Data Science for the Public Good Young Scholar Program Evaluation Framework

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PART I: Evaluation Framework Overview

1. RE-AIM Framework
2. Team Science as a Process Model
3. Logic Model

Evaluation Framework Overview

1. Use a well-established framework to guide and organize evaluation structure (RE-AIM)

- RE-AIM: Reach, Efficacy, Adoption, Implementation, Maintenance
- Focus on components most closely aligned with our program

2. Incorporate Team Science as a process model

3. Substantiate the framework using Logic Model to identify actionable outcomes and outputs and resources.

- Identify key considerations for evaluation (e.g., goals, stakeholders)
- Short term and long term outcomes

RE-AIM Framework

RE-AIM for Reach, Efficacy, Adoption, Implementation, Maintenance; (Glasgow, Vogt, and Boles 1999) to evaluate individual and institutional level program impacts

- **R**each into the target population
- **E**ffectiveness or efficacy
- **A**doption by target settings, institutions, and staff
- **I**mplementation consistency and cost of delivery of intervention
- **M**aintenance of intervention effects in individuals and settings over time

RE-AIM Framework

- **Reach** - The absolute number, proportion, and representativeness of individuals who are willing to participate in an initiative.
- **Effectiveness** - The impact of an intervention on outcomes, including potential negative effects, quality of life, and economic outcomes.
- **Adoption** - The absolute number, proportion, and representativeness of settings and intervention agents who are willing to initiate a program.
- **Implementation** - The intervention agents' fidelity to the various elements of an intervention's protocol. This includes consistency of delivery as intended and the time and cost of the intervention.
- **Maintenance** - The extent to which a program or policy becomes institutionalized or part of routine organizational practices and policies. Defined at the individual level as the long-term effects on outcomes six or more months after the most recent intervention contact.

Team Science as a process model

Team Science – Scientific collaboration, i.e., interdisciplinary research conducted by more than one individual in an interdependent fashion (National Research Council, 2015)

Science of Team Science – "a new interdisciplinary field . . . which aims to better understand the circumstances that facilitate or hinder effective team-based research and practice and to identify the unique outcomes of these approaches in the areas of productivity, innovation, and translation." (Stokols et al., 2013, p. 4)

Team effectiveness – A team's performance and capacity to achieve its goals and objectives, which leads to improved outputs & outcomes for the team members, (e.g., team member satisfaction and willingness to remain together), as well as outputs & outcomes produced or influenced by the team, such as new research findings, new methods, and translational applications (National Research Council, 2015)

Logic Model: Key considerations

Measuring Success in Research Objectives, Inputs, Activities, Outputs, Outcomes

- **Research Objectives:** Project Goals, Milestones and Deliverables
- **Inputs and Activities:** Trainings, Meetings
- **Outputs:** Web-based Resources, Presentations, Reports
- **Outcomes:** Short term outcomes (e.g., knowledge), and long-term outcomes (e.g., job opportunities)

Stakeholders: Students, Faculty Mentors, Project Sponsors

Information Collection Tools: Questionnaires, interviews, regular project page updates, alumni network (e.g., LinkedIn)

Timing: Beginning, during, and after the program

https://managementhelp.org/evaluation/program-evaluation-guide.htm

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PART II: Evaluation Strategy and Design

1. Evaluation Strategy
2. Evaluation Design Overview
3. Survey Content Areas

Evaluation Strategy

Framework

- RE-AIM (Reach, Efficacy, Adoption, Implementation, Maintenance)
- Team Science as the process model (Inputs & Activities engage Team Science to produce Outcomes)
- Measuring Success in Research Objectives, Inputs, Activities, Outputs, Outcomes
  - **Research Objectives:** Project Goals, Milestones and Deliverables
  - **Inputs and Activities:** Trainings, Meetings, Seminars, Brownbags, Mentorship
    - Link to Curriculum Document: https://uva-bi-sdad.github.io/DSPG Young Scholars Program Curriculum.pdf
  - **Outputs:** Web-based Resources, Presentations, Reports
    - Link to List of Publications/Reports that have come out of DSPG: https://uva-bi-sdad.github.io/dspg2019
  - **Outcomes:** Short term outcomes (e.g., knowledge, learning), and long-term outcomes (e.g., job placements)
    - Link to LinkedIn DSPG Alumni Group: https://www.linkedin.com/groups/8794729/

