Analysis of Harvard Medical School Countway Library’s MOOC Course, Best Practices for Biomedical Research Data Management: Learner Demographics and Motivations

Citation

Permanent link
https://nrs.harvard.edu/URN-3:HUL.INSTREPOS:37372987

Terms of Use
This article was downloaded from Harvard University’s DASH repository, WARNING: No applicable access license found.

Share Your Story
The Harvard community has made this article openly available. Please share how this access benefits you. Submit a story.

Accessibility
ANALYSIS OF HARVARD MEDICAL SCHOOL COUNTWAY LIBRARY’S MOOC COURSE, BEST PRACTICES FOR BIOMEDICAL RESEARCH DATA MANAGEMENT: LEARNER DEMOGRAPHICS AND MOTIVATIONS

Focusing on the enrollment period of 03/16/2020 - 06/14/2021

Kai Fay and Julie Goldman

Harvard Library

2022-08-04
## Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Points Summary</td>
<td>3</td>
</tr>
<tr>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td>Research Questions</td>
<td>4</td>
</tr>
<tr>
<td>Methods</td>
<td>4</td>
</tr>
<tr>
<td><strong>Quantitative:</strong> Course Participant Statistics</td>
<td>5</td>
</tr>
<tr>
<td>Geographic</td>
<td>5</td>
</tr>
<tr>
<td>Discovery</td>
<td>7</td>
</tr>
<tr>
<td>Completion Rate</td>
<td>9</td>
</tr>
<tr>
<td>Participant Statistics: Summary</td>
<td>10</td>
</tr>
<tr>
<td><strong>Qualitative:</strong> Course Participant Overview</td>
<td>10</td>
</tr>
<tr>
<td>Motivations</td>
<td>10</td>
</tr>
<tr>
<td>Characteristics</td>
<td>12</td>
</tr>
<tr>
<td>Participant Overview: Summary</td>
<td>12</td>
</tr>
<tr>
<td>Conclusions</td>
<td>13</td>
</tr>
<tr>
<td>Data Availability</td>
<td>14</td>
</tr>
<tr>
<td>Acknowledgments</td>
<td>14</td>
</tr>
<tr>
<td>References</td>
<td>15</td>
</tr>
<tr>
<td>Appendix A</td>
<td>17</td>
</tr>
<tr>
<td>Appendix B</td>
<td>19</td>
</tr>
</tbody>
</table>
Key Points Summary

This report analyzes learner reported data and course generated analytics from March 2020 through June 2021 for the course *Best Practices for Biomedical Research Data Management*. Previous reports analyzed enrollment periods pre-pandemic (Trepanowski 2019; Goldman & Trepanowski 2022) and through July 8, 2020 (Fay & Goldman 2021). This analysis looks deeper into subsets of enrollee data during the pandemic to understand global learner demographics and interest in biomedical research data management.

Major findings include:

- Learner trends were analyzed over three periods:
  - Spring 2020: March 16, 2020 – May 9, 2020 (n=1964)
  - Winter 2020: November 30, 2020 – February 1, 2021 (n=666)
  - Spring 2021: March 28, 2021 – June 14, 2021 (n=683)
- Learner completion rate for the course increased steadily from 17% in Spring 2020 to 45% in Spring 2021
- The mean time to completion decreased from 17.5 days (about 2 and a half weeks) in Spring 2020 to 2.4 days in Spring 2021
- The top three modes of discovery over all three periods were “through a social media site,” “from a friend or colleague,” and “from a web search”
- The COVID-19 pandemic highlighted opportunities for online learning to overcome physical restrictions and expand access to information
  - Comparing learner enrollment to global COVID-19 case data shows correlations between the two
- Learner enrollment included a wider variety of backgrounds and demographics than the course designers originally planned for
  - The proportion of learners from Asia/Pacific continued to increase after Spring 2020 to 68.5% of participants in Winter 2020 and 61.1% of participants in Spring 2021
  - The percentage of learners from North America decreased steadily to 9.6% in Winter 2020 and 6.9% in Spring 2021.
  - The percentage of learners from Latin America was low in both Spring and Winter 2020 but increased to 16.6% in Spring 2021
  - Across all three periods, most learners identified as students (82%) and learners identifying as librarians remained low (1% or 2%)
Introduction

