

Data Science in the Ontario High School Classroom

Developing Lesson Plans from the IDSSP Curriculum Framework

Background

The **International Data Science in Schools Project (IDSSP)** framework for a two-year data science high school curriculum was recently released. This framework details a curriculum for teaching introductory data science (a blend of statistics, computer science and mathematics) in generic 'Western education' high schools such as are found in Canada, the United States and Australia.

Purpose

Analyze the IDSSP curriculum framework and identify suitable sections which are appropriate for integration into the Ontario high school course MDM4U, and develop lesson 4-5 plans around those topics.

Research Questions

1. What aspects of data science are already discussed in MDM4U?
2. Which topics from the IDSSP Phase 1 Framework, especially from Unit 1, translate most readily?
3. What is the structure and format of a standard Ontario Ministry of Education lesson plan?
4. How should the material best be integrated into MDM4U in order to ensure flow with the already existing material?
5. What technologies are appropriate for connection to this set of lesson plans?

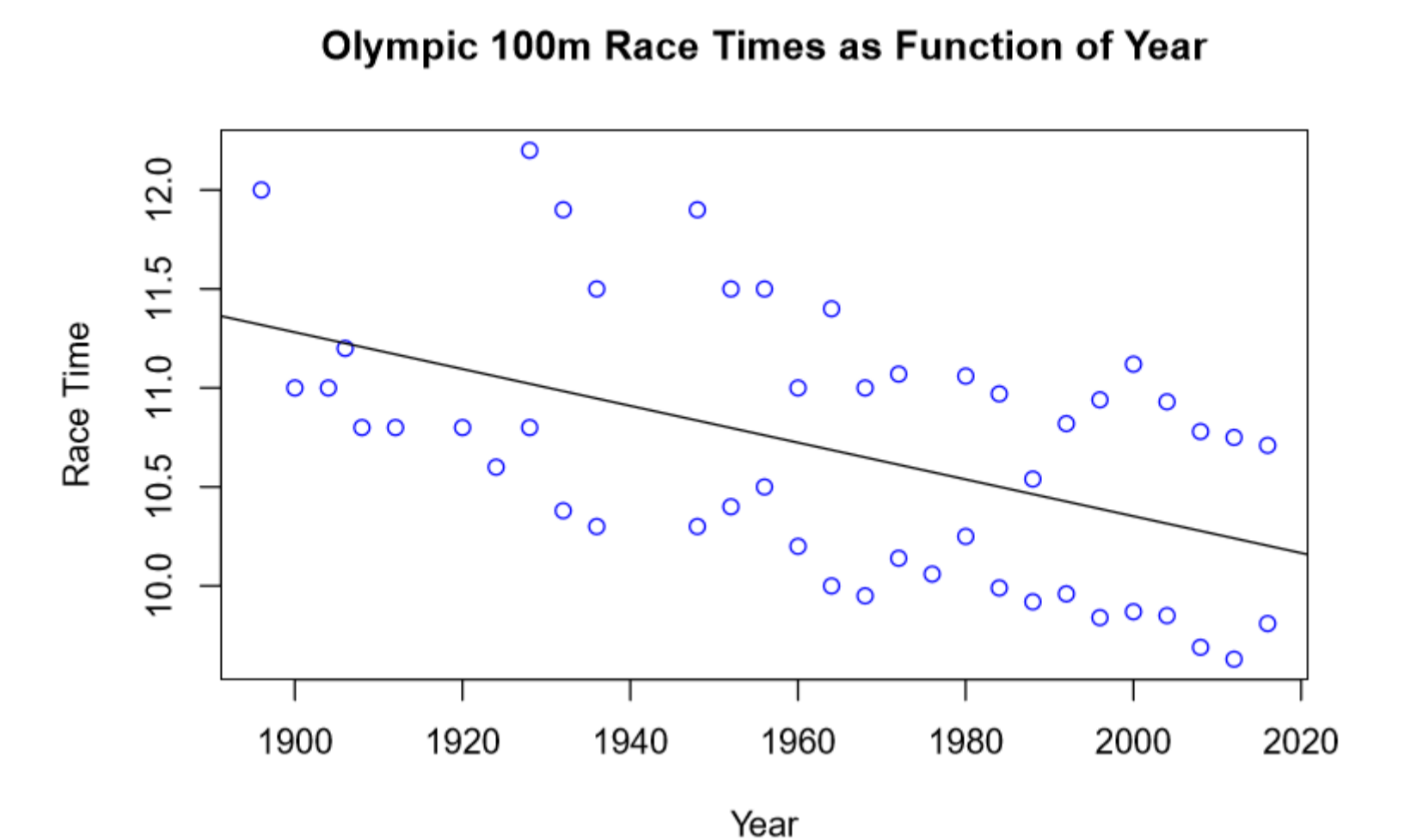
Methods

1. Research educational pedagogies and determine how to write formal lesson plans
2. Review the Ontario curriculum for the MDM4U course and identify aspects of data science pre-existing in the course
3. Propose 4 modules based on the IDSSP curriculum framework that could be integrated into MDM4U

