

**Final Report on the  
Mathematical Sciences Research Institute  
2021 African Diaspora Joint Mathematics Workshops (ADJOINT)  
supported by NSA Grant  
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**July 2022**

**Mathematical Sciences Research Institute**  
**2021 African Diaspora Joint Mathematics Workshop (ADJOINT) Report**

The **African Diaspora Joint Mathematics Workshop (ADJOINT)** is a yearlong program that provides opportunities for U.S. mathematicians – especially those from the African Diaspora – to form collaborations with distinguished African-American research leaders on topics at the forefront of mathematical and statistical research.

Beginning with an intensive two-week summer session at MSRI, participants work in small groups under the guidance of some of the nation’s foremost mathematicians and statisticians to expand their research portfolios into new areas. Throughout the following academic year, the program provides conference and travel support to increase opportunities for collaboration, maximize researcher visibility, and engender a sense of community among participants.

**Structure and Participants:**

For 2021, the two-week intensive period occurred June 21 to July 2. There were four research groups, and a total of 24 researchers (including the four Research Leaders) who participated in ADJOINT. Both the research topics and researchers were diverse in many respects. The research areas included algebraic geometry, biostatistics, decision processes, and topology. The researchers hailed from academic positions ranging from postdoctoral scholars to full professors; liberal-arts to research-intensive institutions; and minority-serving to predominantly-white institutions. Researcher demographics include Black, Latinx, female, and male.

Due to the ongoing COVID-19 pandemic, it was not possible for MSRI to host participants in Berkeley. Indeed, some participants had concerns about traveling that far from home. Instead, two research groups traveled to the home city of their Research Leader, one research group traveled to the home city of a participant who could not travel, and one research group participated virtually.

The program began with a virtual synchronous opening session involving all participants, where MSRI leadership, ADJOINT directors, and MSRI support staff were also present. At this time, all participants and Research Leaders were introduced and the schedule for the two-week intensive period was outlined. Twenty minutes during the opening session were dedicated to socializing, to allow the researchers to get to know each other. Participants were pseudo-randomized (to avoid populating rooms with people from the same research group) to breakout rooms and asked to answer several questions about themselves. This was part of our attempt to simulate the cross-group mingling that would have naturally occurred had this program been face-to-face at MSRI.

The two-week intensive period included several other common activities. A panel titled “Dear Research Leaders: Who are you?” aimed to humanize research by focusing on the lived experiences of these accomplished researchers, with the hope of understanding their path to who they are today. Quite importantly, the undergraduate student participants and faculty advisors of MSRI’s Undergraduate Program (MSRI-UP) also attended this panel. A thirty-minute comingling session using breakout rooms allowed the MSRI-UP participants to interact with the ADJOINT participants. A grantsmanship panel featured advice from four individuals representing three organizations: Dr. Earnestine Easter, NSF/DGE; Dr. Juan Meza, NSF/DMS; Dr. Evan Michelson, Sloan Foundation; and Dr. Charles Toll, NSA. An extension to the grantsmanship panel was a hands-on introduction to finding and responding to funding opportunities offered by the NIH. Finally, each Friday we enjoyed a “Research Share,” where each research group used 10 to 20 minutes to share progress on their activities and the audience would ask questions and offer feedback for another five to 10 minutes.

During the two-week intensive period, each research group had the freedom to organize their time in a manner that was most effective for them. However, it was recommended that each day begin with a period of “training,” crosstalk, updates, debrief, feedback, strategy adjustment, etc.

**Table 2: List of Research Groups from the 2021 ADJOINT program**

<b>Research Topic</b>	<b>Participants</b>	<b>Institution</b>
<b>Racial/Ethnic Disparities in Health: Applying a More Nuanced Inferential Framework</b>	Emma Benn (Leader) Karen Hicklin Lakeshia Jones Opel Jones Omayra Ortega Toyya Pujol Steven Lawrence*	Icahn School of Medicine at Mount Sinai University of Florida University of Arkansas Towson University Sonoma State University Purdue University New York University
	This group traveled to Brooklyn, NY to be closer to their Research Leader. Their meetings were face-to-face. *Steven Lawrence is a doctoral student who provided computational instruction and support to the group.	
<b>Steinberg Modules of Braid Groups</b>	Nathan Broaddus (Leader) Lindsey-Kay Lauderdale Emille Lawrence Anisah Nu'Man Robin Wilson	The Ohio State University Towson University University of San Francisco Spelman College Cal Poly Pomona
	Due to the combination of the pandemic and family obligations, this group opted to work virtually. Apple iPads, equipped with software for technical work and to enable communication, were provided to all members of this group to facilitate their interactions. Moreover, the group is scheduled to meet face-to-face at MSRI in 2022.	
<b>Using Decision Modeling to Personalize Policy in Complex Human Centered Problems</b>	Julie Ivy (Leader) Erica Graham Isabelle Kemajou-Brown Miranda Teboh-Ewungkem Oyita Udiani	North Carolina State University Bryn Mawr College Morgan State University Lehigh University Virginia Commonwealth University
	This group traveled to Baltimore, MD to accommodate a member who was unable to travel. Their meetings were face-to-face.	
<b>Adventures in Constructive Galois Theory</b>	Danny Krashen (Leader) Cory Colbert Edinah Gnamg Haydee Lindo Lori Watson Ashley Wheeler Ulrica Wilson	University of Pennsylvania Washington & Lee University Johns Hopkins University Harvey Mudd College Wake Forest University Mount Holyoke Morehouse College
	This group traveled to New Brunswick, NJ to be close to their Research Leader, who, at that time, was at Rutgers University. Their meetings were face-to-face.	

## **Highlights from Research Leader Reports:**

Research Leaders submitted brief reports within two months after the two-week intensive period (these reports are included in Appendix I). The reports were submitted using a Google Form to reduce the burden on Research Leaders; minimize distraction from the actual research; and increase compliance with the request. The reports summarized (actual and planned) activities during the two weeks and beyond.

All groups had intense “training” sessions to get everyone to the same level and ready to obtain/derive new results, although the format differed slightly between groups. Some groups shared lecture-style materials from representative books, while others employed a journal club approach.

All groups familiarized themselves with the background expertise of individual group members, but one group in particular used these backgrounds to determine the specific projects that the group would undertake. Two groups brought in external researchers who provided seminars to spur research development.

## **Survey Results:**

At the close of the two-week intensive period, all researchers were given a month to complete an online retrospective-pre survey<sup>1</sup> to provide feedback on their experiences. Three of the four Research Leaders responded, and 18 of the 20 participants responded. All responses are anonymized to the ADJOINT Directorate and MSRI Staff. These surveys were conducted and analyzed by the Karen Peterman Consulting Company, and some findings are summarized below (the full report can be found in Appendix II).

- Researchers are quite likely to recommend ADJOINT to others, with an average rating of 4.7 (out of 5) from participants, and 4.5 from Research Leaders.
- Researchers report being highly likely to continue collaborating with members of their research group, with an average rating of 4.7 from participants and 5.0 from Research Leaders.

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<sup>1</sup> A retrospective-pre survey collects data at only one time point, typically when a program or intervention is over. When the survey is administered, respondents are asked to respond to a series of items about their knowledge, skills, attitudes, and/or behaviors BEFORE and AFTER they completed a program. This allows an evaluator or researcher to examine self-reported change in knowledge, skills, attitudes, and/or behaviors.

- Participants were very satisfied with their Research Leader and group members, reporting average ratings of 4.9 for helpfulness of Research Leader, 4.7 for effectiveness of Research Leader, 4.6 for satisfaction with contributions from other group members, and 4.6 for enthusiasm to continue working with the group.
- Research Leaders were very positive about their group members, reporting average ratings of: a perfect 5.0 on group member engagement, satisfaction with group member contributions, enthusiasm to continue working with the group, and confidence in plans for continuing collaboration; and a 4.7 for productive interaction among group members.
- Research Leaders had minimal challenges dealing with the varying levels of incoming expertise of their group members, with an average response of 2 (where 1 means there was no challenge at all).
- Research Leaders believe the most likely research outputs would be a publication (rating of 4.3) or a conference proposal (4.0), and the least likely a grant proposal (3.3).
- Participants were positive about the panel “Dear Research Leaders: Who are you?” (4.1), but the Research Leaders were mixed (3.0)<sup>2</sup>.
- Researchers were positive about the grant panel and workshop (4.2 for participants, 4.5 for Research Leaders)
- The Research Shares received mixed reviews, with participants finding more value than Research Leaders with regard to clarifying opportunities for improvement within a group (3.7 versus 2.5), and the reverse for sparking ideas to advance one’s own research interests (3.1 versus 3.5).
- When it comes to initiating new collaborations with members of their research group, researchers are more hesitant, with an average rating of 3.0 from participants, and 2.5 from Research Leaders.

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<sup>2</sup> It is well documented that some groups of people tend to be more harsh when assessing themselves.

- Researchers joined ADJOINT for a number of different reasons, with participants selecting far more reasons than Research Leaders. Interestingly, some of these reasons experienced large changes pre-workshop compared to post-workshop:
  - Research Leaders had a higher opinion of the reason “to improve my professional network” after completing the two-week intensive period (100%) than before (67%).
  - Research Leaders had a higher opinion of the reason “to increase my long-term research output” after (67%) than before (33%).
  - The reason with the largest change among participants was “to begin a new group project that will move towards publication,” changing from 19% before to 94% after.
  - The reason with the second largest change among participants was “to establish a realistic research project that can be executed in the short term,” changing from 19% before to 50% after.
  - The most perplexing change among participants was the reason “to increase my long-term research output” changing from 94% before to 75% after. We surmise that although participants joined ADJOINT primarily with this reason in mind, once they were involved in ADJOINT they discovered many other motivating reasons. It does not appear to indicate a lack of interest in scholarly output, as indicated by the two preceding bullet points. More specifically, participants appear to have refined their goals to include group research and short-term research.
- Comparing pre-workshop to post-workshop impressions, participants report major changes in their ability to:
  - Connect to mathematical and statistical scientists of the African Diaspora (3.1 before, 4.2 after)
  - Bridge into a new area (2.8 before, 3.9 after)
  - Extend social networks within the mathematical and statistical sciences (3.1 before, 3.9 after)

Baseline information was also collected on scholarly activities in a number of categories (e.g., attendance/presentation at conferences, journal articles, grant proposals, etc.), and this information will be crucial in tracking short- and long-term benefits of the ADJOINT program. Researchers also provided ideas for future professional development activities, and future Research Leaders and topic areas.

### **Continued Collaboration, Research, and Career Development Activities:**

Since the two-week summer workshop, and for the second year in a row, ADJOINT directors organized a special session at the Joint Mathematics Meeting (JMM) to showcase the research of ADJOINT participants and to increase the visibility and productivity of program participants. The annual JMM attracts thousands of mathematicians each year. For the 2022 JMM special session, a total of ten researchers from past ADJOINT cohorts gave talks; five of whom were from ADJOINT 2021, including Nathan Broaddus (Ohio State University), Cory Colbert (Washington and Lee University), Oyita Udiani (Virginia Commonwealth University), Anisah Nabilah Nu'Man (Spelman College), and Ashley K. Wheeler (Georgia Tech). The talk titles and abstracts can be found at the following to URLs:

<https://meetings.ams.org/math/jmm2022/meetingapp.cgi/Session/3507>

<https://meetings.ams.org/math/jmm2022/meetingapp.cgi/Session/3547>

Subsequent to the two-week intensive period, groups have met with frequencies varying from weekly to every two weeks. All groups have begun work on manuscripts and/or presentations. Two groups have even begun developing summaries to share with program officers from funding agencies.



**APPENDIX I**  
**RESEARCH GROUP REPORTS**

**Report**  
**2021 African Diaspora Joint Mathematics Workshop**  
**Racial/Ethnic Disparities in Health:**  
**Applying a More Nuanced Inferential Framework**

Submitted by  
Emma Benn (Icahn School of Medicine, Mt. Sinai), Research Leader

Participants: Karen Hicklin, (University of Florida), Lakeshia Jones, (University of Arkansas),  
Opel Jones, (Towson University), Omayra Ortega (Sonoma State), Toyya Pujol, (Purdue),  
Steven Lawrence (New York University)

**Project Description, Background and Goals**

Reducing and eliminating health disparities is of utmost concern for many public health and biomedical researchers and has been a stated goal for Healthy People 2000, 2010, and 2020. However, when it comes to racial disparities in health, researchers have done well at describing differences, but have often struggled to identify mutable targets for intervention. This problem exists for a host of reasons, including the complex contextual factors surrounding racial disparities, however, this may also stem from the way in which we operationalize race in research.

For the proposed project, we will first explore the operationalization of race as a “cause” when examining racial disparities in health based on multidisciplinary discourse around this topic from statisticians informed by the potential outcomes framework, epidemiologists, clinical investigators, and others. Thus, we will collectively build a strong understanding of the methodologic implications of centering “race” as a cause of health disparities. Subsequently, we will critically scrutinize the traditional approaches to investigating disparities in health and apply a more nuanced inferential, rather than descriptive, approach to the statistical analysis of real-world biomedical data with an underlying objective to find efficacious interventions for eradicating health disparities.

**Summary of two-week experience and impact on project goals**

Over the course of the two weeks that our research team was together in-person in Brooklyn, NY, we accomplished quite a bit. We had regular journal club sessions where we examined scholarly discourse by statisticians and quantitative researchers (i.e., Jay Kaufman, Richard Cooper, Paul Holland, Timothy Thornton, etc.) about the role of race in research and how underlying theories of causal inference and the potential outcomes framework inform how we should appropriately operationalize race. More specifically, we spent the two weeks asking the question as to whether race is truly a cause of health disparities and if not, then what role should race be playing in disparities research aimed at identifying efficacious interventions. In addition to the literature we discussed, each member of the research team was given time on a daily basis for independent investigation and exploration.

In addition to our dissection of the literature, the TA, Steven Lawrence, administered interactive workshops in R and RStudio so that participants could increase their proficiency in statistical computing and data visualizations.

We also met with two of my colleagues, Dr. Scarlett Bellamy (Professor of Biostatistics and Associate Dean of Diversity, Inclusion, and Faculty Development at Drexel University Dornsife School of Public Health) and Dr. Tracy Layne (Assistant Professor of Epidemiology and Director of Mentorship Development for the Center for Scientific Diversity at the Icahn School of Medicine at Mount Sinai), to discuss innovative disparities-related projects for possible collaboration. Additionally, the research team met with Dr. Bian Liu (Associate Professor of Epidemiology at the Icahn School of Medicine at Mount Sinai) to discuss important considerations when using national, publicly available datasets for research purposes. Meeting with Drs. Bellamy, Layne, and Liu was highly impactful as the research team could collaboratively generate important, real-world research problems that they would be able to explore over the course of the year guided by the scholarly discourse around race and causal inference they were examining in the literature.

I also made sure to incorporate a couple social activities (e.g., eating together and touring Brooklyn Bridge Park) into our schedule to facilitate team building.

### **Future plans for research collaboration**

The research team has been meeting every two weeks to ensure that we are making progress. We have a total of three projects that we are working on for which there are 1-2 members of the research team serving as PI/co-PIs for the projects. The projects are as follows:

1) Publish a peer-reviewed commentary that builds upon prior work by Kaufman and Cooper to give guidance on how to best proceed with conducting racial/ethnic disparities research without further stigmatizing those we intend to help or falling into a trap of circular frequentist approaches that are based on often unwarranted underlying assumptions of inequality. The research team has recently met with Kaufman to discuss their ideas. Kaufman is very much interested in collaborating with the team on the commentary. We intend to make recommendations in this commentary that will inform a possible NIMHD R21 grant submission (co-PIs: Toyya Pujol and Karen Hicklin) for February 2022.

2) In collaboration with Dr. Layne, the research team will be evaluating the obesity-endometrial cancer relationship using national, publicly available data and exploring the possibility of race/ethnicity as a modifier of this relationship.

3) In collaboration with Dr. Bellamy, the research team intends to explore differential trajectories among successfully-funded researchers. More specifically, they intend to examine whether the path to one's first successfully funded R01 differs by gender and/or race/ethnicity.

### **Additional support/resources needed to continue research collaboration**

Our team is still determining the necessary resources for continuing our research collaboration. Potential resources may include conference/workshop (e.g., ASA Joint Statistical Meetings, NIH Grant Writing Training, etc.) travel support and to allow for a possible in-person meeting within the year.

# The Steinberg Module of the Braid Group

Nathan Broadus (The Ohio State University)

September 11, 2021

From June 21, 2021 to July 2, 2021 I was the research leader for the intense portion of the “The Steinberg Module of the Braid Group” research group in the ADJOINT program at the Mathematical Sciences Research Institute (MSRI). The following is a report on our group’s activities to this point. My group participants were Lindsey-Kay Lauderdale (Towson University), Emille Lawrence (University of San Francisco), Anisah Nu’Man (Spelman College) and Robin Wilson (Cal Poly Pomona).

The origin of this project for me was a graduate course at Cornell University given by Karen Vogtmann on the work of John Harer on dualizing modules of mapping class groups. These dualizing modules are known as Steinberg modules and are fundamental cohomological objects associated with many important groups in mathematics. In this course Vogtmann posed the problem of identifying certain spheres in a mathematical object called the curve complex. In my later work I was able to address Vogtmann’s question by providing a singleton generator for Steinberg modules of a class of mapping class groups which include braid groups.

Braid groups are a particularly nice collection of mapping class groups and my hope in directing this ADJOINT program was that we could combine my singleton generator with the now mature knowledge of the Garside structures of braid groups in order to give a one-generator presentation of the Steinberg module of the braid group.

During the first week of the two-week intensive program I lectured my group on some of the cohomological motivation and significance of the Steinberg module of the braid group. A key component of the calculation that I envision involves the computation of a certain relative homology group. For this reason I began with a crash course in algebraic topology and group cohomology. This was the most abstract portion of the program, but in the end I believe that they gleaned the important ideas most relevant to our project.

In the next segment of the intensive two-week program we looked into Harer’s work on Steinberg modules of mapping class groups. This was the portion of the project in which

I have the most expertise and we eventually were able to work through a paper that leads to finite a presentation of the Steinberg modules of certain mapping class groups. It is here that I got to introduce my research group to the particularly fun combinatorics involved in homology calculations in the arc complex. This point of view supplies us with a multi-generator presentation of the Steinberg module of the braid group that we hope to adapt to give a one-generator presentation.