This report on the analysis of Harvard Medical School Countway Library’s Massive Open Online Course (MOOC) Best Practices for Biomedical Research Data Management (Canvas Network n.d.), focuses on three subsets of participant data during the pandemic to understand global interest in and knowledge of biomedical research data management. When the COVID-19 pandemic hit in March 2020, registration almost doubled in less than a month. Previous reports analyzed enrollment periods pre-pandemic (Trepanowski 2019; Goldman & Trepanowski 2022) and through July 8, 2020 (Fay & Goldman 2021). This analysis looks deeper into how the pandemic shaped online learning demographics and motivations particularly for this freely available course.

Research Questions

Quantitative: Course Participant Statistics

Research questions:

- **Geographic:**
  - Where are the learners in the course coming from?
  - Is English participants’ primary spoken language?
  - How do the demographics of participants compare to global COVID-19 numbers?
- **Discovery:**
  - How are participants finding out about the course?
  - Are modes of discovery tied to geographic location?
- **Completion Rate:**
  - What percentage of enrollees have completed the course?
  - How long did it take enrollees to complete the course? Did this shift during the pandemic?

Qualitative: Course Participant Overview

Research questions:

- **Motivations:**
  - What are the participants’ motivations for enrolling in the course?
  - How do different motivations correlate with completion rates?
- **Characteristics**
  - What type of professionals and nonprofessionals participate in the course?
  - Did these shift during the pandemic?

Methods

Raw data from the Welcome Survey and Course Assessment Survey covering participants who enrolled in the course Best Practices in Biomedical Research Data Management over the period from March 2020 through June 2021 were exported from the Canvas Network site and deidentified. Data were further subdivided into three periods, March 16 – May 9, 2020 (“Spring 2020”, n=1964), November 30, 2020 –
February 1, 2021 ("Winter 2020", n=666), and March 28 – June 14, 2021 ("Spring 2021", n=683). The date ranges were defined as starting the first day enrollment increased significantly from previous levels and ending the last day prior to at least five days of enrollment returning to a steady, lower level. Data contain unique participant identifiers allowing for response and assessment data for individual learners to be linked across course modules and surveys. Participants agreed to data use by Canvas and the instructors through the course service agreement.

For qualitative analysis, open ended responses were categorized into participant motivations and characteristics. Categories were identified and standardized for manual tagging. Tagging was performed by a single coder using a mixed coding method, combining inductive and deductive approaches. Codebooks are included in Appendix A, and survey questions are available in Appendix B. Open response data from course surveys was removed after coding and analysis to respect participant privacy. All analysis was performed in Microsoft Excel. Data files have been deposited in the Open Science Framework (Goldman & Fay 2022).

**Quantitative: Course Participant Statistics**

Participants enrolling in the course must complete a Welcome Survey developed by the Canvas Instructure Team to unlock the main course modules. Welcome Survey response data was used to answer three categories of research questions:

- **Geographic:**
  - *Where are the learners in the course coming from?*
  - *Is English participants’ primary spoken language?*
  - *How do the demographics of participants compare to global COVID-19 numbers?*

- **Discovery:**
  - *How are participants finding out about the course?*
  - *Are modes of discovery tied to geographic location?*

- **Completion Rate:**
  - *What percentage of learners have completed the course?*
  - *How long did it take learners to complete the course? Did this shift during the pandemic?*

For the Spring 2020 period from March 16, 2020 through May 9, 2020, the Welcome Survey was completed by 1964 participants. During the Winter 2020 period from November 30, 2020 through February 1, 2021, the Welcome Survey was completed by 666 participants. During the Spring 2021 period from March 28, 2021 through June 14, 2021, the Welcome Survey was completed by 683 participants. The analysis does not include those who enrolled in the course but did not complete the Welcome Survey.

