**Call for Teaching Proposals**

**Summer Scholars Program**

**Instructor Application Summer 2022**

Thank you for your interest in being part of the Yale Pathways to Science Summer Scholars program!

**Program Dates:** Monday July 11 – Friday July 22, 2022

**Compensation:** $250 per weeklong workshop

Be creative! Workshops should be highly engaging for high school students while also tackling substantive content. Past summers have included both lab and seminar workshops, including Neurobiology, Physics of Atmospheres, Safer Chemicals, Biotechnology, Ecology & Ecosystems, Metals as You Have Never Seen Them Before, Musical Instrumentation Design Engineering, the Chemistry of Beauty, Geographic Information Systems, and more! If you are only available to teach one of the two weeks, please make a note.

**Please upload this form in** [**this**](https://yalesurvey.ca1.qualtrics.com/jfe/form/SV_9GEUJiD7naQZXEy) **survey, along with your current CV,**

**by Friday, December 10th, 2021\*\***

**\*\*** **If you have previously taught in Pathways Summer Scholars, do not complete this form. You only need to upload your updated syllabus.**

***Workshop Proposal Details***

* Workshops may address any STEM field or focus on developing writing or communication skills.
* Workshops meet for 90 minutes per day with 12-20 high school students in mixed grades.
* We are hoping to be **in-person** this summer, so please propose an in-person workshop. If it is not possible to be in person, we will pivot to virtual, as we have done successfully the last two summers.
* Workshops are 5-day modules that are ideally repeated for another group in week two. If you are only available to teach one of the two weeks, make a note of the conflict.
* There is an opportunity to teach a two-week workshop, if the objectives of your workshop require.

Questions? Rick Crouse at richard.crouse@yale.edu or 203-441-5349‬.

**Instructor Name(s)**: Mary Ryan

**Proposed workshop title**: STEM Meets Storytelling: Using Data Science to Tell Stories about Our Communities

This workshop is aimed at introducing high-school students to basic statistical concepts and data science programming by exploring real-world data and gaining first-hand experience in data analysis and visualization. The end-goal will for students to create at least one data visualization (graph, map, etc.) using Connecticut public data and write a short blog post on the story that data tells.

DAY 1:

1. Introduction to Public Data and Storytelling: Brief lecture on where you can find public data, and how it's used to tell stories about communities

2. Introduction to R: Basic usage of RStudio and commands such as opening, writing, and closing scripts, changing directories, loading data files, and using variables via RStudio Cloud and interactive web slides

DAY 2:

3. Tidy Data: Lecture on tidy data structure, data reformatting, and variable creation and how it is useful in performing data analyses and creating data visualizations

4. Hands-on session: Students will perform some simple data cleaning and reshaping on Connecticut public data

DAY 3:

5. Data Summarization: Lecture on basic statistical concepts like means, medians, and variation and explain how these help us make sense of data and tells stories

6. Hands-on session: Students will perform data summarization on Connecticut public data they cleaned the previous day

DAY 4:

7. Data Visualization: Lecture and examples of basic types of data visualization, what types of data they can be used with, and what they are useful for explaining

8. Hands-on session: Students will create their own data visualizations using data they cleaned and summarized previously

DAY 5:

9. Tell Us A Story: We will incorporate some new public data files and see how this information fits in with the summarization and visualization we have performed previously. Students then have the opportunity to write short "stories"/blog posts on what we've discussed and the statistical visualizations and summarizations they've created

**Describe your workshop below. Please include key questions/objectives, themes, and any activities you plan to incorporate. The more information offered about the proposed *daily* activities, the better we can identify whether the proposed workshop fits in the program.**

**What about your workshop do you think will be particularly engaging/novel for students?**

This workshop will be engaging for students because each day will include hands-on coding and exercises. In addition, as we will be working with local real world data, students will be able to connect to the concepts we are discussing as they will also be learning new things about their communities. Coding and data science are exciting areas, and students will enjoy learning what actually goes into these and how they can be used in areas closer to their everyday lives rather than abstract concepts that are only used by big tech companies.

**What types of supplies will you require? (We have a budget to buy some supplies, including for lab workshops. We also borrow and share as much as we can to keep costs down.)**

None – coding will be down through the RStudio Cloud browser environment to eliminate need for software installation. Slides will be available online.

***Experience***

High school was when I was first introduced to statistics and it entirely changed my life, so I’ve been looking for opportunities to introduce students to the field. I also think that statistical and data literacy are important skills for high school students to develop, and I’ve really enjoyed thinking about how best to teach these concepts in fun ways over the last couple years.

1. **Why are you interested in working with Pathways Summer Scholars this summer?**
2. **What previous teaching experience have you had? Have you had experience working with high school students in particular?**

I’ve previously been the instructor of record for two introductory statistics courses for undergraduate students (typically in their 1st or 2nd year). Have also designed and taught several short statistics and coding workshops for data journalists.

1. **Is there anything else you would like us to know?**