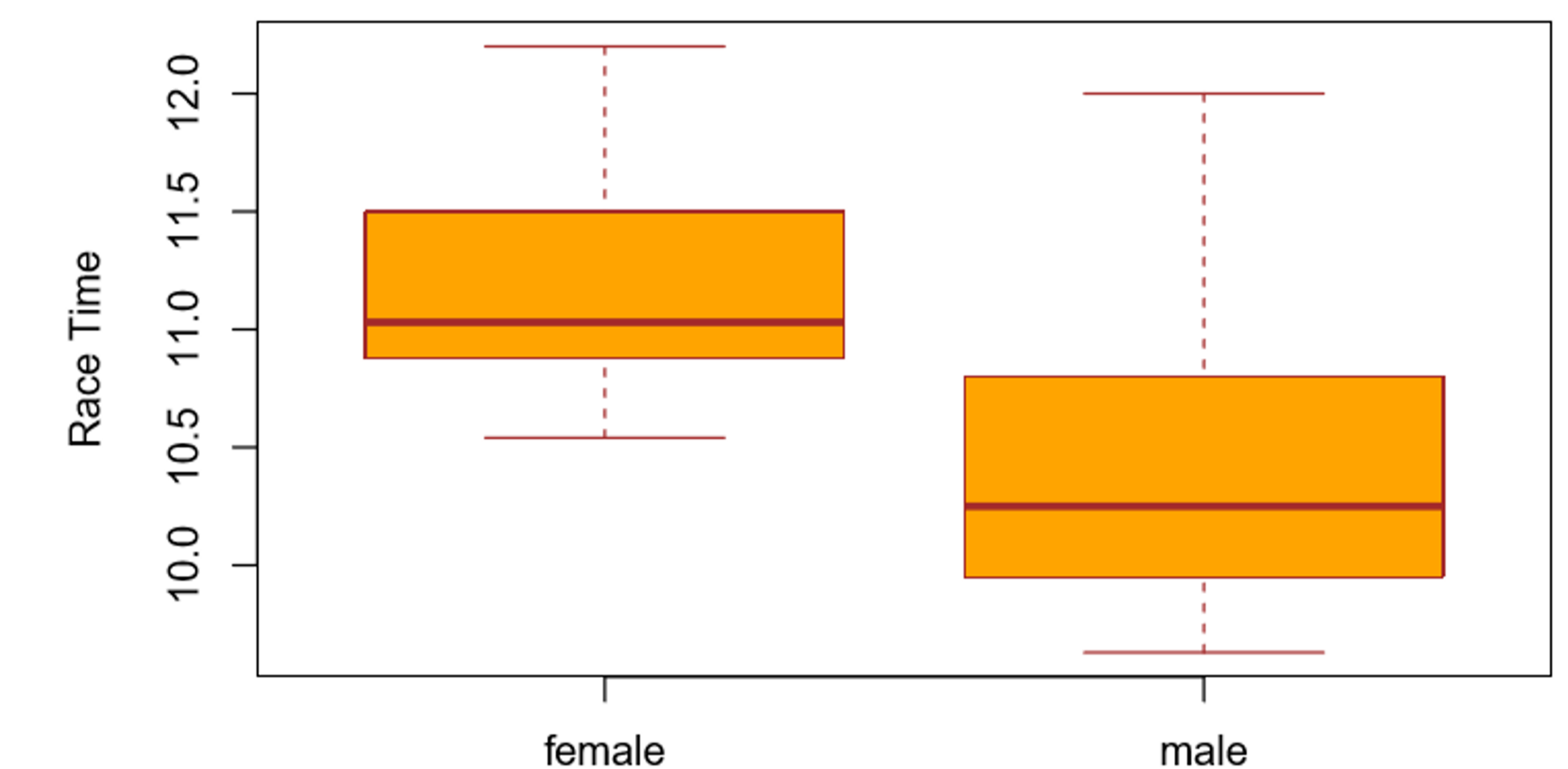
St. Peter Secondary School

Four lesson plans were developed to introduce tools and techniques for exploring and analyzing pairs of variables in datasets. An emphasis was placed on the learning from data science cycle. Local high school teacher Cheryl McLaughlin welcomed me into her classroom to teach the lessons as an optional unit.