**Geographic**

In Spring 2020, 30.7% of new enrollees were from Europe, 25.6% were from Asia/Pacific, and 25.3% were from North America. The proportion of enrollees from Asia/Pacific continued to increase after
Spring 2020 to 68.5% of enrollees in Winter 2020 and 61.1% in Spring 2021. The percentage of participants from North America decreased to 9.6% in Winter 2020 and 6.9% in Spring 2021. The percentage of learners from Latin America was relatively low in both Spring and Winter 2020 but increased to 16.6% in Spring 2021 (Figure 1).

**Figure 1:** Geographic breakdown of participant locations by time segment.

Comparing enrollment numbers to global COVID-19 case data from the New York Times (The New York Times n.d.) shows correlations between the two. For example, the spike in enrollment from Latin America in Spring 2021 corresponds with a spike in COVID-19 infection in the region (Figure 2). Visualizations were created using Our World in Data (Ritchie et al. 2020) which utilizes the Johns Hopkins University CSSE COVID-19 Data (Dong, Du & Gardner 2020).

**Figure 2:** New daily confirmed COVID-19 cases in Brazil between March 2020 and June 2021 showing a spike in new cases in Spring 2021. Visualization created using Our World in Data (Ritchie et al. 2020).
Among those who enrolled in the course during the Spring 2020 period, 39.9% reported English as their primary spoken language while 60.1% did not. Participants enrolling in the course in Winter 2020 and Spring 2021 had a closer to even split with 53.9% of learners in Winter 2020 and 48.4% in Spring 2021 reporting English as their primary spoken language (Figure 3).

**Figure 3**: Participants reporting English as their primary spoken language broken out by time segment.

Discovery

Responses to the Welcome Survey question “How did you hear about this course” were analyzed to determine how participants found out about the course. Eight possible options were given, and respondents could select as many as applied. The top three modes of discovery over all three periods were “through a social media site,” “from a friend or colleague,” and “from a web search,” though the relative ranking of three options shifted (Figure 4). In Spring 2020, social media sites formed the largest proportion of responses at 39.0%. This decreased over the next two periods to 25.7% in Spring 2021. Word of mouth similarly decreased from 25.6% in Spring 2020 to 11.7% in Winter 2020 and 12.2% in Spring 2021. Meanwhile, the number of participants finding the course through a web search increased from 17.1% in Spring 2020 to 29.7% in Spring 2021.
Responses were further subdivided by geographic location to analyze region-specific trends (Figure 5). In Spring 2020, the top three overall modes of discovery were the same across all regions, with “Through a social media site” being the most frequent response. “From a friend or colleague” and “From a web search” were the second and third most common responses respectively, except in the Middle East/North Africa where the positions were reversed.

In Winter 2020, the most frequent response for all regions except Asia/Pacific was “From a web search.” For Asia/Pacific, the most frequent response was “Through a social media site,” which was also the most frequent response overall, likely due to the large proportion of participants from the Asia/Pacific region. Like Spring 2020, “From a friend or colleague” was the third common response. Individual regions also saw top responses other than the overall top three. Sub-Saharan Africa and Europe both saw greater than 10% of respondents stating they heard about the course through a news story. 21.2% from Latin America reported discovering the course by clicking on an ad, which was the only instance of advertising making it into the top three responses across all time periods.

In Spring 2021, the top three responses overall were the same as in the previous two periods. In regional variations, “From a news story that mentioned the course and/or Canvas Network” was the most frequent response from learners in Latin America (29.4%) and was in the top three options for North America (14.9%) and Europe (13.3%) as well.
Figure 5: Top three modes of discovery by time segments in each region.