In the third and final mathematical background segment of the intensive two week program we read through a fundamental paper of Charney-Meier-Whittlesey on duality in Garside groups and developed our understanding of Garside structures of braid groups. This portion of the picture gives us a concrete enumeration of elements of the Steinberg module of the braid group. I expect it to help us make sense of and organize the large number of relations coming from the presentation of the Steinberg module derived from Harer's work.

By early in the second week of the program we were ready to begin our calculations. At this point I stepped back from leadership and the other group members took over the management of our investigation. We started with the Steinberg module of the braid group on three strands (the smallest interesting example) and were amazed at our success with this example. Within two days of careful hand calculations we arrived at a nice presentation with a single generator that gave us a clear conjectural picture for the general case.

Since the intensive portion of the program we have met weekly. Over the last two months, we have worked out the picture for the braid group on 4 strands and have also developed useful software to automate many of our calculations for braid index up to 7. I am very optimistic at this point that we will be able to give the general picture for the presentation of the Steinberg module of the braid group on  $n$  strands within a year of the intensive program. We will certainly be able to give a presentation for low index braid groups by then.

I would like to express my sincere appreciation to the ADJOINT program organizers and funders for introducing me to this energetic and mathematically talented group of colleagues. My group has left me astounded and invigorated by their energy, mathematical creativity and collegiality and I very much hope that they are interested in extending our collaboration long beyond the end of the official year-long program.

Title: Using Decision Modeling to Personalize Policy in Complex Human-centered Problems

Leader: Julie Simmons Ivy, North Carolina State University

Participants: Erica Graham (Bryn Mawr), Isabelle Kemajuo-Brown (Morgan State)

Miranda Teboh-Ewungkem (Lehigh), Oyita Udiani (Virginia Common Wealth)

The focus of this workshop was decision making under conditions of uncertainty with the goal of modeling complex interactions and quantitatively capturing the impact of different factors, objectives, system dynamics, intervention options and policies on outcomes with the goal of improving decision quality. This research workshop introduced concepts of sequential decision making under conditions of uncertainty, modeling learning as the future evolves, and effectively using data to inform decision making from a systems modeling perspective.

The first week included the introduction of a decision theoretic framework that we used to structure our research. In addition, Markov decision processes (MDPs), semi-Markov decision process (SMDPs), and partially observable Markov decision process (POMDP) modeling frameworks for structuring complex decision problems were introduced using Martin Puterman's framework in Markov Decision Processes. The MDP framework considers the following questions:

1. What are the actions we can take? What constitutes an action? **Action Space**
2. When can actions be selected? (Time and event) **Decision Epochs**
3. What kind of information will be available prior to action selection? **State** → Information pattern
4. How is the future decision making environment affected by a current action? **Dynamics:** How the state changes
5. What are we trying to accomplish by our action selection? **Objectives**

During the second half of the first week, each participant presented their current research and decision problems of interest to them in their research area. As a team, following each research presentation, we began to formulate the sequential decision problem: identifying the research questions, sources of uncertainty, the states, the state dynamics (the stochastic process), the rewards, the key decision makers, time horizon of interest, and the objective function. We spent a lot of time learning each other's research language – translating systems dynamics models representing the physics of the various biological, disease, and transportation frameworks to stochastic models from an operations research perspective.

During the second week, we focused on formulating four research projects. Specifically, we defined and began the initial formulation for the following four projects.

#### **Project 1: Mosquito Control in Patches**

##### **Objectives**

- Minimize mosquito population
- Minimize injury to public health, e.g. disease burden, toxicity from spraying

##### **Research Questions**

1. Comparison of cost-effectiveness of alternative mosquito control/management strategies for patches

2. Patch disparities: Who absorbs the risk of patch mosquito control?

**Actions**

- Spraying (S) via larvicides/adulticides
- Intermittent release of genetically modified mosquitoes (GMM)
- Environmental clean-up

**States:** Mosquito population (juveniles and adults in patches)

**Decision Makers:** Government

**Project 2: Malaria Control in Endemic Regions**

**Objectives**

- Minimize breeding site density
- Minimize injury to public health

**Research Questions**

1. What is the impact of consciousness on breeding site density reduction?
2. What is the cost-effectiveness of control measures as a function of consciousness/adherence, and what is the effect of control measures on consciousness?
3. What is the role of disparities/equity on actions?
4. What is the effect of multiple decision makers?

**Actions**

- Education (influences consciousness)
- Breeding site control
  - Site removal (environmental control)
  - Creation of non-viable breeding sites (e.g. via water storage vessels)

**States:** Breeding site density, consciousness, adherence to “guidelines”

**Decision Makers:** government, individuals, community leaders, public health workers, NGOs, local chiefs

**Project 3: Ovulatory Classification with Diabetes and Infertility Risk**

**Objectives**

- Minimize type 1 and type 2 errors in diagnosis of PCOS or other unspecified irregularity

**Research Questions**

1. What is the value (i.e. minimal set) of information to detect irregularities/make a diagnosis?
2. How often should information (observations) be collected and when?

**Actions**

- Gather information at time  $t$  (or not)
- Classification identification (regular vs. irregular)

**States:** hormone levels, ovarian stages (follicular, ovulatory, luteal)

**Decision Makers:** medical personnel

**Project 4: Optimal Route Recommendation**

**Objectives:**

Given link information in a network, color-coded by speed,

- minimize travel time;
- minimize route congestion.

**Research Questions**

1. To what percentage of drivers should a particular route be recommended?
2. How do we minimize traffic congestion along an entire network?

**Actions**

- Recommend next node  $j$
- Recommend alternative route given overlapping links
- Engage congestion mitigation strategy, e.g. opening HOV lane or enabling on-ramp traffic signals

**States:** Node  $i$  in network, destination, driver behavior (accept or reject recommendation)

**Decision Makers:** route-planning algorithm, traffic engineers

Since the conclusion of the ADJOINT in-person workshop, our team meets weekly and we have begun to identify potential funding mechanisms to support our collaboration. Specifically, so far we have focused primarily on Projects 1, 2, and 3. We have begun to develop one-page summaries of the project to share with a program officer. For Projects 1 and 2, we are targeting the NSF Humans, Disasters, and the Built Environment (HDBE) call for our work on vector-borne, specifically mosquito borne, disease mitigation in the face of the threat of a hurricane. For Project 3, we are targeting the NSF Joint DMS/NIGMS Initiative to Support Research at the Interface of the Biological and Mathematical Sciences call for our work on polycystic ovary syndrome diagnosis and classification. Over the remainder of the semester, we will work on proposal development and manuscript development as we develop our collaboration.



**Report**  
**2021 African Diaspora Joint Mathematics Workshop**  
**Adventures in Constructive Galois Theory**

Submitted by  
Danny Krashen (University of Pennsylvania), Research Leader

Participants: Cory Colbert (Washington & Lee), Edinah Gngang (Johns Hopkins, Haydee Lindo (Harvey Mudd), Lori Watson (Wake Forest), Ashley Wheeler (Mount Holyoke),  
Ulrica Wilson (Morehouse)

**Project Description, Background and Goals**

In this project, we explored some topics along the edges of "explicit inverse Galois theory," which tries to understand which groups arise as Galois groups for a given field, and how. Our goal was to take constructive approaches to work in a less explored direction with these Galois extensions to understand richer algebraic structures and properties that collections of Galois extensions exhibit as a whole, in particular looking for reflections of the kinds of structure one seems in Kummer theory.

**Summary of two-week experience and impact on project goals**

In the two week period, we went over background necessary to work on the projects together, familiarized each other with our individual areas of expertise. We also did a number of starting cases of our project, which we hope to generalize and extend over the course of the next year.

**Future plans for research collaboration**

We have been in some communication over slack and email, and are collaborating on a manuscript via overleaf. We plan to have regular virtual meetings, starting at the beginning of September, and also hope to meet in person sometime over the next year (dates not yet determined).

**Additional support/resources needed to continue research collaboration**

Travel support will be valuable in the future.

**APPENDIX II**  
**EVALUATION REPORT**



## **MSRI ADJOINT**

### **Summer 2021 Survey Findings**

Report created by Karen Peterman Consulting, Co.,  
Jen Gathings, Keshia Martin, & Karen Peterman

October 25, 2021



## Background to this Report

Hosted by the Mathematical Sciences Research Institute (MSRI), “the African Diaspora Joint Mathematics Workshop (ADJOINT) program is a yearlong program that provides opportunities for U.S. mathematicians—especially those from the African Diaspora—to form collaborations with distinguished African-American research leaders on topics at the forefront of mathematical and statistical research” (<https://www.msri.org/web/msri/scientific/adjoint>). Beginning with an intensive two-week summer session at MSRI, participants work in small groups under the guidance of some of the nation’s foremost mathematicians and statisticians to expand their research portfolios into new areas. Throughout the following academic year, the program provides conference and travel support to increase opportunities for collaboration, maximize researcher visibility, and cultivate a sense of community among participants.

As the third cohort to join the ADJOINT program, the 2021 Cohort included twenty-four researchers from across the United States, including four Research Leaders. Three of four groups were able to meet in-person in the hometown of their respective research leader while the fourth group met virtually. The research leaders were Nathan Broaddus (Ohio State University); Emma Benn (Mount Sinai University); Julie Ivy (North Carolina State University); and Daniel Krashen (Rutgers University; now University of Pennsylvania). Research projects spanned the topics of algebraic geometry, topology, mathematical biology, and biostatistics and operations research.

In Summer 2021, program participants and Research Leaders completed an online retrospective-pre survey<sup>1</sup> to assess their program experience and solicit feedback for continuous improvement of ADJOINT and MSRI program offerings in the future. Respondents were also asked to provide information related to their scholarly activities and career advancements over the past year. Sixteen of twenty researchers (referred to as “[program] participants” throughout) and three of four Research Leaders completed the survey. This report distills these survey findings.

To better understand nuances in ADJOINT researchers’ experiences, we disaggregate survey findings by role (i.e., program participants and Research Leaders) where appropriate. Sub-sample sizes are noted throughout.

## The 2021 ADJOINT Experience

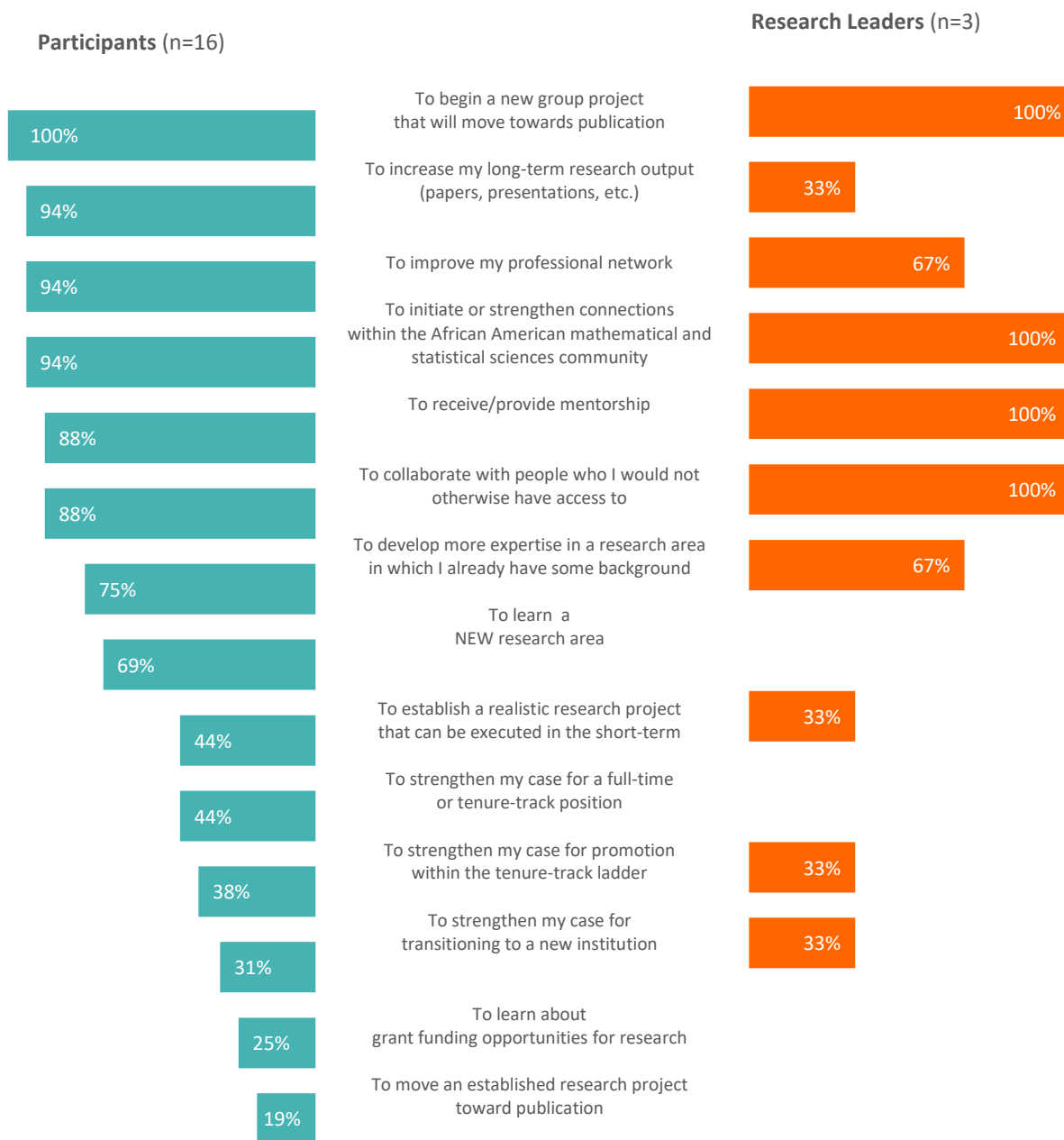
Program participants heard about ADJOINT through a variety of communication channels: by email (six mentions), word of mouth (five mentions), online (two mentions), and communications from ADJOINT leadership and the National Association of Mathematics (two mentions each). Several respondents noted learning about this opportunity from a trusted source, such as a graduate school mentor or colleague, or directly from one of the ADJOINT Directors, with comments such as, “Edray Goins organized the first ADJOINT group (or ADJOINT pilot group) with Emille Davie, Michale Young, Naiomi Cameron, and Karoline Pershell (folks who I know and love). I have been waiting for the right topics to align with some free time so that I would feel comfortable applying.”

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<sup>1</sup> A retrospective-pre survey collects data at only one time point, typically when a program or intervention is over. When the survey is administered, respondents are asked to respond to a series of items about their knowledge, skills, attitudes, and/or behaviors BEFORE and AFTER they completed a program. This allows an evaluator or researcher to examine self-reported change in knowledge, skills, attitudes, and/or behaviors.

Program participants and Research Leaders identified a variety of goals for joining ADJOINT. As shown in Chart 1, both groups unanimously joined the program to begin a new group project that would move towards publication. Most participants and all Research Leaders also joined the program to strengthen professional connections with African American colleagues, to mentor or be mentored, and to collaborate with a new group of colleagues. Participants also joined to increase their long-term research output.

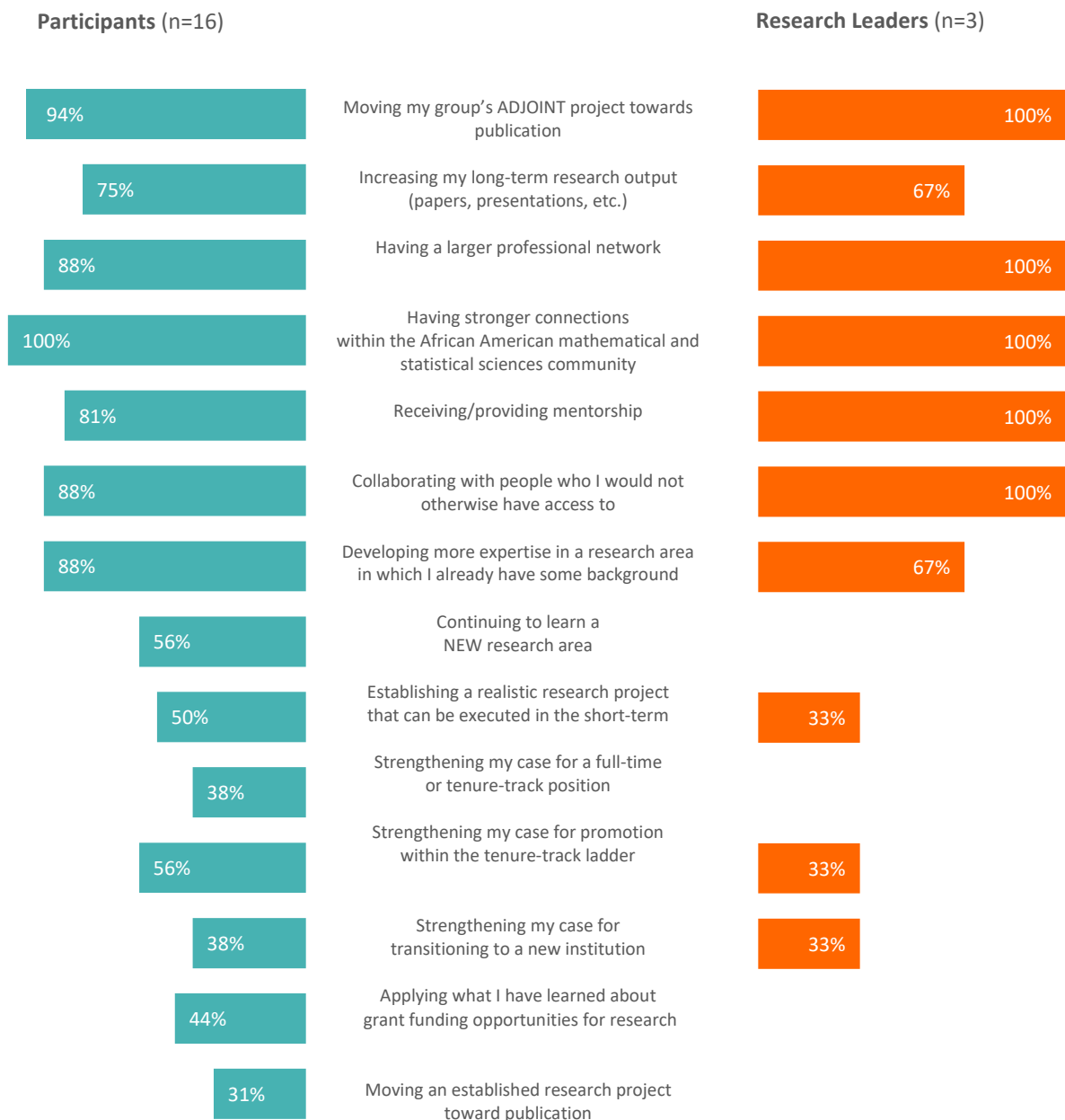
**Chart 1.** Goals for participating in ADJOINT, before the program



+ Note that the framing and wording of these items were different from those presented next in Chart 2. As such, the two charts should not be compared.

