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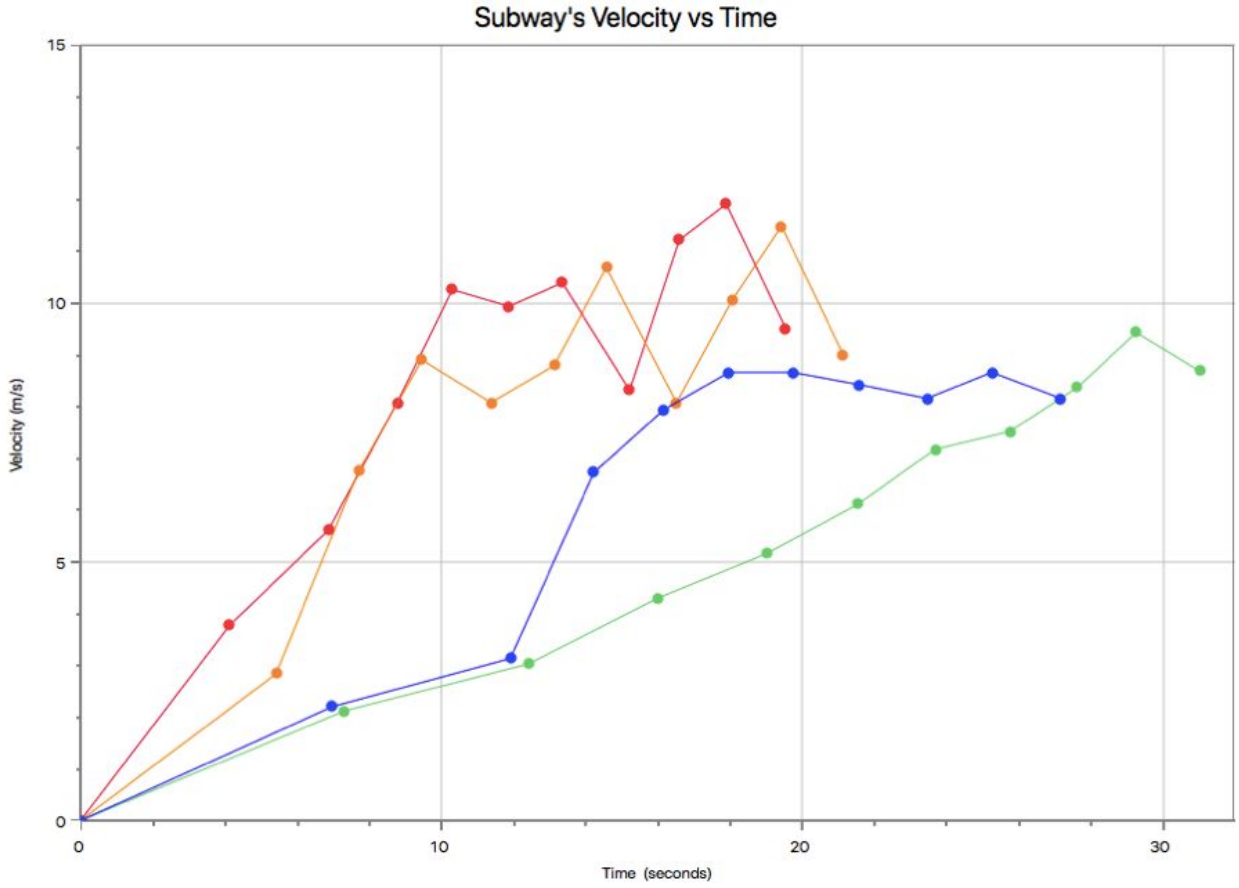
Velocity of Subway Leaving the Station

In this lab, my group and I was trying to figure out if the subway moves at a constant velocity for any part of its motion and what its maximum speed is while leaving the station.