Completion Rate

Data from participants’ Welcome Survey and Course Assessment date stamps were used to answer the following research questions. For this analysis, completion was defined as completing the Course Assessment within 90 days of completing the Welcome Survey:

- What percentage of learners have completed the course?
- How long did it take learners to complete the course? Did this shift during the pandemic?

During the Spring 2020 period, 1964 learners completed the Welcome Survey. Of those, 337 completed the course for a completion rate of 17%. The mean time to complete the course was 17.5 days. During the Winter 2021 period, 278 of 666 learners completed the course for a completion rate of 42%. The mean time to completion was 4.3 days. During the Spring 2021 period, 307 of 683 learners completed the course for a completion rate of 45%. The mean time to completion was 2.4 days. Figure 6 shows how the completion rate for the course increased steadily from 17% in Spring 2020 to 45% in Spring 2021, and the mean time to completion decreased from 17.5 days in Spring 2020 to 2.4 in Spring 2021.

Figure 6: Course completion rates (%) and average completion time (days) by time segment.
Participant Statistics: Summary

Pre-pandemic, those enrolling in the Best Practices in Biomedical Research Data Management course were primarily from North America. In Spring 2020, the percentage of participants from Europe and Asia/Pacific both increased relative to pre-pandemic trends. The increase in learners from Asia/Pacific peaked in Winter 2020 at 68.5% and remained a majority through Spring 2021. Learners from Latin America hovered around 5% through Winter 2020 but jumped to 16.5% in Spring 2021. Comparing enrollment trends with worldwide COVID case data from the New York Times shows a correlation between COVID cases, course enrollment numbers, and participant locations. Over all three periods, at least 46% of enrollees self-reported a language other than English being their primary spoken language.

The completion rate for the course increased steadily from 17% in Spring 2020 to 45% in Spring 2021. The mean time to completion also decreased from 17.5 days in Spring 2020 to 2.4 days in Spring 2021. Over the periods analyzed, the method through which participants heard about the course shifted from word of mouth or other direct communication to web searches with the latter increasing from 17.07% in Spring 2020 to 29.73% in Spring 2021.

Qualitative: Course Participant Overview

Learners enrolling in the course must complete a Welcome Survey developed by the Canvas Instructure Team to unlock the main course modules. Welcome Survey response data was used to answer three categories of research questions:

Research questions:

- **Motivations:**
  - What are the participants’ motivations for enrolling in the course?
  - How do different motivations correlate with completion rates?

- **Characteristics**
  - What type of professionals and nonprofessionals participate in the course?
  - Do these differ during the pandemic?

Motivations

Data from the survey was used to produce visualizations that captured participants’ motivation and goals for enrolling in the course.

To evaluate learners’ motivations and goals in enrolling in the course, responses to the question “How will this course help you meet your personal or professional goals?” from the Welcome Survey were analyzed and grouped according to the themes outlined below (Figure 7). Learner motivations were wide-ranging, with the majority relating in some way to a career in the sciences or science education. A large minority cited a personal interest in the topic or general interest in continued learning. Several participants also cited the COVID-19 pandemic as a motivation for enrolling in the course (3.8% across all three time periods).
When comparing motivations to completion rates, there was no observed significant difference in motivation between learners who completed the course versus those who did not. Table 1 shows the learners who were tagged in a motivation and/or characteristics category, subdivided by course completion status. As indicated earlier, the primary motivation across time periods was learning for a future career (32.2%), with current course work as a secondary motivation (17.3%).

**Table 1:** Learners who were tagged in a motivation and/or characteristics category subdivided by course completion status.