Evaluation Design

Stakeholders:

- Students, Faculty Mentors, Project Sponsors

Evaluations:

- Formative – provides ongoing feedback and learning relative to goals
- Summative – provides periodic assessment about status of achieving goals

Data Collection:

- **Information Collection Tools:** Questionnaires, interviews, regular project page updates, alumni network (e.g., LinkedIn)
    - **Designed:** Intentional, targeted data collect to answer evaluation questions, e.g., intake surveys regarding expectations administered to students, sponsors, and faculty.
    - **Administrative:** Data from designing, and executing the program; e.g., student and faculty selection, project and team assignments, training attendance records.
- **Timing:** Beginning (prior to and first week), during (every two weeks), and after the program (last week, and future)

Evaluation Surveys Content Areas

DSPG Young Scholars – Content Areas

- **Intake surveys**
  - Program expectations
  - Professional (career) interests
  - Professional and technical skill development goals
- **Training and Team Science surveys**
  - Training experience so far
  - Training - does it meet expectations
  - Training – what are you learning
  - Suggestions to improve
- **Final survey –** Planned for August
  - Program expectations update
  - Career interests update
  - Professional and technical goal update
  - Training update

Faculty – Content Areas

- **Early project surveys**
  - Project goals
  - Professional (career) interests and expectations
  - Training and mentorship goals
- **Post-project surveys –** Planned for August
  - Interest and experience with data science
  - Project goal completion
  - Suggestions to improve

Project Sponsors – Content Areas

- **Early project surveys**
  - Interest in and experience using data science
  - Project goals
- **Post-project surveys –** Planned for August
  - Interest and experience with data science
  - Project goal completion
  - Suggestions to improve

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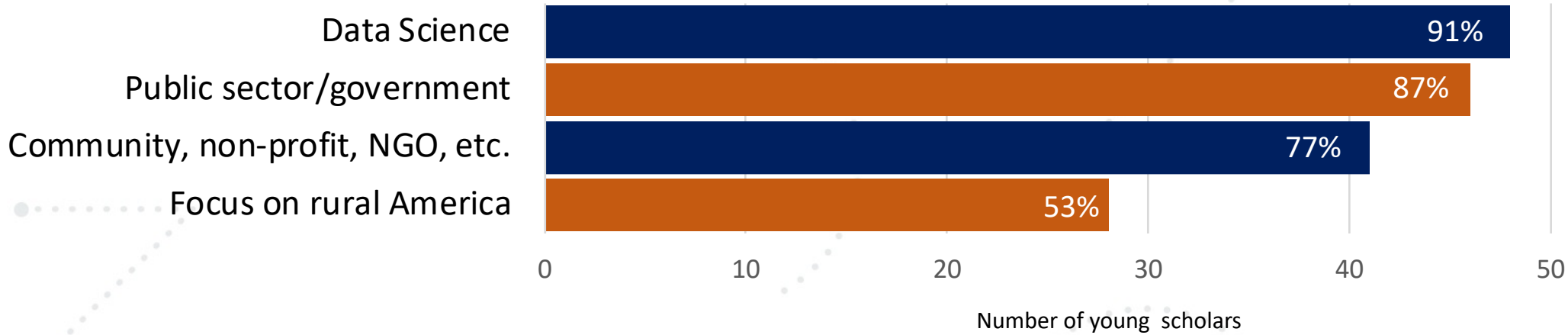
PART III: Highlights from DSPG 2020

Evaluation Surveys Highlights
DSPG Young Scholars – Intake Survey

Intake survey topics highlights –
How many students are interested in pursuing a career in….