Program participants and Research Leaders also expected a number of benefits to continue after the ADJOINT (See Chart 2). The most frequently cited expectation was related to their strengthened connections within the African American colleagues, with 100% of both groups citing this as an expected long-term benefit. Most also expected to continue benefiting from the program through publications and the networks established.

**Chart 2 .** Expectations for continued benefits from being part of ADJOINT +

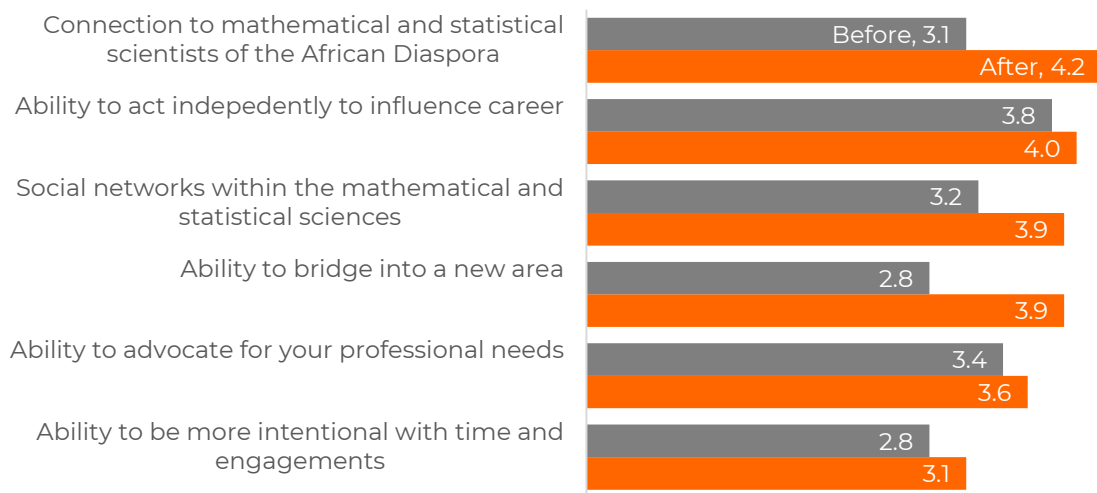


+ Note that the framing and wording of these items were different from those presented in Chart 1. As such, the two charts should not be compared.

In 2020, Researcher Leaders identified a noticeably greater number of advantages associated with remaining engaged in ADJOINT programming after the two-week experience than they did prior to joining the program. This prompted the evaluation team to recommend a retrospective-pre design for the annual survey for the 2021 Cohort. This year, Research Leaders' goals for joining and remaining engaged in ADJOINT remained mostly in alignment. The one exception was an increase in those interested in improving their professional network; two of the three selected this goal as a reason for joining and all three chose it as a reason for staying engaged.

Program participants were asked to respond to a series of questions about their connections to other mathematical and statistical scientists of the African Diaspora and social networks with the mathematical and statistical sciences communities, with the goal of determining ADJOINT's impact on participants' professional connections (see Chart 2). Program participants were also asked to rate their abilities to utilize a variety of strategies to advance their careers (see Chart 3). Ratings were made using a scale from 1 to 5 where 1 means not strong and 5 means very strong. Program participants reported gains across all six items, with the largest gains reported for ratings in *connection to mathematical and statistical scientists of the African Diaspora* and *ability to bridge into a new area* after completing ADJOINT. The smallest gain was recorded for *ability to advocate for your professional needs*.

**Chart 3.** Program participant ratings (n=14) related to professional networks and related abilities, before and after participating in ADJOINT



Survey results indicate that program participants were highly satisfied with contributions made by their respective Research Leaders, who were perceived as helpful and effective (see Table 1). On average, ADJOINT participants were more satisfied with the contributions of their group members than their own individual contributions to the group (4.6 compared to 4.3, respectively; measured on a scale of 1 to 5 where 1 means not at all and 5 means extremely). Enthusiasm remains high for continuing to engage with their groups throughout the upcoming academic year.

**Table 1.** Program participant satisfaction (n=15)

	Mean rating
Helpfulness of Research Leader in providing background on research area	4.9
Research Leader effectiveness (e.g., provided sufficient guidance on possible paths of inquiry, cultivated inclusive and supportive environment, facilitated timely completion of activities, exercised effective conflict resolution, etc.)	4.7
Satisfaction with contributions by other group members (other than the Research Leader)	4.6
Enthusiasm for continuing to work with group throughout the upcoming academic year	4.6
Satisfaction with individual contributions to group	4.3

Assessments made by Research Leaders were also very positive (see Table 2; measured on a scale of 1 to 5 where 1 means not at all and 5 means extremely). In particular, Research Leaders were extremely pleased with their group members' level of engagement and contributions. Research Leaders did not note significant challenges with navigating varying levels of expertise and preparation for group meetings. They also reported significant confidence in their group's ability to produce a scholarly deliverable (i.e., journal article, conference presentation, grant proposal) from their ADJOINT project, rating the likelihood of a journal article highest and a grant proposal the lowest (see Table 3; measured on a scale of 1 to 5 where 1 means not at all and 5 means extremely).

**Table 2.** Research Leader group assessment (n=3)

	Mean rating
Group member engagement	5.0
Satisfaction with group members' contributions	5.0
Enthusiasm for continuing to work with group throughout the upcoming academic year	5.0
Confidence in plans for continuing collaboration	5.0
Productive interaction among group members	4.7
Challenges with varying levels of expertise/preparation among group members	2.0

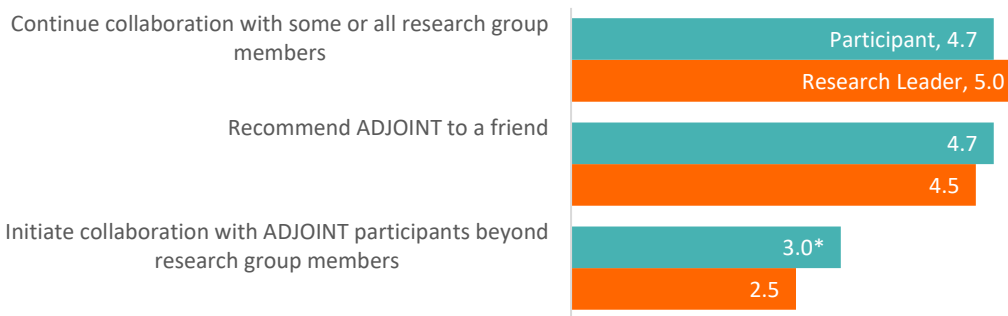


**Table 3.** Research Leader productivity assessment (n=3)

	Mean rating
Develop into a publication	4.3
Develop into a conference proposal	4.0
Develop into a grant proposal	3.3

Chart 4 shows that program participants and Research Leaders are highly likely to continue collaborating with members of their research group (measured on a scale of 1 to 5 where 1 means not at all and 5 means extremely). Both groups were also highly likely to recommend ADJOINT to a friend. Participants and Research Leaders reported being less likely to initiate collaborations with those outside their research team, though ratings on this item were still in the somewhat likely range.

**Chart 4.** Intentions among program participants (n=14) and research leaders (n=2) to collaborate and recommend ADJOINT program

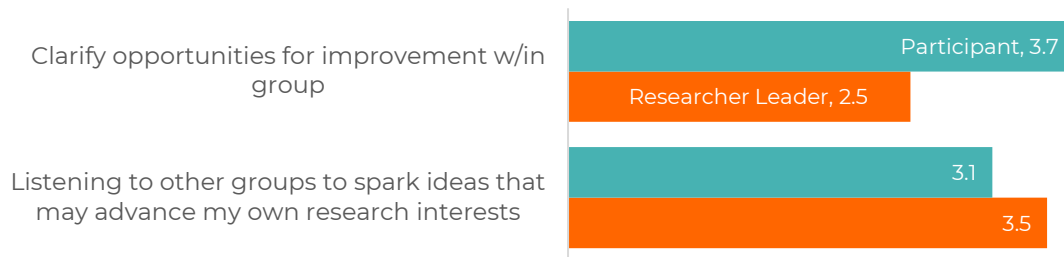


\*n=15

## Program Activities

The survey was also used to elicit feedback on key program activities, such the usefulness of the group presentations and the topics covered during professional development sessions. Chart 5 presents ratings related to the perceived usefulness of group presentations (measured on a scale of 1 to 5 where 1 means not at all and 5 means extremely). Interestingly, program participants and Research Leaders did not seem to agree on the usefulness of group presentations for clarifying opportunities for improvements within one's own research group.

**Chart 5.** Perceptions among program participants (n=15) and Research Leaders (n=2) of group presentations made during ADJOINT program



Program participants and Research leaders were asked to rate the information provided during two workshops and to share qualitative feedback and suggestions for additional professional development and research area idea for future ADJOINT programs (see Chart 6 and Table 4; measured on a scale of 1 to 5 where 1 means not at all and 5 means extremely). Program participants rated the two sessions—a panel of research leaders and a grant workshop—similarly, whereas Research Leaders rated the grant workshop more highly. Both participants and Research Leaders provided similar high ratings for the grant workshop.

**Chart 6.** Professional develop session ratings provided by program participants (n=15) and Research Leaders (n=2) in ADJOINT program.



**Table 4.** Professional development session ratings (n=17)

	Panel of Research Leaders	Grant Workshop
1 – Poor	-	1
2	1	-
3	3	1
4	8	7
5 - Excellent	5	8

2021 ADJOINT Cohort members were asked on the survey to share ideas for future professional development workshops or panels. Responses are included below:

- *Honestly, just time for research, and maybe a virtual social event, or in person at JMM 2022 in Seattle!*
- *Writing retreats, grant writing retreats, reading*
- *Tenure panel*
- *Perhaps include some optional weekend activities*
- *Grant writing, securing mentors, applying for tenure track positions/promotions, institutional transitions, maintaining in majority institutions*
- *Get together/reunion*
- *(1) Negotiating higher pay/higher position while you are incumbent. (2) Working towards an administrative position. (3) Leveraging your network to increase the participation of traditionally underserved populations in mathematics. (4) Finding funding for your research group to meet after ADJOINT*
- *Add a panel on leading from below (i.e., how can we empower our students and ourselves to make change)*

Survey respondents also provided suggestions for research areas in future ADJOINT programs, including names of potential future research leaders in suggested areas. These recommendations included: *Spatiotemporal Statistics and Health Disparities (Loni Tabb Statistical Genetics for Admixed Populations - Tim Thornton Data Science and Functional Imaging - Jeff Goldsmith Clinical Trials - Leslie McClure; Zero forcing and Graph theory to be possibly led by Prof. Michael Young Associate Professor of Mathematics and Scott D. Hannah Faculty Fellow at Iowa State University; economics, math finance, math education research leaders - - Suzanne Weekes, Talitha Washington; Trachette Jackson, Gaston N'Gerekata, Erica Graham; Ilesanmi Adeboye (Wesleyan University); Combinatorics, Abstract Algebra; Algorithms and bias in mathematics; Stochastic modeling with applications; and Topological applications in mathematical biology.*

Table 5 presents mean group ratings for perceived helpfulness of MSRI computing staff and administrative staff. These ratings (measured on a scale of 1 to 5 where 1 means not at all and 5 means extremely) suggest that ADJOINT participants and leaders were pleased with support services provided by MSRI staff members.

**Table 5.** Mean ratings for support services, all survey respondents (n=17)

	<b>Mean rating</b>
Helpfulness of MSRI administrative staff	5.0
Helpfulness of MSRI computing staff	4.8

## Scholarly Activities

ADJOINT program participants and Research Leaders were also asked to share information related to their participation in professional conferences (see Chart 7) and submissions to journals and grants (see Chart 8).

**Chart 7.** Scholarly activities of program participants (n=16) and Research Leaders (n=3) during ADJOINT program



\*n=15

Chart 7 illustrates several key pieces of noteworthy information. First, as expected, Research Leaders are more active at conferences at all levels: regional, national, and international. Second, program participants are more likely to report attending rather than presenting at regional, national, and international conferences; even so, 63% of program participants reported presenting at a national conference or seminar over the past year. Third, as conference audience increases in size (i.e., regional, national, international), the gap between the number of presentations given by program participants and Research Leaders grows wider: 33% gap in number of presentations at the regional level, 37% gap at the national level, and 48% gap at the international level.

**Chart 8.** Mean number of articles and grants for program participants (n=16) and Research Leaders (n=3) in ADJOINT program

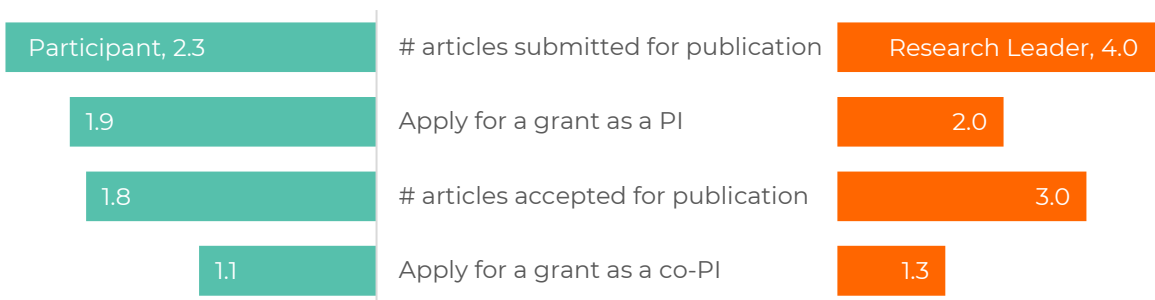


Chart 8 provides information about the number of peer-reviewed journal articles and grant proposals submitted over the past year. On average, program participants submitted 2.3 articles for publication and had 1.8 articles accepted for publication during their time in the ADJOINT program. Research

Leaders submitted an average of 4.0 articles for publication with 3.0 articles accepted for publication during the program period. Although program participants lag behind Research Leaders in publications submitted and published, they apply for grants as PIs or co-PIs at almost the same rate as Research Leaders.

## 2021 ADJOINT Cohort Recommendations

**Figure 1.** Suggestions for creating community, all respondents

<b>Participant recommendations for building/strengthening community</b>	<i>There's so few of us, I believe having a committee to find each and every one of us amongst universities and the industry.</i>
	<i>Promote the computing infrastructure for collaboration online. A subscription to CoCalc - Collaborative Calculation and Data Science (as <a href="https://cocalc.com/">https://cocalc.com/</a>) would solve all matters relating to programming/computing infrastructure, as well [as] LaTeX editing.</i>
	<i>Regular and consistent gatherings, some structured, some social to allow us to get to know each other and make connections.</i>
	<i>Reach out to all heads of department and schools from mathematics and engineering. Also, some people from industry might be interested in joining the ADJOINT community. Not sure if ADJOINT can work with people out of the USA, if yes reach out to some institutions in Africa.</i>
	<i>A reunion at MSRI, possibly an ADJOINT mini-conference?</i>
	<i>More conferences like the workshop on mathematics and racial justice.</i>
	<i>Create an informal peer-group, where there are matches b/w 2 ppl at similar levels to find community.</i>

Most members of the 2021 ADJOINT Cohort (89%, or 17 of 19 respondents) recommended that MSRI continue the ADJOINT program.<sup>2</sup> When asked to elaborate, cohort members shared the following feedback:

- *This was one of the best workshop experiences I've had. It's the first time I was able to do math in an environment around other people like me—it was enriching in ways I couldn't have even imagined before taking part.*
- *I think this program is very important for the professional development of early career scholars in particular. I also think that it provides the opportunity for additional research collaborations and also contributes to an increased sense of belonging.*
- *It's an absolute must!*
- *This is an immensely valuable program for black mathematicians who [are] starved of opportunities that come from being part of a vibrant research community in mathematics. The ADJOINT program is a vehicle for connecting networks of networks (across math sub-disciplines). I expect the collaborations that I have formed this summer to continue into the foreseeable future in form of research papers and grant proposals.*
- *The program was great in bringing together researchers who would not have normally been able to collaborate together.*
- *This was great. The workshop should be longer.*


<sup>2</sup> The respondents (one participant, one Research Leader) did not provide a response to this question.

- *The program is great for establishing productive and research driven connections*
- *This program is very helpful for faculty of the African Diaspora in that it connects us in an effective and productive way. We often meet each other at major conferences, but that does not typically allow time for the development of new ideas and collaborations.*
- *This was a great experience for me and I anticipate that every scientist will benefit for such collaboration.*
- *These collaborations are helpful.*
- *Please continue the ADJOINT program. It's exciting to think about the research community that is growing out of this program from year to year. It crosses mathematical disciplines but the ADJOINT experience keeps us connected.*
- *ABSOLUTELY! This is an incredible and beautiful program that does not exist anywhere else! It is a rare and wonderful unicorn that must be treasured and protected, as it nourishes mathematicians of the African Diaspora, not just within ADJOINT but throughout the mathematics community.*
- *I will benefit greatly from this experience. I have new research group and I am very excited about what is to come. I don't think this would have happened without ADJOINT.*
- *I would never have had the opportunity to develop a collaboration with any of the wonderful people in my group without the Adjoint program. I very thankful to the program for reaching out to me with an invitation to run a group.*
- *The experience is unique and provides so much enrichment.*
- *It was helpful in expanding my network and developing new research areas.*

Cohort members were also provided space to provide additional comments and suggestions for ADJOINT and/or MSRI. Cohort members shared the following thoughts:

- *Opportunities for the Research Leaders to get to meet with each other throughout the two weeks.*
- *I would like to see more interactions between ADJOINT and MSRI summer undergraduate program.*
- *Incorporate some of the positive aspects of meeting via Zoom*
- *A program in stochastic modeling will be beneficial in many research areas because many situations in real life include uncertainties that are sometimes best described by a stochastic model.*
- *The only request is for the professional development sessions to be held at the end of the research day (they tended to fall in the middle of the day and we would often lose the momentum we had built up in the morning).*
- *I loved it; hopefully we can all be in person next summer for a reunion!*
- *Thank you for bringing together an amazingly diverse group of mathematicians to engage in a transformative research experience.*

In summary, 2021 survey results suggest that ADJOINT delivers valuable research experiences for African American mathematicians and statistical scientists. Program participants are consistently drawn to and remain engaged in ADJOINT for its ability to: (1) initiate and strengthen connections among African Americans within the mathematical and statistical sciences, (2) facilitate collaborative research experiences, and (3) provide mentorship from leading scholars in the field. Program participants reported high satisfaction with their ADJOINT research experience and responses to open-



ended questions called for additional opportunities for continued engagement with the ADJOINT program, their cohort members, and potentially others involved in the program. Research Leaders reported high confidence in their team's abilities to leverage their ADJOINT research experiences into a research publication or conference presentation, and also noted their own willingness to continue collaborations with their research team members. Research Leaders reported little difficulty with working across varying levels of expertise and preparation among their team members. Together, these findings suggest that the third offering of ADJOINT programming has been successful in its mission to create meaningful, productive research experiences for mathematicians and statistical scientists connected to the African Diaspora.