<table>
<thead>
<tr>
<th>Learners that completed the course (n=201)</th>
<th>Spring 2020 (n=87)</th>
<th>Winter 2020 (n=41)</th>
<th>Spring 2021 (n=73)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Future Career</td>
<td>36.8%</td>
<td>29.3%</td>
<td>27.4%</td>
</tr>
<tr>
<td>Course Work</td>
<td>21.8%</td>
<td>14.6%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Current Career</td>
<td>14.9%</td>
<td>19.5%</td>
<td>13.7%</td>
</tr>
<tr>
<td>Personal Interest</td>
<td>14.9%</td>
<td>4.9%</td>
<td>28.8%</td>
</tr>
<tr>
<td>Career Exploration</td>
<td>3.4%</td>
<td>26.8%</td>
<td>15.1%</td>
</tr>
<tr>
<td>Characteristic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>60.9%</td>
<td>29.3%</td>
<td>20.5%</td>
</tr>
<tr>
<td>Researcher/Scientist</td>
<td>9.2%</td>
<td>0.0%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Instructor</td>
<td>3.4%</td>
<td>2.4%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Learners that did not complete the course (n=631)</td>
<td>Spring 2020 (n=342)</td>
<td>Winter 2020 (n=116)</td>
<td>Spring 2021 (n=173)</td>
</tr>
<tr>
<td>Motivation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Future Career</td>
<td>34.2%</td>
<td>28.4%</td>
<td>31.2%</td>
</tr>
<tr>
<td>Course Work</td>
<td>21.9%</td>
<td>18.1%</td>
<td>11.0%</td>
</tr>
<tr>
<td>Current Career</td>
<td>16.4%</td>
<td>17.2%</td>
<td>16.2%</td>
</tr>
<tr>
<td>Career Exploration</td>
<td>9.1%</td>
<td>18.1%</td>
<td>18.5%</td>
</tr>
<tr>
<td>Personal Interest</td>
<td>9.1%</td>
<td>8.6%</td>
<td>18.5%</td>
</tr>
<tr>
<td>Characteristic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>78.9%</td>
<td>37.1%</td>
<td>36.4%</td>
</tr>
<tr>
<td>Researcher/Scientist</td>
<td>12.9%</td>
<td>0.9%</td>
<td>8.7%</td>
</tr>
<tr>
<td>Instructor</td>
<td>2.6%</td>
<td>3.4%</td>
<td>1.7%</td>
</tr>
</tbody>
</table>
Characteristics

The course drew in a wider variety of learners. The course description outlined the recommended educational and professional background for taking the course, so participants knew at the point of enrollment if they were in the target audience or not.

Answers to the Welcome Survey question “How will this course help you meet your personal or professional goals?” were analyzed and grouped according to characteristics identified during tagging (Figure 8; a complete list is in Appendix A). Of the Spring 2020 survey respondents (n=1964), 395 responses included a reference to their professional or nonprofessional characteristic. Of those responses, the clear majority identified as a student, either indicating their current or future education level, academic program, or they would be using the course to help them with their current studies (82%). The Spring 2020 cohort also included many researchers/scientists (13%) and instructors (3%). Spring 2021 (n=103) followed the same trend as Spring 2020; however, Winter 2020 (n=66) included more instructors (8%) than researchers (2%). Winter 2020 also included a larger percentage of doctors (6%) than the other two time periods.

Across all three time periods, the majority of learners identified as students. Despite being listed as a target audience, the percentage of learners identifying as librarians remained low (1% or 2%).

![Figure 8: Breakdown of the top five course participant characteristics by time segment.](image)

Participant Overview: Summary

Across all three periods, learners consistently enrolled in the course to improve their skills for a future career, current career, or current course work. In Spring 2020 and Spring 2021, many learners also
mentioned a personal interest for enrolling in the course. Learners consistently identified as students, with other top professions being Researchers/Scientists, Health Care Professionals, Instructors, and Doctors. Several of these groups were not included in the original target audience for this course. This analysis serves as a valuable reminder that any time content is made free and widely available, it can be used and reused in ways the developers did not originally intend.