How do you believe participating in the DSPG program will affect your professional and career goals?

- *I think the project management and collaborative skills that I'll almost certainly develop are applicable to any sort of career, but more specifically I'm hoping that DSPG could be a bridge that allows me to shift my focus toward the public domain. I am extremely interested in pursuing a graduate degree in public policy and thought this would be a great introduction into how data science and public policy can intertwine.*
- *The experience will help me continue to grow my skills as a data scientist in applied ways that help others.*
- *DSPG will help to show me what kind of work is possible where I can use my data science skills and also affect policy in a positive way.*

Evaluation Surveys Highlights
DSPG Young Scholars - Training

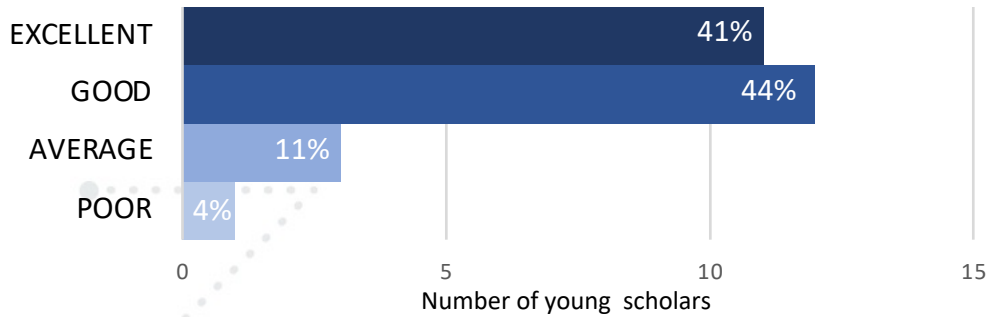
Training highlights –

What is something new that you have learned?

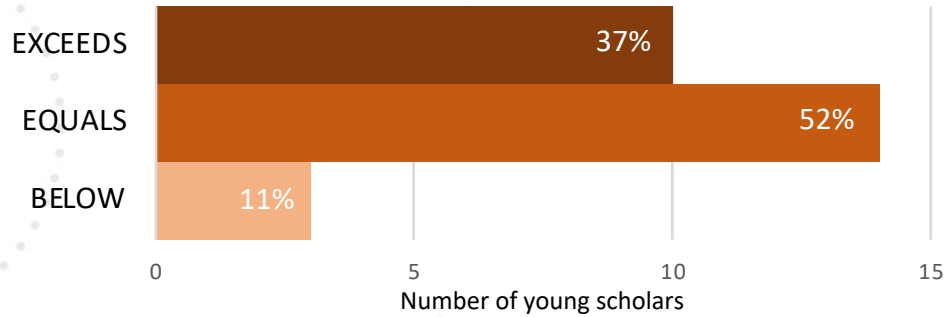
Evaluation Surveys Highlights
DSPG Young Scholars - Training

Training highlights –

How would you rate your overall experience in the training thus far?



To what degree does your experience meet your expectations?