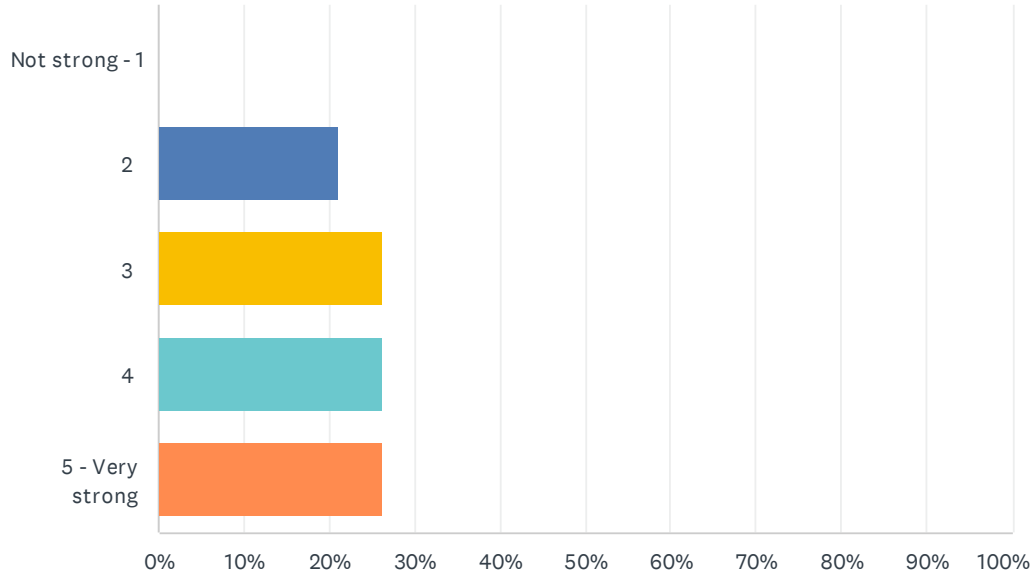
**Appendix A. SurveyMonkey Results**

Starts on next page.



## Q1 From June 2020 – May 2021, how would you rate your level of research activity?

Answered: 19 Skipped: 0



ANSWER CHOICES	RESPONSES	
Not strong - 1	0.00%	0
2	21.05%	4
3	26.32%	5
4	26.32%	5
5 - Very strong	26.32%	5
<b>TOTAL</b>		<b>19</b>

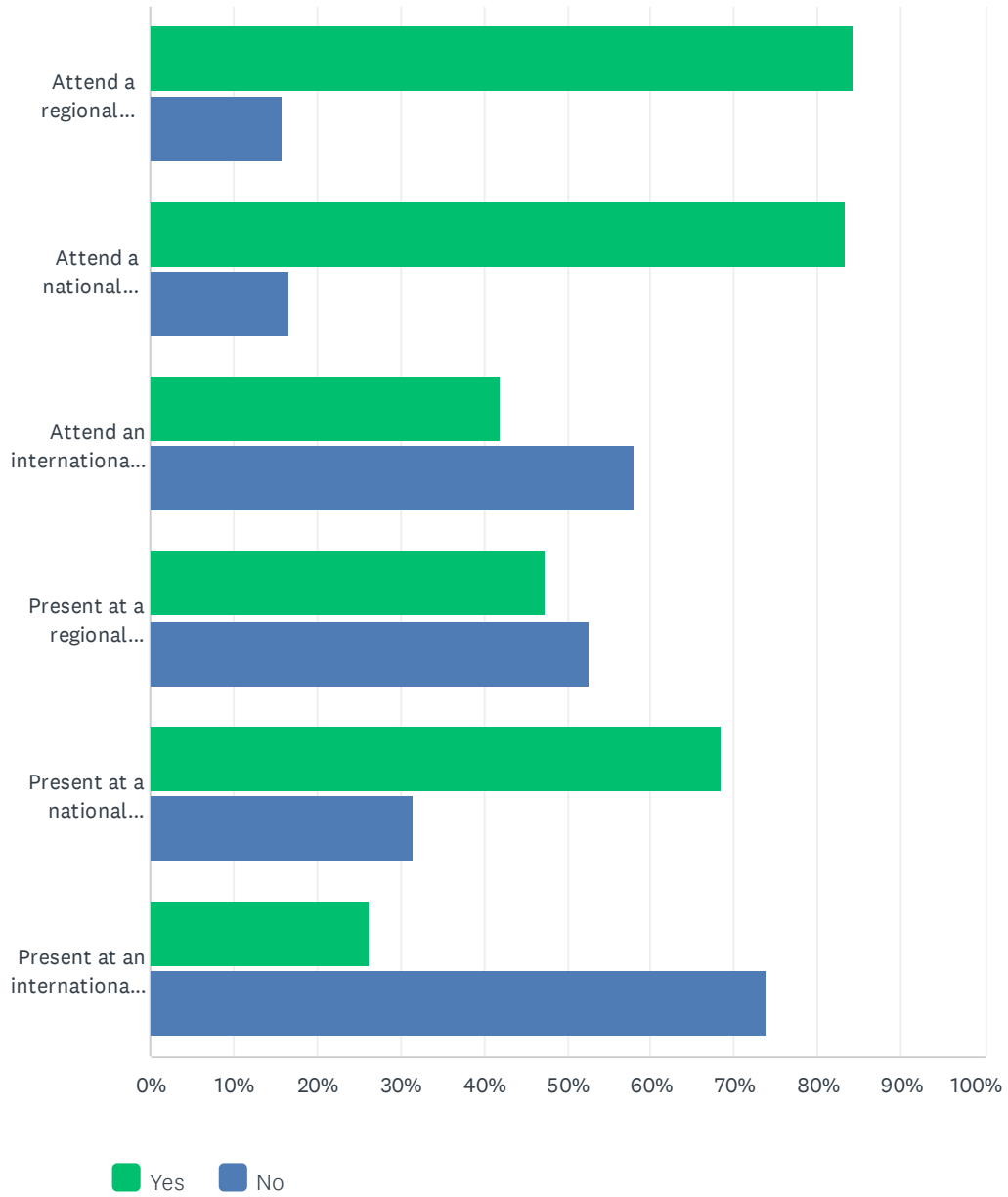
## Q2 Why did you pick that rating?

Answered: 15 Skipped: 4

#	RESPONSES	DATE
1	I didn't have any new results and struggled to find good projects to work on next.	7/9/2021 6:22 PM
2	I had a substantial number of research collaborations (grants & publications) during this time in addition to research being conducted within my Center that was launched in 2020.	7/9/2021 9:57 AM
3	I picked a rating of 5 because we worked literally from 9am to 6pm looking at various articles, brainstorming with each other, and presenting our findings to the other teams	7/6/2021 10:32 AM
4	I've been struggling to find time to work and collaborators.	7/6/2021 8:20 AM
5	My research was constrained due to expanded teaching load plus unanticipated challenges of working remotely. On the other hand, being virtual allowed me to attend a number regional and international conferences during the semester, which would be nearly impossible under normal circumstances.	7/5/2021 1:30 PM
6	I would like to improve the strength of my research.	7/5/2021 12:34 PM
7	Covid limited research activity significantly. Primary focus was coping and adapting with course adjustments.	7/4/2021 11:08 AM
8	I published more than 5 articles	7/3/2021 1:52 AM
9	we were productive, and had an enjoyable experience.	7/2/2021 4:17 PM
10	Good, but negatively impacted by the pandemic	7/2/2021 4:15 PM
11	I had finished up a paper submission but wasn't working actively on any new research projects	7/2/2021 4:11 PM
12	I focused on research and service in the fall semester and research, teaching, and service in the spring.	7/2/2021 4:02 PM
13	We spent a lot of time learning the needed background material.	7/2/2021 3:17 PM
14	My research is regaining momentum after a drop in my output following the births of my children. It's just now getting back up to a good pace.	7/2/2021 1:56 PM
15	I defended my thesis in August 2021 and then didn't have to teach until the Spring. In that time frame, I have had 2 papers published, a grant submitted, and 3 papers to be submitted this summer.	7/2/2021 1:37 PM

### Q3 From June 2020 – May 2021, did you:

Answered: 19 Skipped: 0



MSRI ADJOINT Retrospective Pre/Post Survey

	YES	NO	TOTAL
Attend a regional conference/seminar?	84.21% 16	15.79% 3	19
Attend a national conference/seminar?	83.33% 15	16.67% 3	18
Attend an international conference/seminar?	42.11% 8	57.89% 11	19
Present at a regional conference/seminar?	47.37% 9	52.63% 10	19
Present at a national conference/seminar?	68.42% 13	31.58% 6	19
Present at an international conference/seminar?	26.32% 5	73.68% 14	19

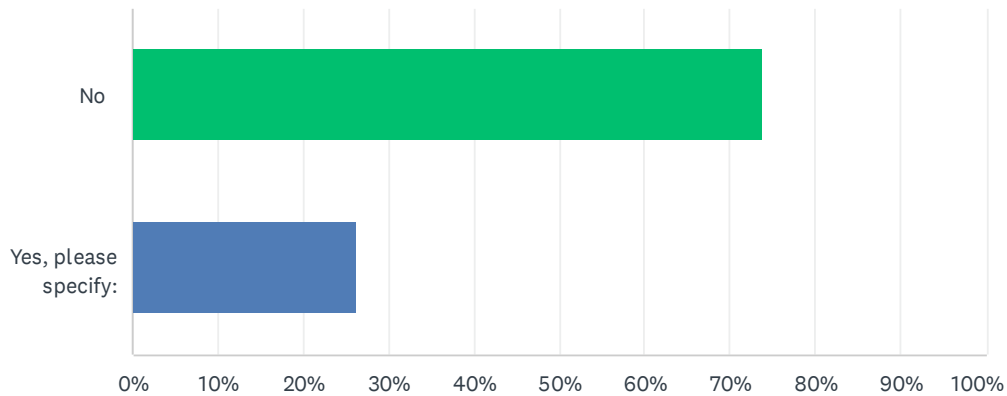
## Q4 Please share whether and how any of the activities listed in the above table were different from “normal” as a result of the pandemic.

Answered: 16 Skipped: 3

#	RESPONSES	DATE
1	All were virtual	7/11/2021 8:34 PM
2	All of the conferences were virtual as well as the presentations.	7/9/2021 9:57 AM
3	all were virtual	7/6/2021 10:32 AM
4	Conferences were held online. Usually at conferences I meet with collaborators in person, so the online format didn't really allow for that.	7/6/2021 8:20 AM
5	The virtual format for math conferences (e.g., JMM, SIAM, SMB) offered some benefits. For instance, with many presentations being fully recorded, I was able to attend a larger set of talks from diverse areas of mathematics. On the other hand, the virtual format doesn't (yet) provide ample networking opportunities for early career faculty who do not yet an established professional relationships and collaborations.	7/5/2021 1:30 PM
6	The pandemic did not effect my research program.	7/5/2021 12:34 PM
7	The conferences I was able to attend were all virtual. The format was certainly different, but aided my ability to attend.	7/4/2021 11:08 AM
8	They were all held virtually.	7/3/2021 1:52 AM
9	all activities were virtual which made it easier to attend.	7/2/2021 4:17 PM
10	They were all virtual	7/2/2021 4:15 PM
11	I attended less conferences due to Zoom burn out	7/2/2021 4:11 PM
12	The conferences were virtual.	7/2/2021 4:02 PM
13	My children being home from school effected my productivity. I declined all presentation invitations due to this added stress.	7/2/2021 3:17 PM
14	All because of the pandemic	7/2/2021 2:15 PM
15	All of my conference participation was via zoom, which is very convenient for parents with young children.	7/2/2021 1:56 PM
16	These are not normal. I normally attend 2-3 conference/year.	7/2/2021 1:37 PM

## Q5 From June 2020 – May 2021, did you receive a promotion?

Answered: 19 Skipped: 0

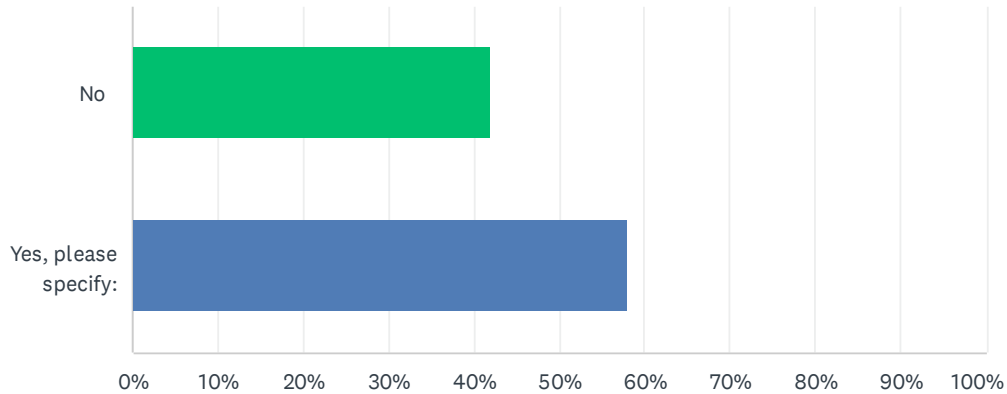


ANSWER CHOICES	RESPONSES
No	73.68% 14
Yes, please specify:	26.32% 5
<b>TOTAL</b>	<b>19</b>

#	YES, PLEASE SPECIFY:	DATE
1	Associate Dean for Faculty Wellbeing and Development and Director of the Center for Scientific Diversity	7/9/2021 10:01 AM
2	I began a tenure track appointment	7/5/2021 1:32 PM
3	My wife and I were offered (better) positions at the University of Pennsylvania	7/2/2021 4:17 PM
4	I was promoted from Postdoc to Assistant Professor.	7/2/2021 4:10 PM
5	PhD Student to Visiting Asst Prof to Asst Prof	7/2/2021 1:42 PM

## Q6 From June 2020 – May 2021, are there ways you advanced your career that are not related solely to research and/or are intangible?

Answered: 19 Skipped: 0

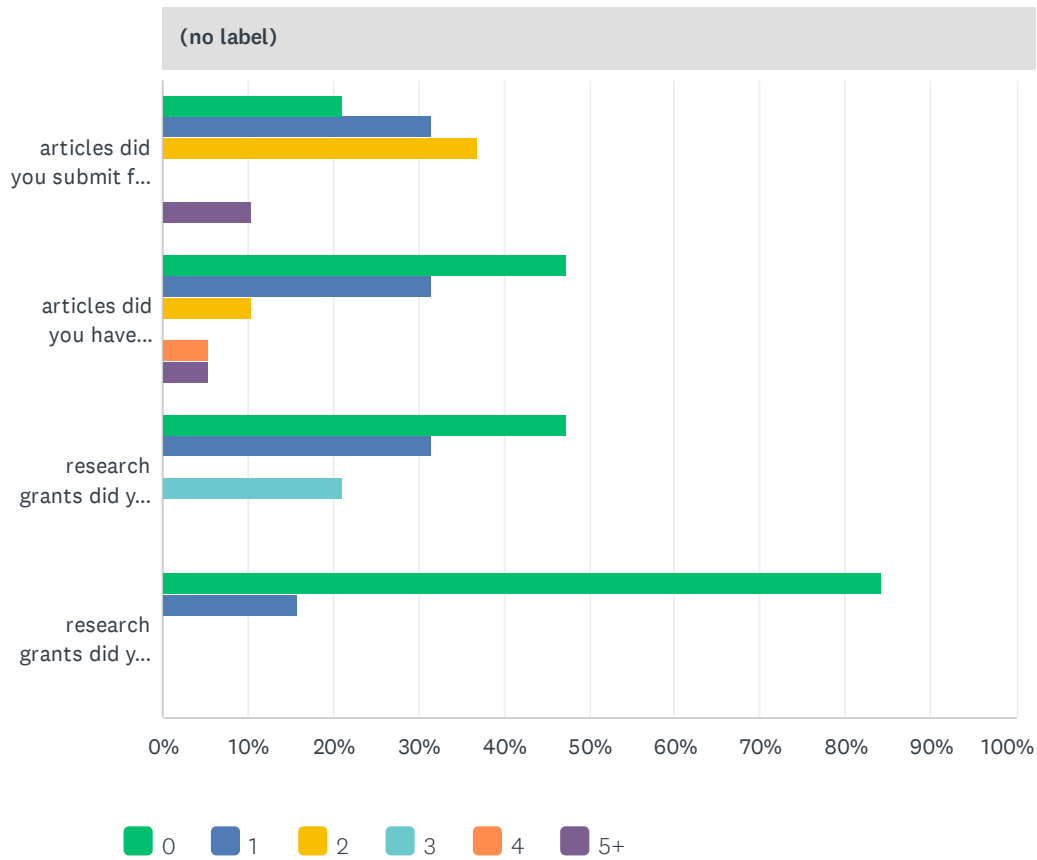


ANSWER CHOICES	RESPONSES
No	42.11% 8
Yes, please specify:	57.89% 11
TOTAL	19

#	YES, PLEASE SPECIFY:	DATE
1	Teaching	7/12/2021 12:35 PM
2	Teaching and Service	7/11/2021 8:34 PM
3	Expanded my networks	7/9/2021 10:01 AM
4	Receiving grants.	7/6/2021 8:21 AM
5	Enhanced teaching efforts due to changes and adaptations necessitated by Covid. I applied for and was awarded an education grant to improve student engagement and overall student success. I also wrote 2 non-mathematics related articles and submitted them to peer-reviewed journals. They had a higher education focus, related to institutional responses to Covid and George Floyd's murder.	7/4/2021 11:17 AM
6	I became the SMB Math-Epi co-chair	7/3/2021 1:54 AM
7	I became involved in some expository writing on issues involving the mathematical community	7/2/2021 4:17 PM
8	I became the president of NAM and received my first NSF grant	7/2/2021 4:12 PM
9	I was elected Chair of my department.	7/2/2021 3:18 PM
10	I have become much more proficient in online teaching	7/2/2021 1:57 PM
11	I found new collaborators/mentors to help with my career (research and otherwise).	7/2/2021 1:42 PM