Conclusions

This course was designed primarily for learners in the United States and teaches data management guidelines within the US regulatory framework. Over the period analyzed, the participants demographics shifted to primarily learners outside of the United States. Previous analysis showed that some participants who enrolled in the course seeking information about data management regulations outside of the United States did not have their information needs met (Fay & Goldman 2021). Although this report did not analyze the question specifically, we suspect the trend continued as the course enrollment increasingly shifted to participants from outside of the United States. A lesson learned for future instruction is to explicitly state the scope, perspective, and intended audience of the course at the start so that potential learners can make informed enrollment decisions, especially when the course is easily discoverable and accessible through web searches.

Over the period analyzed in this report, the modes of discovery for the course shifted away from word of mouth to internet searches. Most participants also stated they enrolled in the course due to its relevance to their current or future careers. All of this combined with the broad geographic distribution of participants indicates a clear need for accessible research data management instruction.

This course was created before the GDPR regulations (European Parliament and Council of the European Union 2016) went into effect in the European Union. It also does not address the upcoming changes to the NIH Data Management and Sharing Policy that will take effect in January 2023 (Office of The Director, National Institutes of Health 2020). Given the frequency of changes to data management regulations, especially when looking globally, there is an ongoing need for new and updated instructional content if courses are to continue filling the needs identified by participants. Maintainers of existing courses and other instructional objects must also continually review their content and either update or consider removing content that is sufficiently outdated as to be unhelpful or incorrect.

Open online courses and open educational resources (OER) can help provide timely and relevant information to learners who may otherwise face barriers to access. This course was on the forefront of offering free, open education for research professionals to develop data skills. However, there are many examples of RDM training offerings that are available to the global RDM community (Goldman & Trepanowski 2022).

“Research Data Management and Sharing” from The School of Information and Library Science and the Odum Institute at the University of North Carolina-Chapel Hill and EDINA at the University of Edinburgh (Rice 2016) serves as an introductory course to RDM. The “Data Management for Clinical Research”
offered by the Department of Biomedical Informatics at Vanderbilt University (Duda & Harris n.d.) focuses on clinical research and is geared toward anyone working in medical research.

The National Network of Libraries of Medicine Training Office (NTO) developed an eight-week online course to address key concepts in RDM (Van Der Volgen & Zhao 2019). Most recently, the Research Data Management Librarian Academy (RDMLA) launched in 2020 as a unique partnership between a LIS academic program, academic health sciences and research libraries, and a publisher (Research Data Management Librarian Academy n.d.)

Two interactive “games” take a novel approach to teaching data management topics:

1. League of Data: Data Management Challenge by the Social Sciences and Humanities Open Cloud (SSHOC) Project (2022)
2. Research Data Management (RDM) Adventure Game by the Stellenbosch University Library and Information Service (2021)

There are also useful collections of research data management training materials (links included in the references): DataONE Data Management Skillbuilding Hub, Data Management Training (DMT) Clearinghouse, Research data management (RDM) open training materials Zenodo Community, Consortium of European Social Science Data Archives (CESSDA) Training Resources, Framework for Open and Reproducible Research Training (FORT) Educational Nexus, and ELIXIR Research Data Management Kit (RDMkit).

This landscape is constantly evolving. As the library’s role in data services grows, it is more important than ever to find ways to develop effective free, online, interactive professional development opportunities and to evaluate the success of those courses in helping participants achieve their goals.

Data Availability

The datasets generated and/or analyzed during the current study are available in Open Science Framework at [https://osf.io/jy5a6](https://osf.io/jy5a6) (Goldman & Fay 2022b).

Acknowledgments

This project is led by the Francis A. Countway Library of Medicine at the Harvard Medical School, made possible by funding from the NIH Big Data to Knowledge (BD2K) Initiative for Resource Development (Award Number R25LM012284).