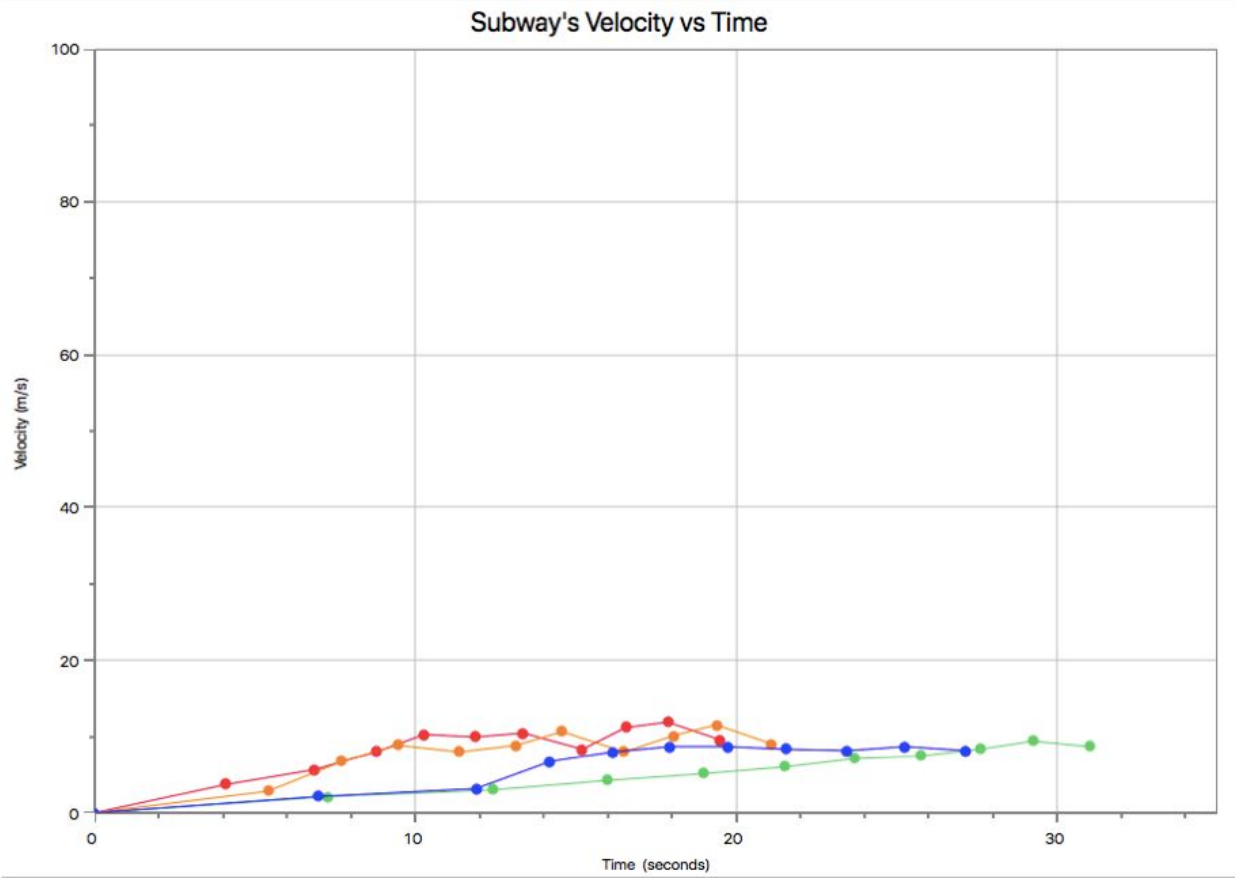
Key:

- =Train 1
- =Train 2
- =Train 3
- =Train 4

Graph 1 (zoomed in)



Graph 2 (zoomed out)



Based upon the data collected, I have concluded that the subway does move at a constant for a part of its motion and that its maximum speed is about 11.9m/s. The maximum speed is represented by the greatest point on the vertical axis and when looking at graph 1, the coordinate of the greatest point is (17.9s, 119m/s). As you can see from graph 1, trains 1, 3, and 4 eventually reach a constant velocity after accelerating for a certain amount of time. This is represented by the diagonal then horizontal trend of the plot points/lines. Although graph 1 doesn't show a perfectly horizontal line, the velocities of the trains after about 10 seconds for trains 1 and 3 and after 15 seconds for train 4 are very close in range. Also, when looking at graph 2, a more zoomed out version of graph 1, you can better see/visualize a horizontal trend, especially for train 4. However, train 2 was the exception because it only kept accelerating and did not reach a constant velocity by the time it left the station. This is represented by how to plot points kept trending diagonally and never became horizontal. Although one train did not move at a constant velocity for part of its motion, because three out of the four trains did, it is accurate to conclude that the subway eventually reaches a constant velocity while leaving the station.