### Q7 In the time period from June 2020 – May 2021, how many:

Answered: 19 Skipped: 0

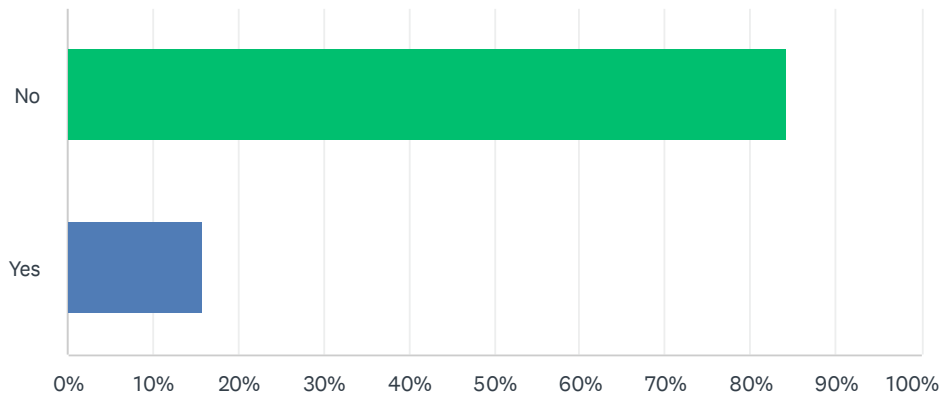


(no label)							
	0	1	2	3	4	5+	TOTAL
articles did you submit for publication in a peer-reviewed journal?	21.05%	31.58%	36.84%	0.00%	0.00%	10.53%	19
articles did you have accepted for publication in a peer-reviewed journal?	47.37%	31.58%	10.53%	0.00%	5.26%	5.26%	19
research grants did you apply for as a Principal Investigator (PI)?	47.37%	31.58%	0.00%	21.05%	0.00%	0.00%	19
research grants did you apply for as a co-PI?	84.21%	15.79%	0.00%	0.00%	0.00%	0.00%	19



## Q8 Did you serve as your group's Research Leader?

Answered: 19 Skipped: 0



ANSWER CHOICES	RESPONSES	
No	84.21%	16
Yes	15.79%	3
TOTAL		19

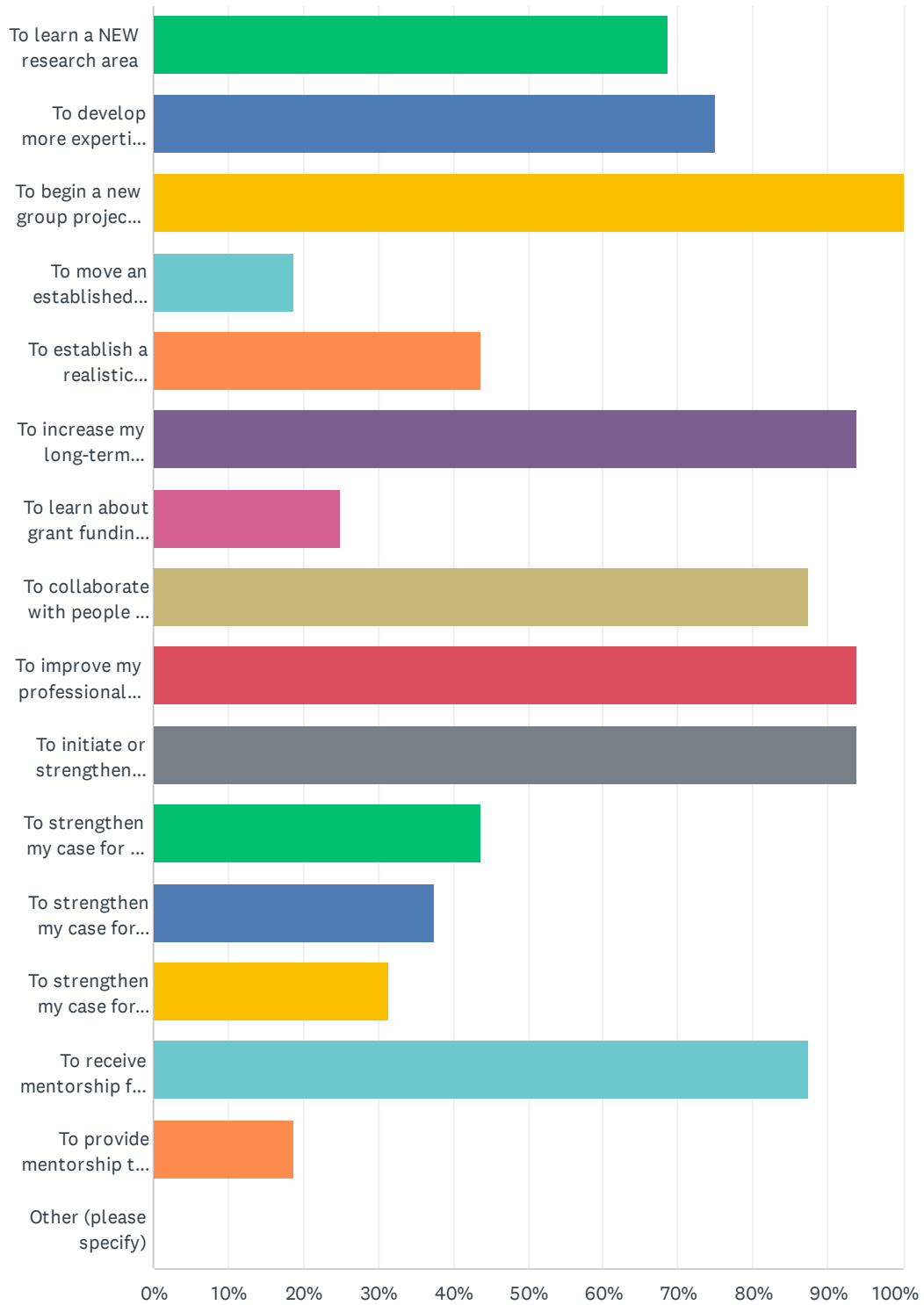
## Q9 How did you hear about ADJOINT?

Answered: 16 Skipped: 3

#	RESPONSES	DATE
1	Online	7/12/2021 12:36 PM
2	Email received!	7/11/2021 8:35 PM
3	Through the MSRI website.	7/9/2021 6:24 PM
4	Word of mouth from members at the National Association of Mathematics (NAM)	7/6/2021 10:34 AM
5	Colleagues	7/6/2021 8:23 AM
6	Colleagues and a mentor from graduate school	7/5/2021 1:34 PM
7	An email requesting that I apply.	7/5/2021 12:35 PM
8	My advisor prof. Vladimir Retakh told me about it.	7/4/2021 6:46 PM
9	From the NAM newsletter.	7/4/2021 11:49 AM
10	Email sent to me	7/3/2021 2:11 AM
11	through email and word of mouth	7/2/2021 4:19 PM
12	Edray Goins organized the first ADJOINT group (or ADJOINT pilot group) with Emille Davie, Michale Young, Naiomi Cameron, and Karoline Pershell (folks who I know and love). I have been waiting for the right topics to align with some free time so that I would feel comfortable applying.	7/2/2021 4:14 PM
13	I received an email	7/2/2021 4:11 PM
14	Edray Goins	7/2/2021 3:19 PM
15	email announcement	7/2/2021 2:17 PM
16	Karen Hicklin told me about it.	7/2/2021 1:46 PM

### Q10 I joined ADJOINT to:

Answered: 16 Skipped: 3



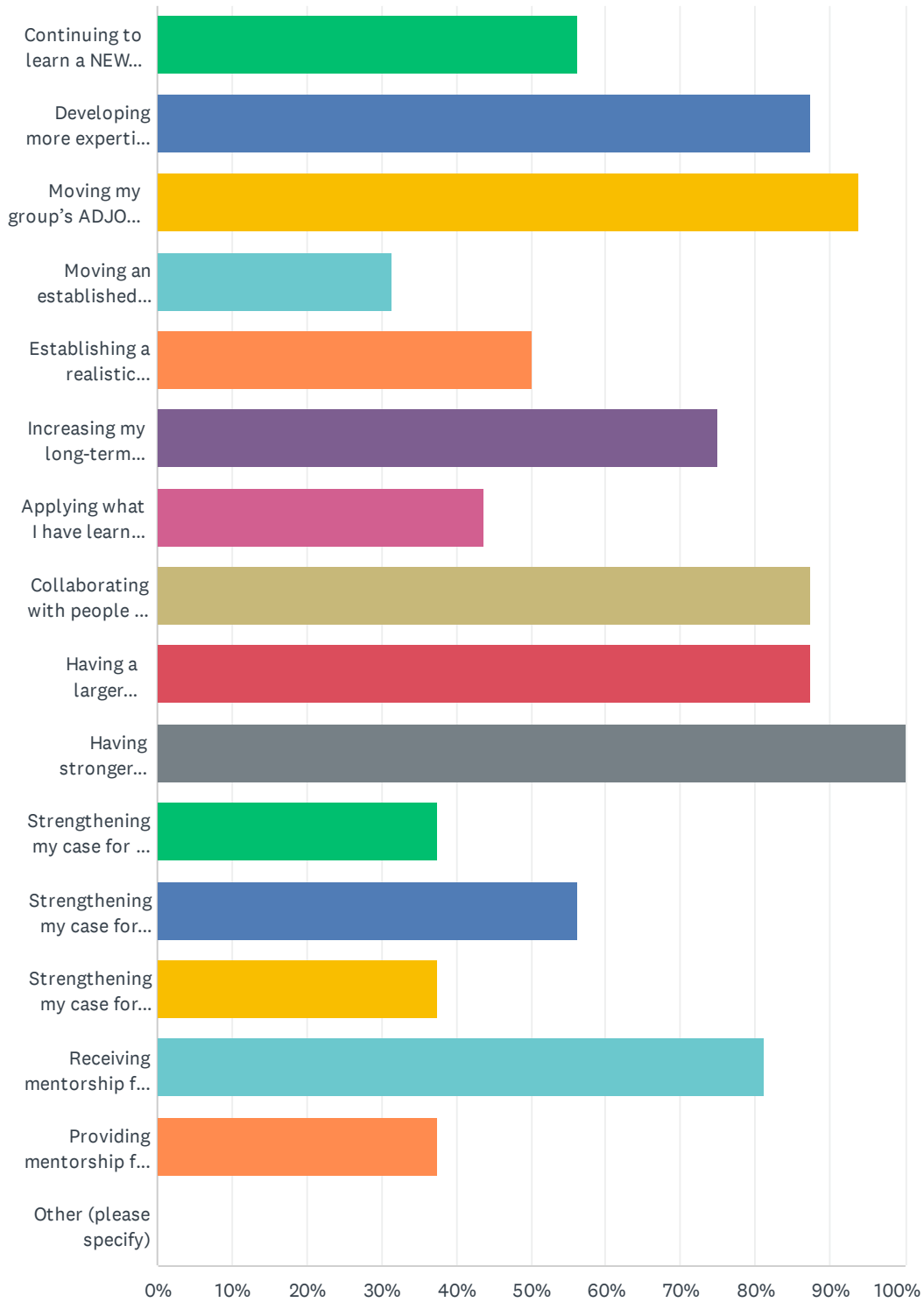
## MSRI ADJOINT Retrospective Pre/Post Survey

ANSWER CHOICES	RESPONSES	
To learn a NEW research area	68.75%	11
To develop more expertise in a research area in which I already have some background	75.00%	12
To begin a new group project that will move towards publication	100.00%	16
To move an established research project toward publication	18.75%	3
To establish a realistic research project that can be executed in the short-term	43.75%	7
To increase my long-term research output (papers, presentations, etc.)	93.75%	15
To learn about grant funding opportunities for research	25.00%	4
To collaborate with people who I would not otherwise have access to	87.50%	14
To improve my professional network	93.75%	15
To initiate or strengthen connections within the African American mathematical and statistical sciences community	93.75%	15
To strengthen my case for a full-time or tenure-track position	43.75%	7
To strengthen my case for promotion within the tenure-track ladder	37.50%	6
To strengthen my case for transitioning to a new institution	31.25%	5
To receive mentorship from leading mathematicians and statistical scientists from the African Diaspora	87.50%	14
To provide mentorship to mathematicians and statistical scientists from the African Diaspora	18.75%	3
Other (please specify)	0.00%	0
Total Respondents: 16		

#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

### Q11 I will continue to benefit from ADJOINT by:

Answered: 16 Skipped: 3



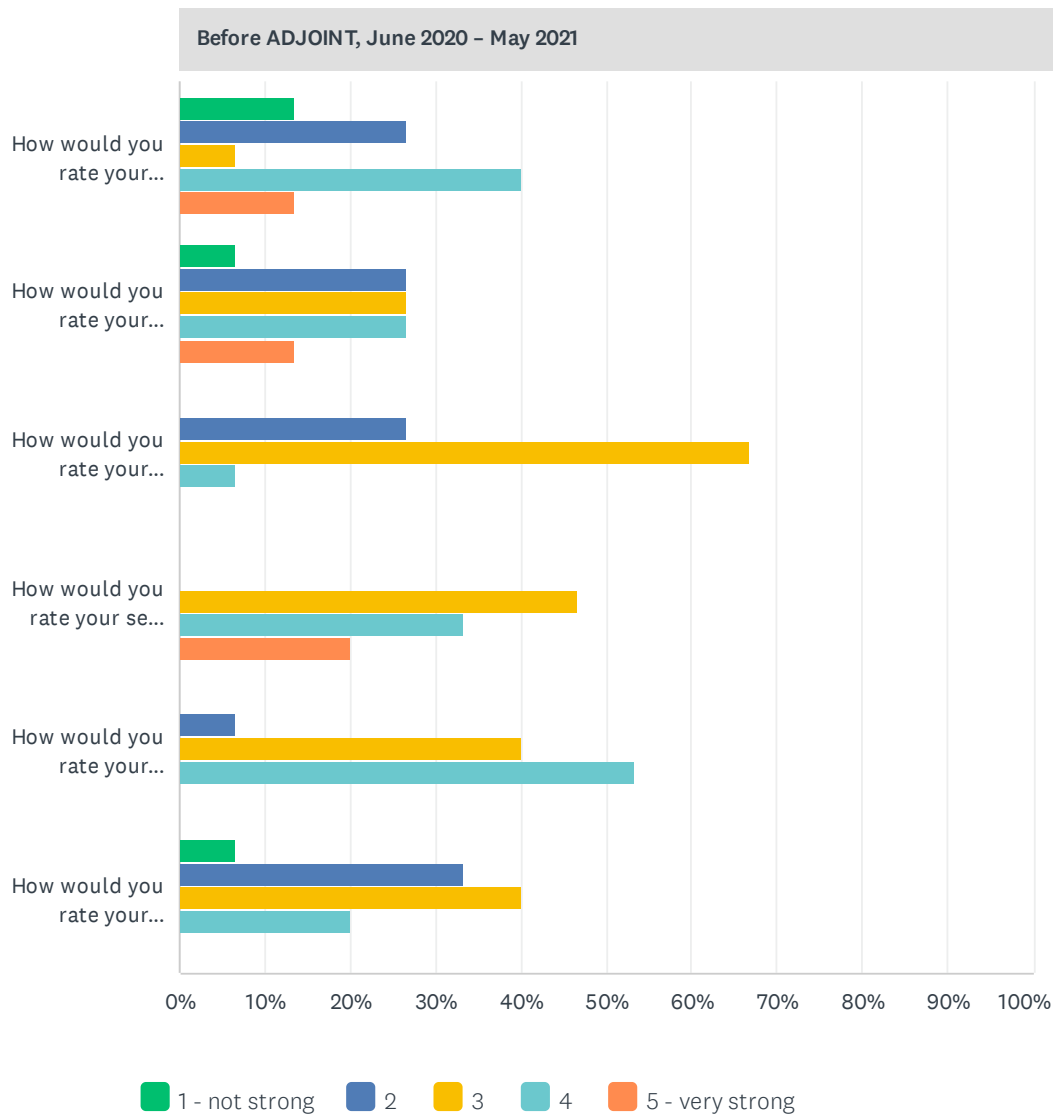
MSRI ADJOINT Retrospective Pre/Post Survey

ANSWER CHOICES	RESPONSES	
Continuing to learn a NEW research area	56.25%	9
Developing more expertise in a research area in which I already have some background	87.50%	14
Moving my group's ADJOINT research project toward publication	93.75%	15
Moving an established research project toward publication	31.25%	5
Establishing a realistic research project that can be executed in the short-term	50.00%	8
Increasing my long-term research output (papers, presentations, etc.)	75.00%	12
Applying what I have learned about grant funding opportunities for research	43.75%	7
Collaborating with people who I would not otherwise have access to	87.50%	14
Having a larger professional network	87.50%	14
Having stronger connections within the African American mathematical and statistical sciences community	100.00%	16
Strengthening my case for a full-time or tenure-track position	37.50%	6
Strengthening my case for promotion within the tenure-track ladder	56.25%	9
Strengthening my case for transitioning to a new institution	37.50%	6
Receiving mentorship from leading mathematicians and statistical scientists from the African Diaspora	81.25%	13
Providing mentorship from leading mathematicians and statistical scientists from the African Diaspora	37.50%	6
Other (please specify)	0.00%	0
Total Respondents: 16		