The authors would like to thank Ceilyn Boyd for her insights on structuring the data analysis for the Canvas dataset, and Melanie Smith, Amy Deschenes, and Danielle Lavoie for input and feedback on the qualitative methodology.
References


Goldman, Julie and Kai Fay. 2022. “Analysis Data: Learner Demographics and Motivations.” OSF. https://osf.io/jy5a6

Molloy, Laura. 2015. “Research data management (RDM) open training materials.” Zenodo. 
https://zenodo.org/communities dcc-rdm-training-materials


Blog. http://datablog.is.ed.ac.uk/2016/02/24/new-mooc

(COVID-19).” Published online at OurWorldInData.org. https://ourworldindata.org/coronavirus

Social Sciences & Humanities Open Cloud. 2022. “SSHOC Releases Video Game to Test and Improve Data 

Stellenbosch University Library and Information Service. 2021. “Research Data Management Adventure 
Game.” SUNScholarData. https://libguides.sun.ac.za/SUNScholarData/RDMAdventureGame

Trepanowski, Nevada. 2019. “Analysis of Harvard Medical School Countway Library’s MOOC Course: 

Van Der Volgen, Jessica and Shirley Zhao. 2019. “Building a National Research Data Management Course 
https://doi.org/10.7191/jeslib.2019.1160
Appendix A

Codebook for responses to Welcome Survey question “How will this course help you meet your personal or professional goals?” Responses were coded for “Motivation” and “Characteristic” categories.

<table>
<thead>
<tr>
<th><strong>Motivation: How will this course help you meet your personal or professional goals?</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current Career</strong></td>
<td>References to a current job or academic program. For all career codes, &quot;career&quot; also includes any references to enrollment in academic programs (e.g., &quot;useful for a current/future academic degree&quot;).</td>
</tr>
<tr>
<td><strong>Future Career</strong></td>
<td>References to desired future jobs, including both specific examples and general statements. Includes references to listing the course on a resume but excludes references to receiving the certificate of completion. For all career codes, &quot;career&quot; also includes any references to enrollment in academic programs (e.g., &quot;useful for a current/future academic degree&quot;).</td>
</tr>
<tr>
<td><strong>Career Exploration</strong></td>
<td>References to exploring a potential degree/career. For all career codes, &quot;career&quot; also includes any references to enrollment in academic programs (e.g., &quot;useful for a current/future academic degree&quot;).</td>
</tr>
<tr>
<td><strong>Career Change</strong></td>
<td>References making a degree/career change. For all career codes, &quot;career&quot; also includes any references to enrollment in academic programs (e.g., &quot;useful for a current/future academic degree&quot;).</td>
</tr>
<tr>
<td><strong>Course Work</strong></td>
<td>Explicit references to utilizing course concepts and/or knowledge gained to current degree program.</td>
</tr>
<tr>
<td><strong>Free Course</strong></td>
<td>References to enrolling in the course because it is a free online course.</td>
</tr>
<tr>
<td><strong>Language Skills</strong></td>
<td>References to a desire to learn the vocabulary and terminology to better communicate on this topic in English.</td>
</tr>
<tr>
<td><strong>Pandemic</strong></td>
<td>Explicit references to the COVID-19 pandemic as well as any responses that could reasonably be inferred to be in reference to the COVID-19 pandemic (e.g., &quot;my planned summer research internship was cancelled like everything else this year&quot;).</td>
</tr>
<tr>
<td><strong>Personal Interest</strong></td>
<td>References to non-academic/career reasons for enrolling in course. Does not include responses that do not answer the original survey question.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Characteristic: How will this course help you meet your personal or professional goals?</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biotechnologist</strong></td>
<td>Explicit reference to their current profession.</td>
</tr>
<tr>
<td><strong>Dentist</strong></td>
<td>Explicit reference to their current profession.</td>
</tr>
<tr>
<td><strong>Doctor</strong></td>
<td>Explicit reference to their current profession.</td>
</tr>
<tr>
<td><strong>Graduate</strong></td>
<td>References to having graduated from an academic program, but no current professional job (i.e. being between school and a professional career).</td>
</tr>
<tr>
<td><strong>Health Care Professional</strong></td>
<td>Explicit reference to their current profession.</td>
</tr>
<tr>
<td>Role</td>
<td>Possible References</td>
</tr>
<tr>
<td>-------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>Instructor</td>
<td>References to online teaching/pedagogy from the instructor perspective, including references to course design/assessment.</td>
</tr>
<tr>
<td>Librarian</td>
<td>References to using the course to inform their work as a librarian.</td>
</tr>
<tr>
<td>Medical Professional</td>
<td>Explicit reference to their current profession.</td>
</tr>
<tr>
<td>Nurse</td>
<td>Explicit reference to their current profession.</td>
</tr>
<tr>
<td>Pharmacist</td>
<td>Explicit reference to their current profession.</td>
</tr>
<tr>
<td>Physician</td>
<td>Explicit reference to their current profession.</td>
</tr>
<tr>
<td>Project Manager</td>
<td>Explicit reference to their current profession.</td>
</tr>
<tr>
<td>RDM Professional</td>
<td>Explicit reference to their current profession.</td>
</tr>
<tr>
<td>Researcher/Scientist</td>
<td>Explicit reference to their current profession.</td>
</tr>
<tr>
<td>Student</td>
<td>References to a current or future education level, academic program, or using the course to help them with their current studies.</td>
</tr>
</tbody>
</table>
Appendix B