YEAR	NAME	TIME	Country	Gender	
1	1896	Tom Burke	12.00	USA	male
2	1900	Frank Jarvis	11.00	USA	male
3	1904	Archie Hahn	11.00	USA	male
4	1906	Archie Hahn	11.20	USA	male
5	1908	Reggie Walker	10.80	SAF	male
6	1912	Ralph Craig	10.80	USA	male
7	1920	Charles Paddock	10.80	USA	male
8	1924	Harold Abrahams	10.60	GBR	male
9	1928	Percy Williams	10.80	CAN	male
10	1932	Eddie Tolan	10.38	USA	male
11	1936	Jesse Owens	10.30	USA	male
12	1948	Harrison Dillard	10.30	USA	male
13	1952	Lindy Remigino	10.40	USA	male
14	1956	Bobby Morrow	10.50	USA	male
15	1960	Armin Hary	10.20	GER	male
16	1964	Bob Hayes	10.00	USA	male
17	1968	Jim Hines	9.95	USA	male
18	1972	Viktery Borzov	10.14	URS	male
19	1976	Heesely Crawford	10.06	TRI	male

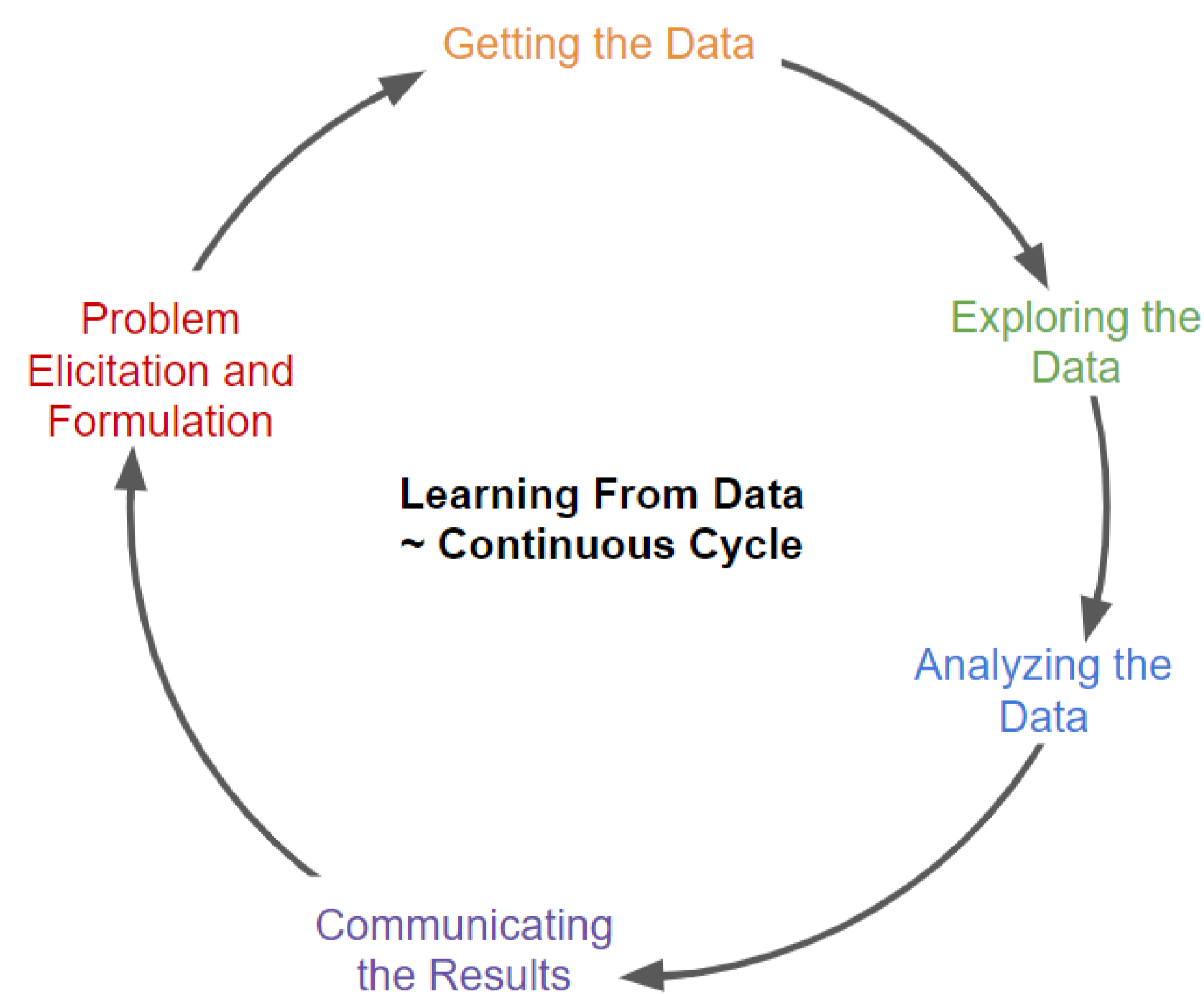


Olympic 100m Race Times By Gender



Student Samples

Students were required to individually explore one of three pre-selected datasets at the end of the unit. They practiced working through the learning from data science cycle, developing questions about a given topic, and attempting to answer said questions through the exploration and analysis of data. The above figures are pulled from student work with an Olympic 100m sprint dataset.



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