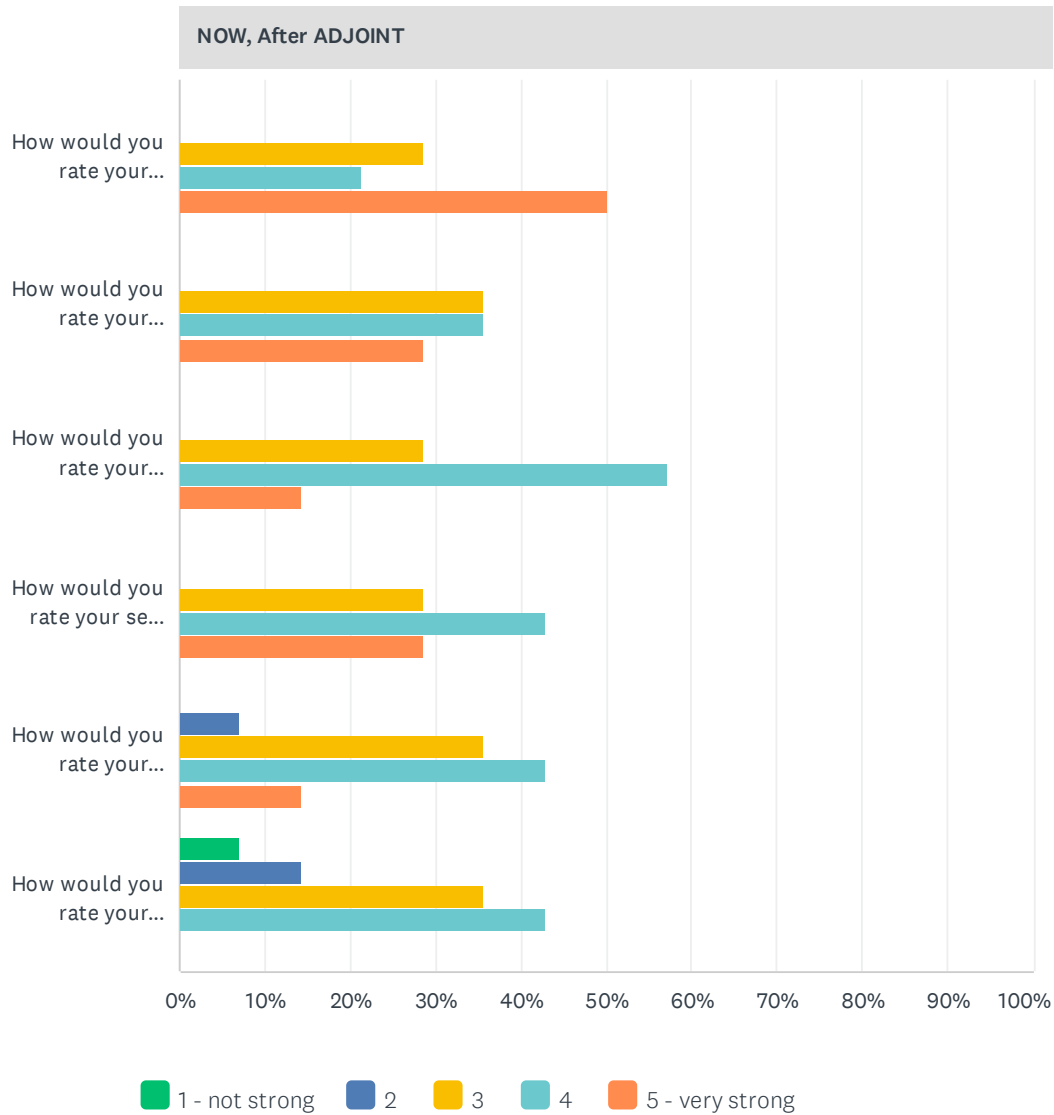
#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

Q12 Provide answers to each of the following questions for the time period BEFORE and NOW, after participating in ADJOINT.

Answered: 15 Skipped: 4



## MSRI ADJOINT Retrospective Pre/Post Survey



Before ADJOINT, June 2020 – May 2021						
	1 - NOT STRONG	2	3	4	5 - VERY STRONG	TOTAL
How would you rate your connection to mathematical and statistical research scientists of the African Diaspora?	13.33% 2	26.67% 4	6.67% 1	40.00% 6	13.33% 2	15
How would you rate your social networks within the mathematical and statistical sciences communities?	6.67% 1	26.67% 4	26.67% 4	26.67% 4	13.33% 2	15
How would you rate your ability to bridge into a new area of mathematics or statistics?	0.00% 0	26.67% 4	66.67% 10	6.67% 1	0.00% 0	15
How would you rate your sense of being able to act independently to make choices that will influence your career?	0.00% 0	0.00% 0	46.67% 7	33.33% 5	20.00% 3	15
How would you rate your ability to advocate for your professional needs?	0.00% 0	6.67% 1	40.00% 6	53.33% 8	0.00% 0	15
How would you rate your ability to be more intentional with your time and engagements (e.g., avoiding overcommitting, engaging in activities that further career goals, scheduling time for research, etc.)?	6.67% 1	33.33% 5	40.00% 6	20.00% 3	0.00% 0	15

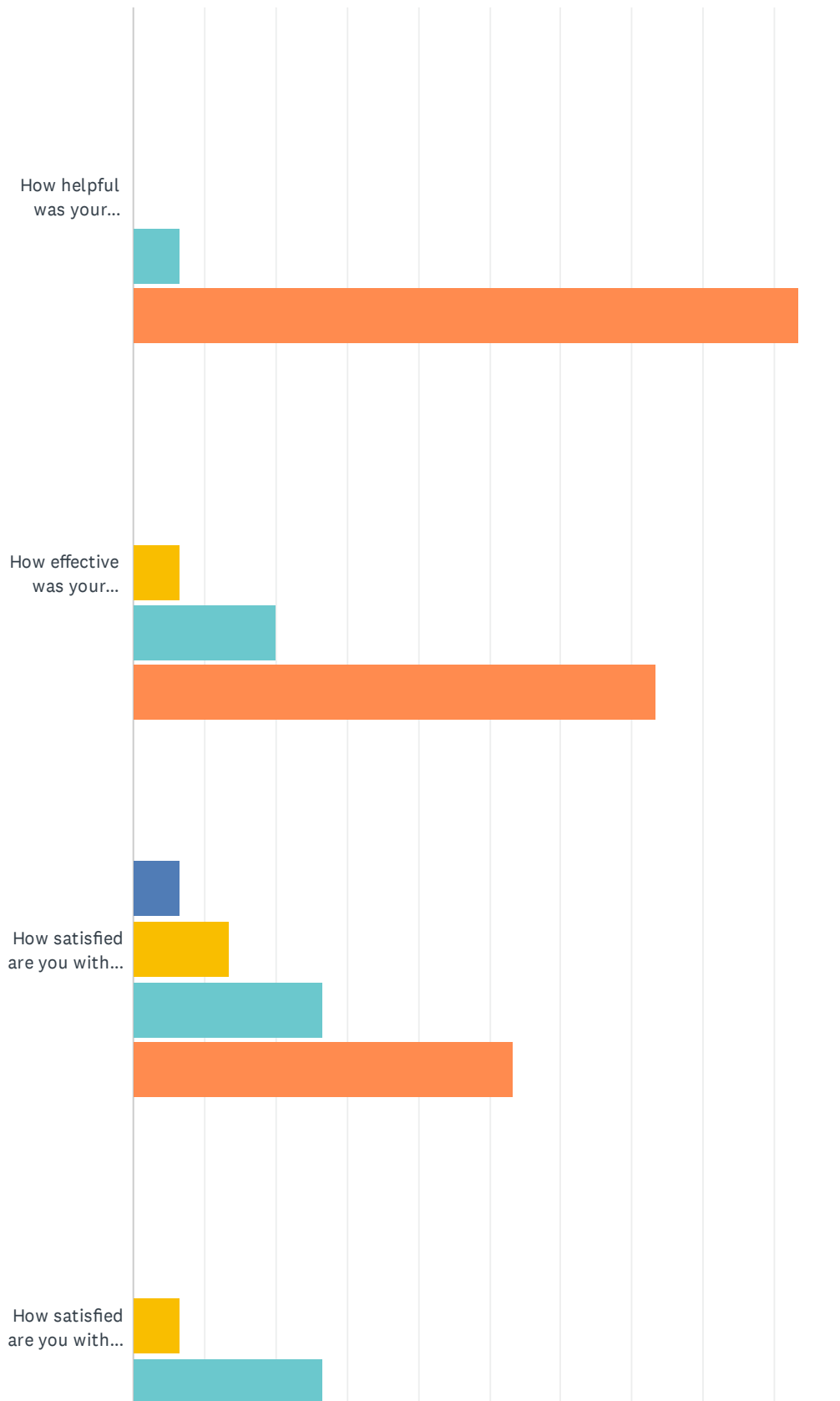


MSRI ADJOINT Retrospective Pre/Post Survey

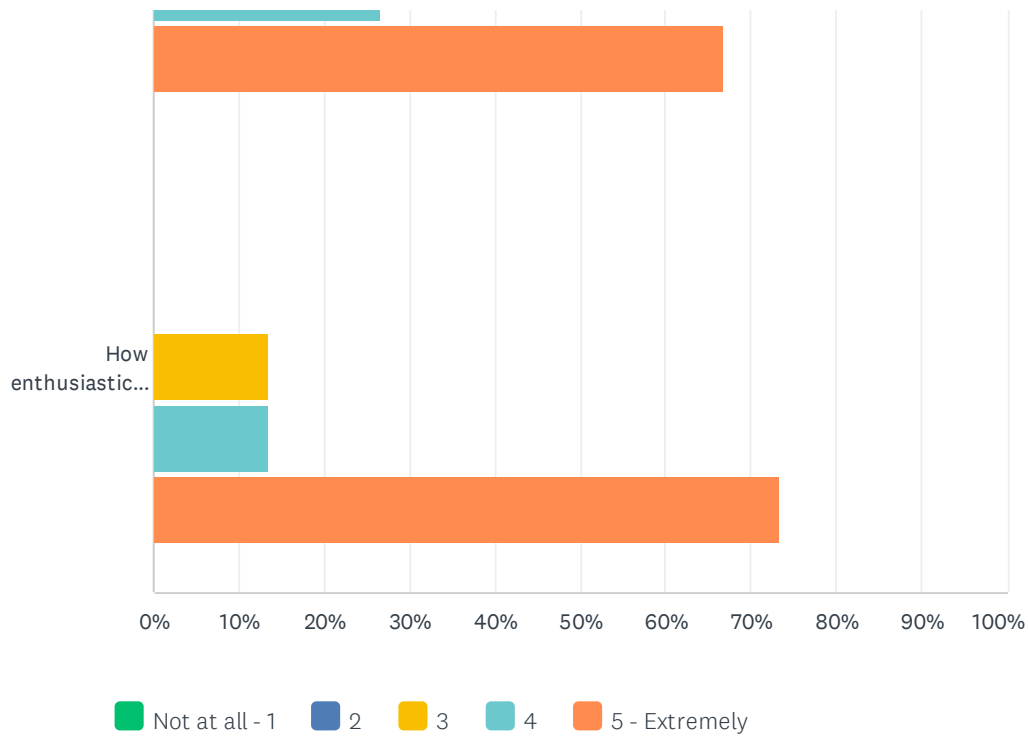
NOW, After ADJOINT						
	1 - NOT STRONG	2	3	4	5 - VERY STRONG	TOTAL
How would you rate your connection to mathematical and statistical research scientists of the African Diaspora?	0.00% 0	0.00% 0	28.57% 4	21.43% 3	50.00% 7	14
How would you rate your social networks within the mathematical and statistical sciences communities?	0.00% 0	0.00% 0	35.71% 5	35.71% 5	28.57% 4	14
How would you rate your ability to bridge into a new area of mathematics or statistics?	0.00% 0	0.00% 0	28.57% 4	57.14% 8	14.29% 2	14
How would you rate your sense of being able to act independently to make choices that will influence your career?	0.00% 0	0.00% 0	28.57% 4	42.86% 6	28.57% 4	14
How would you rate your ability to advocate for your professional needs?	0.00% 0	7.14% 1	35.71% 5	42.86% 6	14.29% 2	14
How would you rate your ability to be more intentional with your time and engagements (e.g., avoiding overcommitting, engaging in activities that further career goals, scheduling time for research, etc.)?	7.14% 1	14.29% 2	35.71% 5	42.86% 6	0.00% 0	14

### Q13 Please rate the following during your two-week intensive session:

Answered: 15 Skipped: 4



## MSRI ADJOINT Retrospective Pre/Post Survey



	NOT AT ALL - 1	2	3	4	5 - EXTREMELY	TOTAL	WEIGHTED AVERAGE
How helpful was your Research Leader in providing background on the research area?	0.00% 0	0.00% 0	0.00% 0	6.67% 1	93.33% 14	15	4.93
How effective was your Research Leader in providing leadership to your group (e.g., provided sufficient guidance on possible paths of inquiry, cultivated inclusive and supportive environment, facilitated timely completion of activities, exercised effective conflict resolution skills, etc.)?	0.00% 0	0.00% 0	6.67% 1	20.00% 3	73.33% 11	15	4.67
How satisfied are you with your individual contributions to your research group?	0.00% 0	6.67% 1	13.33% 2	26.67% 4	53.33% 8	15	4.27
How satisfied are you with the contributions made by the participants (other than the Research Leader) within your group?	0.00% 0	0.00% 0	6.67% 1	26.67% 4	66.67% 10	15	4.60
How enthusiastic are you about continuing to work with this group of researchers throughout the upcoming academic year?	0.00% 0	0.00% 0	13.33% 2	13.33% 2	73.33% 11	15	4.60

Q14 If you selected 1 or 2 for any of the items above, please explain why you made that selection.

Answered: 1 Skipped: 18

#	RESPONSES	DATE
1	Our facilitator was excellent at getting the group to bond and to choose projects that spoke to all off our experience and especially our interest.	7/2/2021 4:20 PM

## Q15 What aspects of the relationships with your ADJOINT colleagues were most beneficial to you?

Answered: 14 Skipped: 5

#	RESPONSES	DATE
1	I learned about new areas of research that can be implemented in my existing research. We also come up with plans to apply for research grants which if successful will be extremely helpful in supporting my students' research which I do not currently have.	7/11/2021 8:36 PM
2	Having an environment where there was little judgement and a focus on learning and exploring.	7/9/2021 6:32 PM
3	Team building, and understanding other mathematical disciplines	7/6/2021 10:37 AM
4	The research was great but I enjoyed our side conversations about personal lives.	7/6/2021 8:30 AM
5	I enjoyed working my ADJOINT group. They were all very friendly and supportive. It was beneficial to be in group of people at (or transitioning between) different career stages. I learned a lot of from our informal discussions about life and work in academia.	7/5/2021 1:56 PM
6	Research and personal relationships.	7/5/2021 12:38 PM
7	Leadership	7/5/2021 4:02 AM
8	The openness and availability to answer questions	7/4/2021 6:54 PM
9	The mutual respect for one another as professionals in the mathematical sciences, all were motivated to be productive and further ADJOINT efforts after the initial 2 weeks.	7/4/2021 11:58 AM
10	it was great to not be the only black person in the research group.	7/2/2021 4:26 PM
11	Really just getting to know folks better was nice. I'm excited to have a new group of collaborators and that this is a group of researchers from the African diaspora.	7/2/2021 4:26 PM
12	Learning more about their research and how we can all contribute together.	7/2/2021 4:19 PM
13	In the last two weeks, my interest in a former research area was reignited. I'm very happy about this.	7/2/2021 3:23 PM
14	Solidified relationships with people I knew previously. I was able to connect with the research leader as a mentor.	7/2/2021 1:56 PM

## Q16 How can MSRI help your research group in the future?

Answered: 14 Skipped: 5

#	RESPONSES	DATE
1	I believe if in the future, MSRI can continue on this path by facilitating the group's connection and provide opportunities for the group to meet on a regular basis, this will be very much appreciated. I do not have a well detailed plan to suggest on how to proceed on this, but I imagine that with the experienced people on the MSRI team, you will be able to come up with plans that will mitigate potential obstacles that this group might face and that might prevent the team in improving the odds of their various research projects.	7/11/2021 8:36 PM
2	Support for in-person research.	7/9/2021 6:32 PM
3	Allowing more time for us to do research, and of course funding to help us come together in the future to meet face to face	7/6/2021 10:37 AM
4	Provide funding for our group to meet in person.	7/6/2021 8:30 AM
5	Continued provisioning of infrastructure to support our nascent collaboration. I would love to attend an in-person reunion so I can meet all of the ADJOINT members.	7/5/2021 1:56 PM
6	Funding to continue our work.	7/5/2021 12:38 PM
7	Facilitate our meetings; iPad to ease virtual meetings	7/5/2021 4:02 AM
8	Arranging for more meetings	7/4/2021 6:54 PM
9	Continued library access, financial support for a future meeting or conference presentation, ongoing professional development opportunities.	7/4/2021 11:58 AM
10	support for travel for collaboration, either to the MSRI or another meeting place.	7/2/2021 4:26 PM
11	I think this is a GREAT start. I am also happy that MSRI will support us in a reunion next year and group attendance at a conference where we can present our work and meet again in person	7/2/2021 4:26 PM
12	We are interested in opportunities to unite and continue our research endeavors.	7/2/2021 4:19 PM
13	Travel funds	7/2/2021 3:23 PM
14	provide cloud storage for each team to manage documents.	7/2/2021 1:56 PM

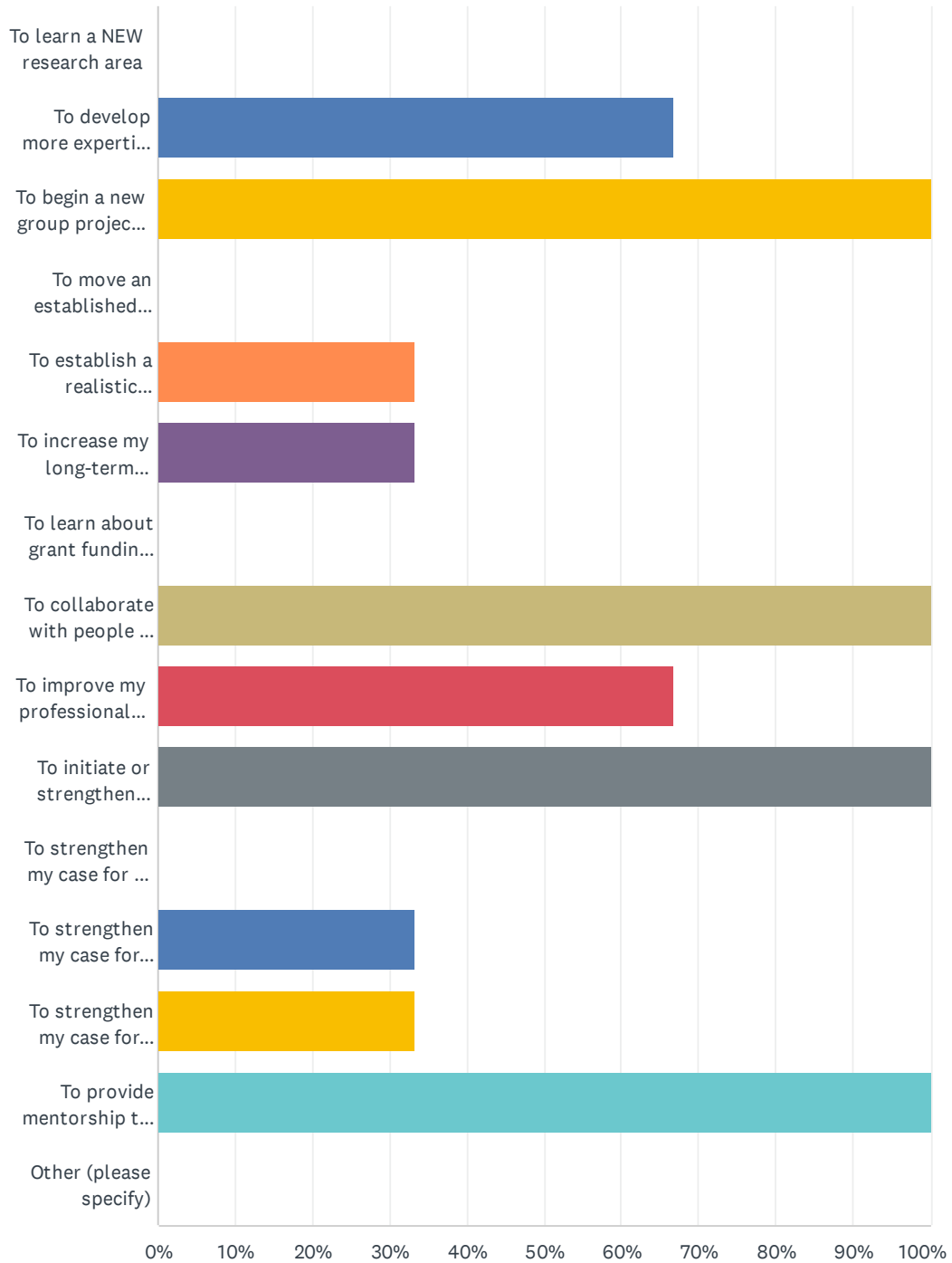
## Q17 If you have additional comments about your experience during the two-week intensive session, please provide them here:

Answered: 8 Skipped: 11

#	RESPONSES	DATE
1	I personally value steps and efforts that MSRI has taken in making this connection possible and especially the support I received during this two weeks in childcare for my young children. This was extremely helpful for me to focus on the work with my group. I have to admit that the fact that I didn't have to worry about my children care made a huge difference for me. And, because of that, I was able to learn a lot and, to contribute with my team during those couple weeks. Thank you so much for the opportunity.	7/11/2021 8:36 PM
2	Well done given the circumstances of COVID-19	7/5/2021 1:56 PM
3	My time at ADJOINT was very impactful to my research program.	7/5/2021 12:38 PM
4	It was great.	7/5/2021 4:02 AM
5	The research collaboration atmosphere was great.	7/4/2021 6:54 PM
6	These 2 weeks were amazing! I was a little surprised at how rigorous these 2 weeks were. Past participants in ADJOINT have told me that that is not how their 2-weeks went, so I am curious why the policy changed for summer 2021	7/2/2021 4:26 PM
7	Great experience. I really enjoyed working with my group members and the research leader.	7/2/2021 3:23 PM
8	In the future, I think it would be more helpful to have each person have at least a moderate background in the topic of the workshop group. It would make the groups more effective.	7/2/2021 1:56 PM

### Q18 I joined ADJOINT to:

Answered: 3 Skipped: 16





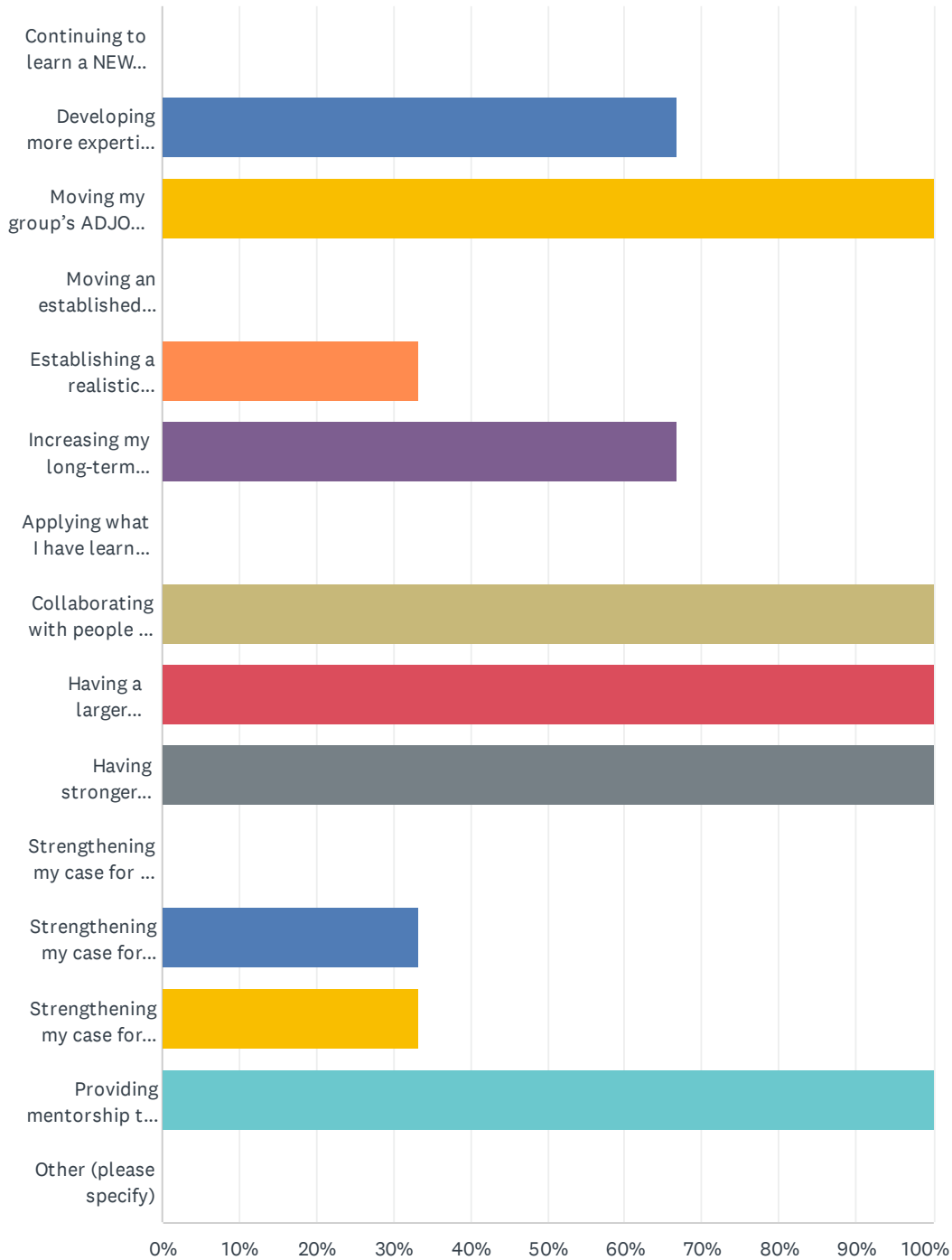
MSRI ADJOINT Retrospective Pre/Post Survey

ANSWER CHOICES	RESPONSES
To learn a NEW research area	0.00% 0
To develop more expertise in a research area in which I already have some background	66.67% 2
To begin a new group project that will move towards publication	100.00% 3
To move an established research project toward publication	0.00% 0
To establish a realistic research project that can be executed in the short-term	33.33% 1
To increase my long-term research output (papers, presentations, etc.)	33.33% 1
To learn about grant funding opportunities for research	0.00% 0
To collaborate with people who I would not otherwise have access to	100.00% 3
To improve my professional network	66.67% 2
To initiate or strengthen connections within the African American mathematical and/or statistical sciences community	100.00% 3
To strengthen my case for a full-time or tenure-track position	0.00% 0
To strengthen my case for promotion within the tenure-track ladder	33.33% 1
To strengthen my case for transitioning to a new institution	33.33% 1
To provide mentorship to mathematicians and statistical scientists from the African Diaspora	100.00% 3
Other (please specify)	0.00% 0
Total Respondents: 3	

#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

### Q19 I will continue to benefit from ADJOINT by:

Answered: 3 Skipped: 16



MSRI ADJOINT Retrospective Pre/Post Survey

ANSWER CHOICES	RESPONSES	
Continuing to learn a NEW research area	0.00%	0
Developing more expertise in a research area in which I already have some background	66.67%	2
Moving my group's ADJOINT research project toward publication	100.00%	3
Moving an established research project toward publication	0.00%	0
Establishing a realistic research project that can be executed in the short-term	33.33%	1
Increasing my long-term research output (papers, presentations, etc.)	66.67%	2
Applying what I have learned about grant funding opportunities for research	0.00%	0
Collaborating with people who I would not otherwise have access to	100.00%	3
Having a larger professional network	100.00%	3
Having stronger connections within the African American mathematical and/or statistical sciences community	100.00%	3
Strengthening my case for a full-time or tenure-track position	0.00%	0
Strengthening my case for promotion within the tenure-track ladder	33.33%	1
Strengthening my case for transitioning to a new institution	33.33%	1
Providing mentorship to mathematicians and statistical scientists from the African Diaspora	100.00%	3
Other (please specify)	0.00%	0
Total Respondents: 3		

#	OTHER (PLEASE SPECIFY)	DATE
	There are no responses.	

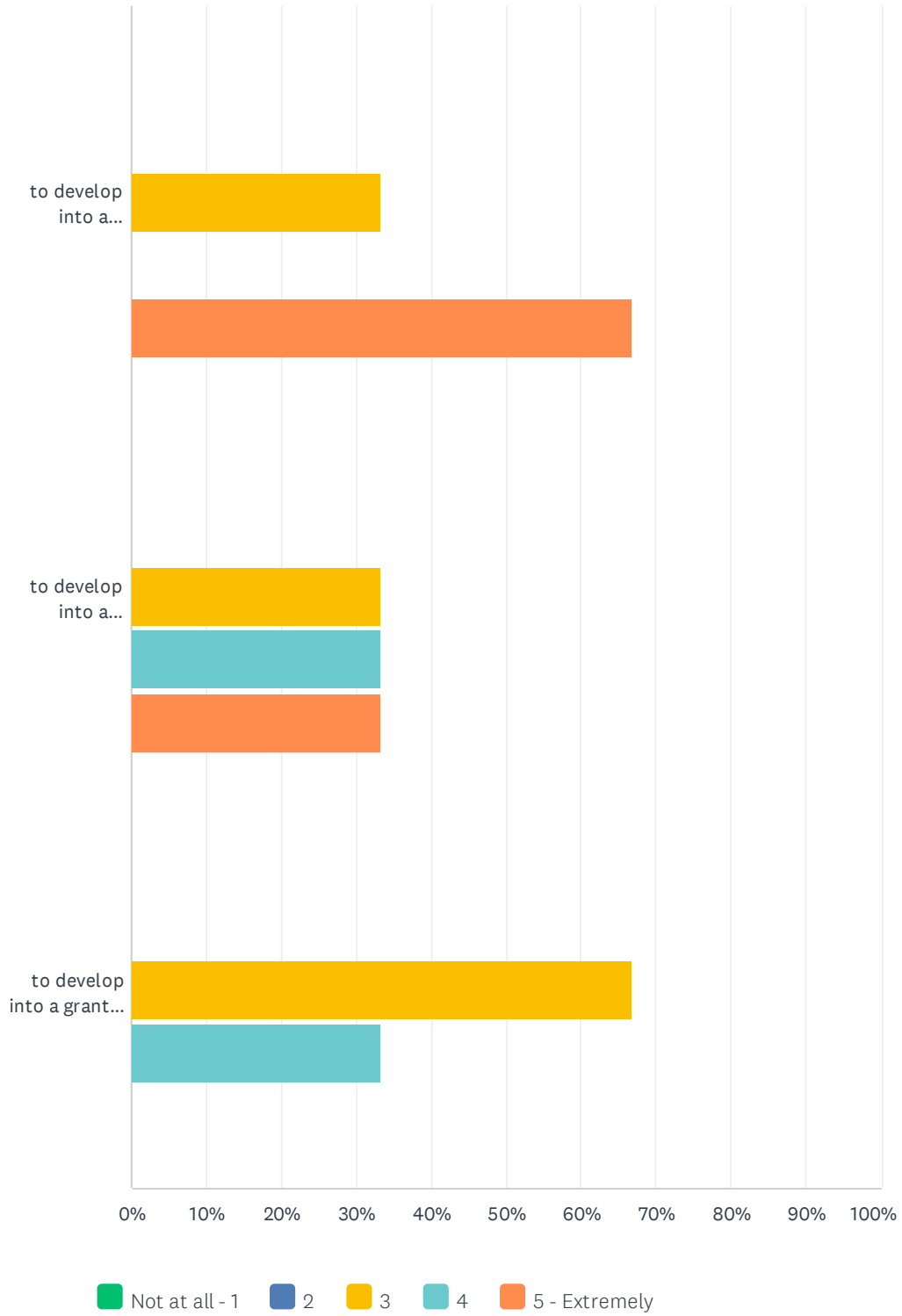
## Q20 Did you experience any additional benefits serving as a Research Leader?

Answered: 2 Skipped: 17

#	RESPONSES	DATE
1	I found the experience to be extremely beneficial and really gained new colleagues from this experience as well as the potential opportunity to collaborate not just with my research group but also with other research leaders and colleagues that I would not have gotten to collaborate with otherwise.	7/9/2021 10:06 AM
2	This project has really increased my confidence that I have interesting mathematical insight to share with the larger math community.	7/2/2021 2:04 PM

## Q21 How likely is your ADJOINT research experience

Answered: 3 Skipped: 16

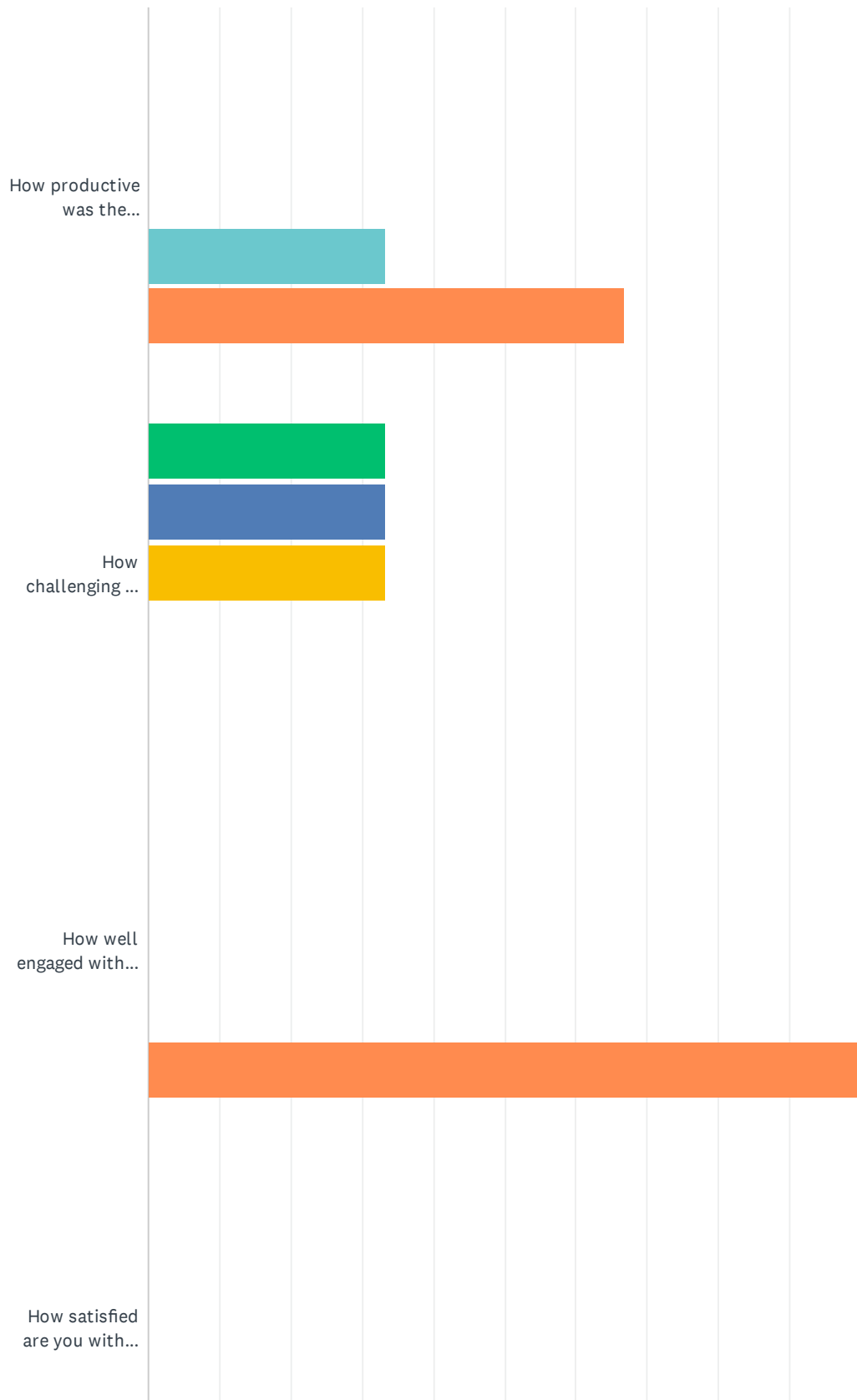


MSRI ADJOINT Retrospective Pre/Post Survey

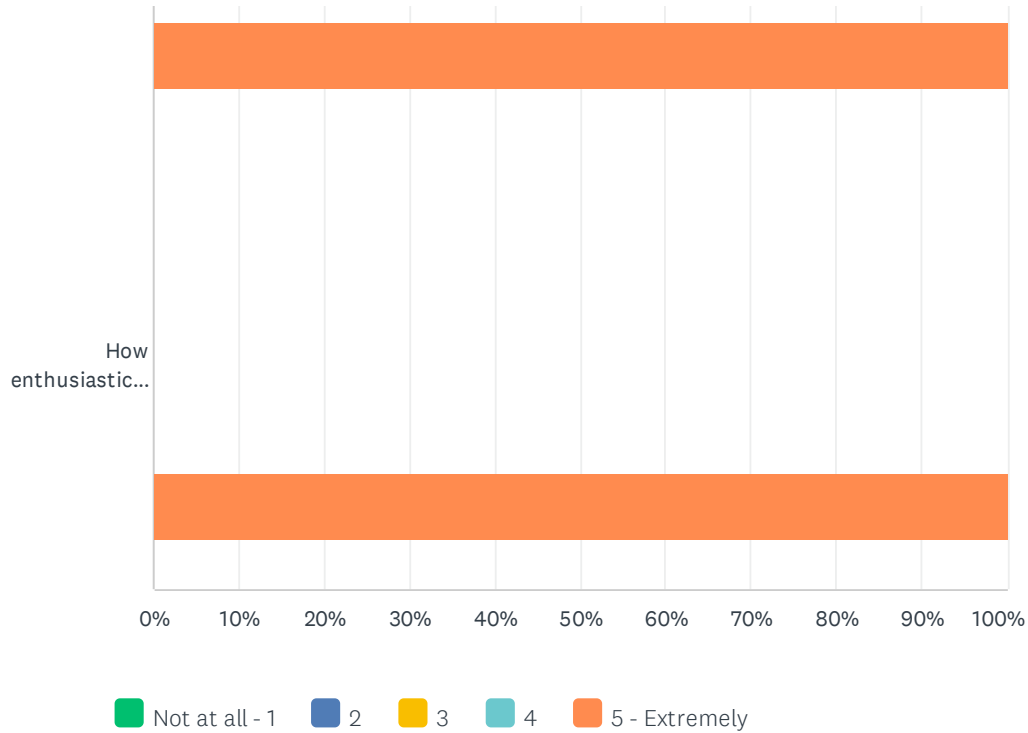
	NOT AT ALL - 1	2	3	4	5 - EXTREMELY	TOTAL	WEIGHTED AVERAGE
to develop into a publication	0.00% 0	0.00% 0	33.33% 1	0.00% 0	66.67% 2	3	4.33
to develop into a conference presentation	0.00% 0	0.00% 0	33.33% 1	33.33% 1	33.33% 1	3	4.00
to develop into a grant proposal	0.00% 0	0.00% 0	66.67% 2	33.33% 1	0.00% 0	3	3.33