Welcome Survey (Required by Canvas Network)

141829: What is your primary reason for taking an open online course?

- I like the format (online)
- I enjoy learning about topics that interest me
- I enjoy being part of a community of learners
- I hope to gain skills for a new career
- I hope to gain skills for a promotion at work
- I am preparing to go back to school
- I am preparing for college for the first time
- I am curious about MOOCs
- I want to try Canvas Network

141830: Not everyone has the same participation and learning goals. We welcome the diversity. Which type of online learner best describes you?

- An observer. I just want to check the course out. Count on me to “surf” the content, discussions, and videos but don’t count on me to take any form of assessment.
- A drop-in. I am looking to learn more about a specific topic within the course. Once I find it and learn it I will consider myself done with the course.
- A passive participant. I plan on completing the course but on my own schedule and without having to engage with other students or assignments.
- An active participant. Bring it on. If it’s in the course, I plan on doing it.

141831: How many hours a week are you planning to spend on this course?

- Less than 1 hour
- Between 1 and 2 hours
- Between 2 and 4 hours
- Between 4 and 6 hours
- Between 6 and 8 hours
- More than 8 hours per week

141832: How will this course help you meet your personal or professional goals? [open ended]

141833: What is your highest level of education?

- High School or College Preparatory School
- Some college, but have not finished a degree
- Completed 2-year college degree
- Completed 4-year college degree
- Some graduate school
• Master's Degree (or equivalent)
• Ph.D., J.D., or M.D. (or equivalent)
• None of these

141834: Is English your primary spoken language?

• Yes
• No

141835: Where do you live?

• North America
• Latin America
• Europe
• Middle East/North Africa
• Sub-Saharan Africa
• Asia/Pacific

141836: What is your gender?

• Male
• Female
• Other

141837: How old are you?

• 13-18
• 19-24
• 25-34
• 35-44
• 45-54
• 55-64
• 65 or older

141838: How did you hear about this Canvas Network Course? (select all that apply)

• Through a social media site (like Facebook or Twitter)
• From a news story (print, online, radio, or TV) that mentioned the course and/or Canvas Network
• From a friend or colleague
• I clicked on an ad
• From a web search
• From the instructor
• From a Canvas or Canvas Network communication
• From the sponsoring institution (newsletter, institution’s website/blog, or flyer)
141839: Where have you taken an online course before? (Select all that may apply)

- Never taken an online course
- At school
- Canvas Network
- Coursera
- EdX
- Udacity
- FutureLearn
- Other

141840: If you have any general feedback you'd like to provide, please do so here: [open ended]