stay open, or how long will the train wait before leaving? Students in a New York City high school indicated that to get to school on time, they must consider not only when is the best time to catch a subway connection, but also what is the chance that a door on the subway will close before they have a chance to get on the subway. The students indicated to their teacher that often their tardiness to school is a result of the doors closing before they have a chance to get on board.

In planning the route to school, the following questions were considered by the students:

When will the subway connection arrive at our location?

How many people generally will connect at this location?

What is the expected time the doors will stay open to catch the subway?

Several students indicated that they frequently missed their connection because the doors did not stay open long enough while other students indicated it rarely happened to them. The students asked a number of questions related to the subway door operation.

How long do the doors of a subway stay open?

Are the doors opened and closed automatically or manually?

Do the doors stay open approximately the same amount of time throughout the day?

Does the number of people in the subway possibly influence the length of time?

After exploring several of the factors that might influence the opening and closing of the doors, the students at this school decided to investigate some of these questions through a statistical study. They were particularly interested in the urban myth that the doors on the New York City subway stay open for 30 seconds as they based their decisions of when to catch a subway based on that time.