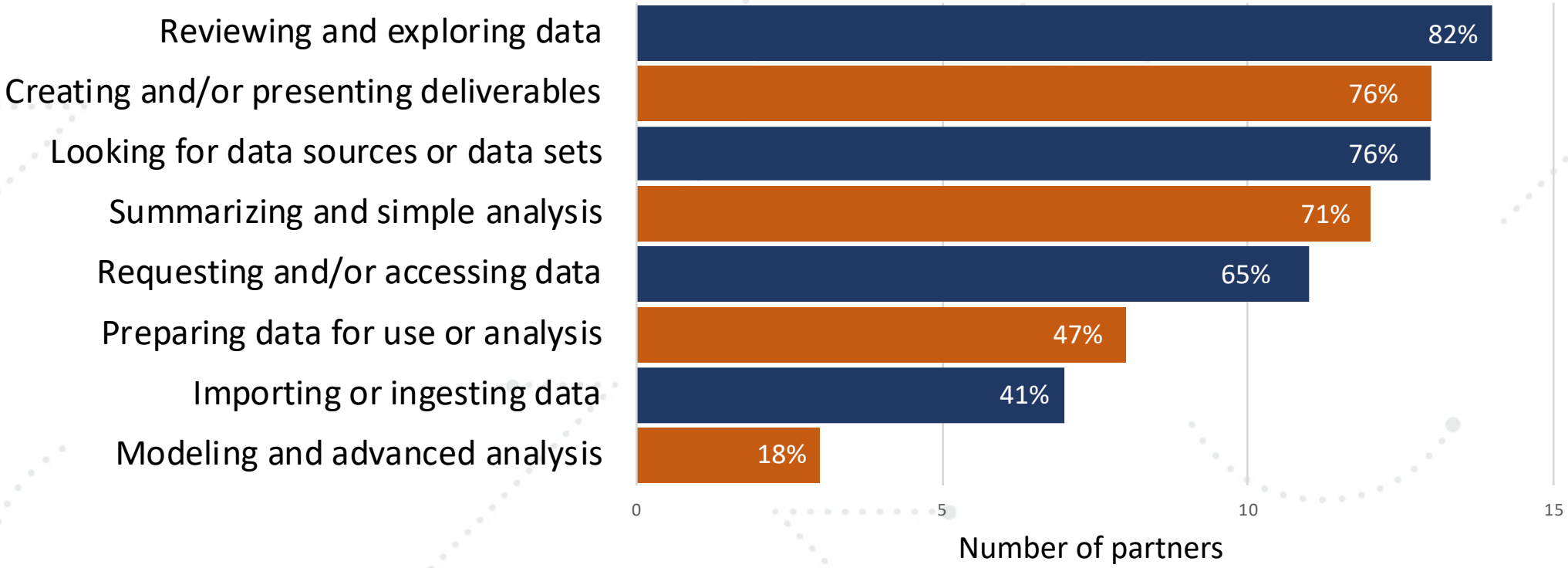
What suggestions do you have on improving training?

- *I sympathize a lot with trying to lead trainings virtually and I think that the training coordinators have done a great job.*
- *Allow the students to have access to data camp two weeks prior to the start date so the students can master the content before the class and follow along better during the class.*
- *Some trainings treat attendees as total beginners, others as advanced users… that makes it hard to figure out which parts of each training are relevant to me as a relatively advanced R user.*
- *It would be better if there was some way people could choose from a menu of trainings.*
- *Learning more about previous projects will help us do the new projects.*
- *The R Shiny training was perfect with the "your-turn"*

Evaluation Surveys Highlights Partners (Project Sponsors)

Early-project survey topics highlights –

How comfortable do you feel engaging in each of these activities as a part of your ongoing work?



Evaluation Surveys Highlights
Project Sponsors

Early-project survey topics highlights –

How do you make use of data or data-driven insights in your work?

- *Mostly by collaborating with modelers and other data analysts. It's not my primary focus.*
- *I basically use pre-existing data for special projects or to familiarize myself with a certain topic in advance of a meeting or something of that nature. I also find it helpful in determining the needs of the community, certain populations and certain areas of the City.*
- *I would like to use more data. However, my time is spent being reactive rather than proactive. It's a shame, but a reality.*

Links to DSPG 2020 Documents

DSPG 2020 Student Intake and Final Survey Summary:
https://uva-bi-sdad.github.io/DSPG 2020 Student Intake and Final Survey Response Summary.pdf

DSPG 2020 Survey Instruments (intake and final survey questions, team science questions, sponsor survey):
https://uva-bi-sdad.github.io/DSPG 2020 Survey Instruments.pdf

DSPG Young Scholars 2014-2020 Program Statistics:
https://uva-bi-sdad.github.io/DSPG Young Scholars 2014-2020 Program Statistics.pdf

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RE-AIM website: http://www.re-aim.org/about/

Logic model Planning Process: https://nifa.usda.gov/resource/logic-model-planning-process

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