# Q22 Please rate the following during your two-week intensive session:

Answered: 3 Skipped: 16



## MSRI ADJOINT Retrospective Pre/Post Survey



	NOT AT ALL - 1	2	3	4	5 - EXTREMELY	TOTAL	WEIGHTED AVERAGE
How productive was the interaction among the members of your group?	0.00% 0	0.00% 0	0.00% 0	33.33% 1	66.67% 2	3	4.67
How challenging did you find the varying levels of expertise/preparation of your group participants?	33.33% 1	33.33% 1	33.33% 1	0.00% 0	0.00% 0	3	2.00
How well engaged with the program were your group members?	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 3	3	5.00
How satisfied are you with the contributions made by the participants within your group?	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 3	3	5.00
How enthusiastic are you about continuing to work with this group of researchers throughout the upcoming academic year?	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 3	3	5.00



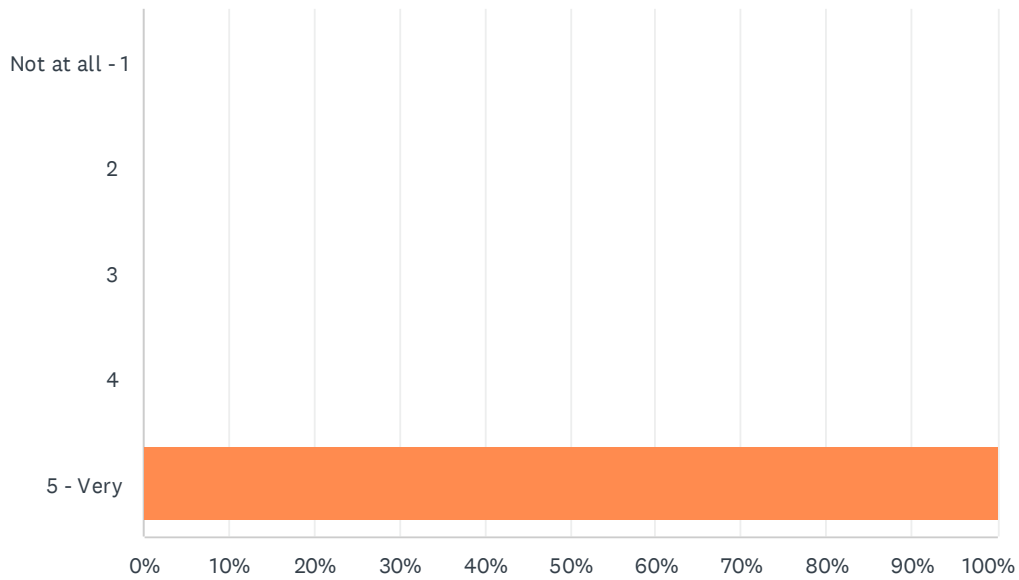
Q23 If you selected 1 or 2 for any of the items above, please explain why you made that selection.

Answered: 2 Skipped: 17

#	RESPONSES	DATE
1	I did not find the varying levels of participation to be challenging.	7/9/2021 10:06 AM
2	My group was very quick in moving from background review to active research.	7/2/2021 2:10 PM

## Q24 How confident are you in the plans for continuing this collaboration?

Answered: 3 Skipped: 16



ANSWER CHOICES	RESPONSES	
Not at all - 1	0.00%	0
2	0.00%	0
3	0.00%	0
4	0.00%	0
5 - Very	100.00%	3
<b>TOTAL</b>		<b>3</b>

## Q25 How can MSRI help your research group in the future?

Answered: 3 Skipped: 16

#	RESPONSES	DATE
1	It would be helpful if MSRI could provide my team with online storage for files, assistance with scheduling of meetings, and also provide additional professional development seminars/activities for my group.	7/9/2021 10:14 AM
2	Travel support	7/2/2021 4:22 PM
3	A number of my group participants have a high teaching load during the academic year. Any money that they might be able to use to buy off teaching would be very much appreciated.	7/2/2021 2:19 PM

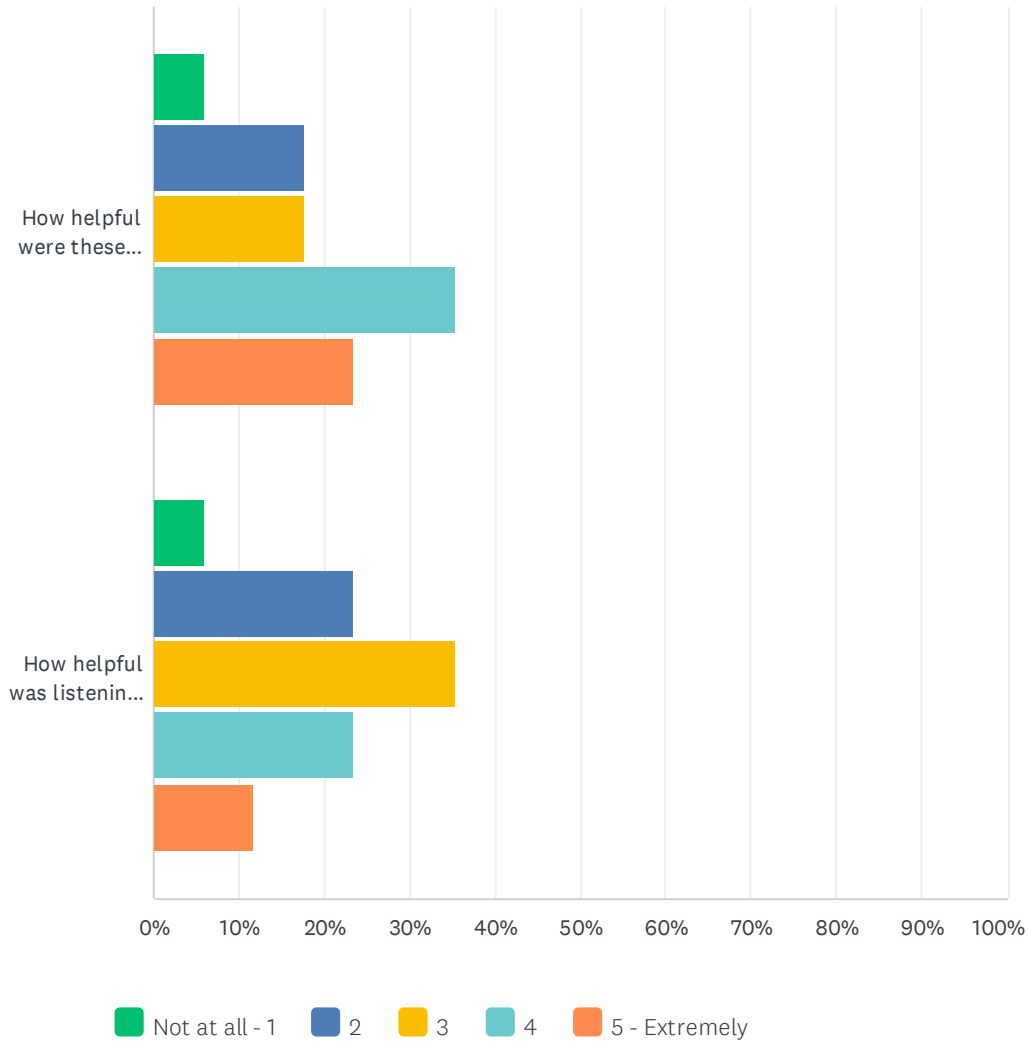
## Q26 If you have additional comments about your experience during the two-week intensive session, please provide them here:

Answered: 2 Skipped: 17

#	RESPONSES	DATE
1	I think that it helps to allow more flexibility with research leaders if they are able to determine the best strategy for interaction with their research group. I also think that the hybrid (virtual + in-person format) was more accommodating for the research group and actually, in my opinion, increased engagement. I think the rules of engagement felt a bit rigid and were a bit discouraging at first, but I am appreciative of the fact that after bringing my concern to MSRI ADJOINT leadership, they were able to better address my concern. Also, I think that it would be good for research leaders to make sure that scholars are given sufficient time for their own independent research and exploration. Lastly, I found having team building and social activities throughout the two weeks was really helpful and increased our enthusiasm for working together.	7/9/2021 10:14 AM
2	I want to thank everyone involved in the Adjoint program for inviting me to participate. I'm very excited about the project that my group has developed over this program and I am very optimistic that we will have a nice paper on our work within the coming year.	7/2/2021 2:19 PM

## Q27 Each research group was required to make presentations to the remaining ADJOINT participants.

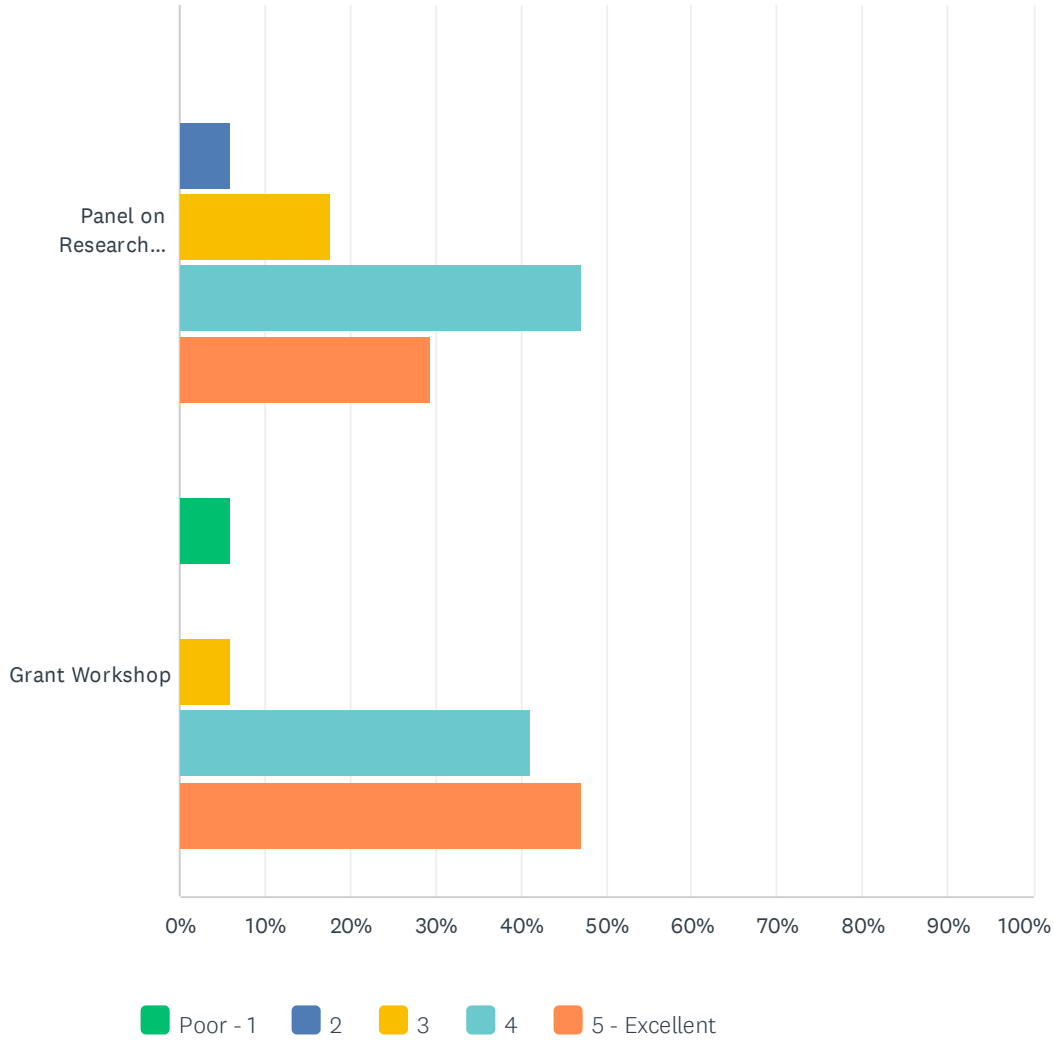
Answered: 17 Skipped: 2



	NOT AT ALL - 1	2	3	4	5 - EXTREMELY	TOTAL	WEIGHTED AVERAGE
How helpful were these presentations to clarify opportunities for improvement within your group?	5.88% 1	17.65% 3	17.65% 3	35.29% 6	23.53% 4	17	3.53
How helpful was listening to other groups' presentations in sparking ideas that may advance your own research interests (not necessarily related to your ADJOINT work)?	5.88% 1	23.53% 4	35.29% 6	23.53% 4	11.76% 2	17	3.12

## Q28 How would you rate the following in terms of the information provided?

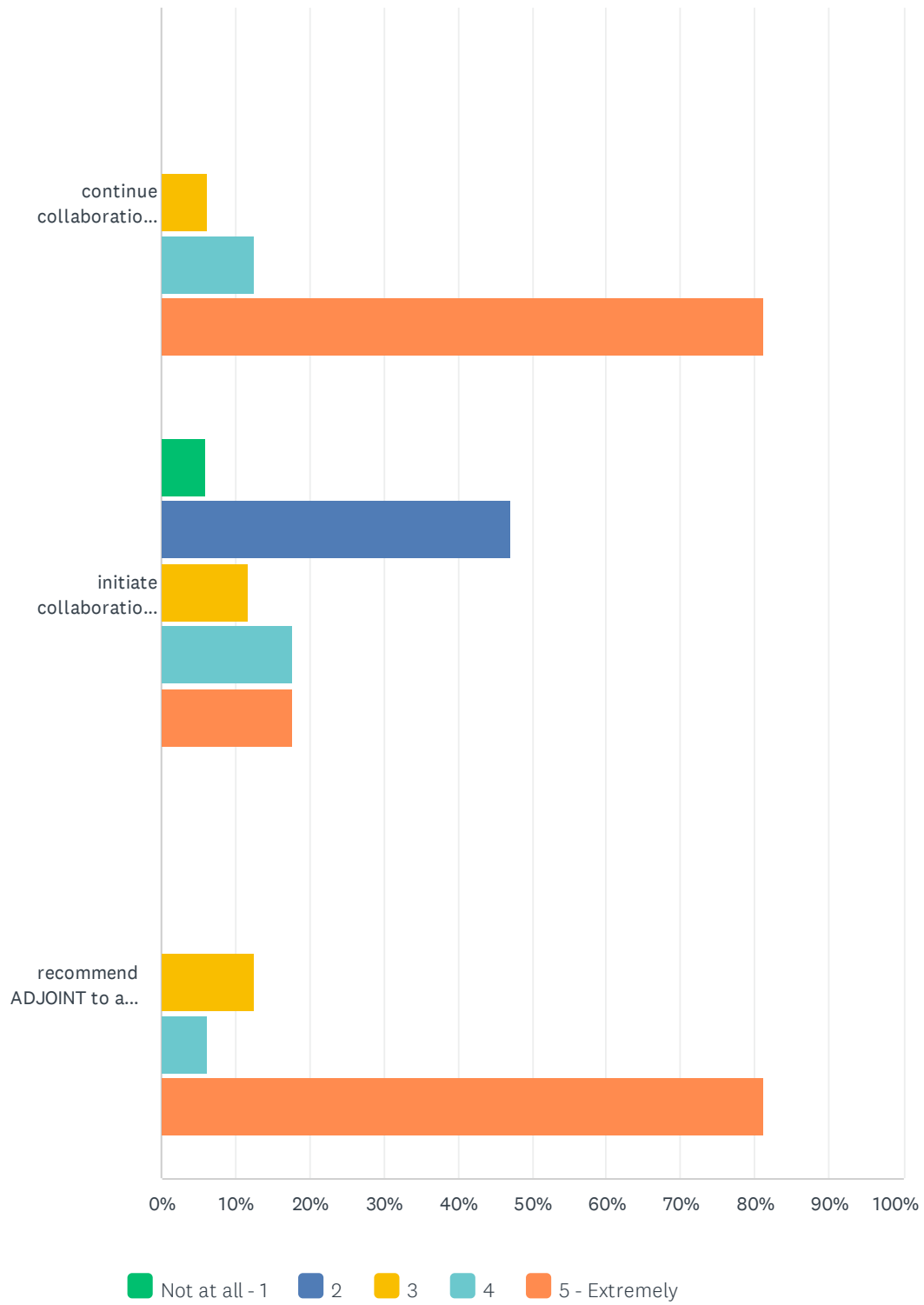
Answered: 17 Skipped: 2



	POOR - 1	2	3	4	5 - EXCELLENT	TOTAL	WEIGHTED AVERAGE
Panel on Research Leaders	0.00% 0	5.88% 1	17.65% 3	47.06% 8	29.41% 5	17	4.00
Grant Workshop	5.88% 1	0.00% 0	5.88% 1	41.18% 7	47.06% 8	17	4.24

## Q29 How likely are you to:

Answered: 17 Skipped: 2



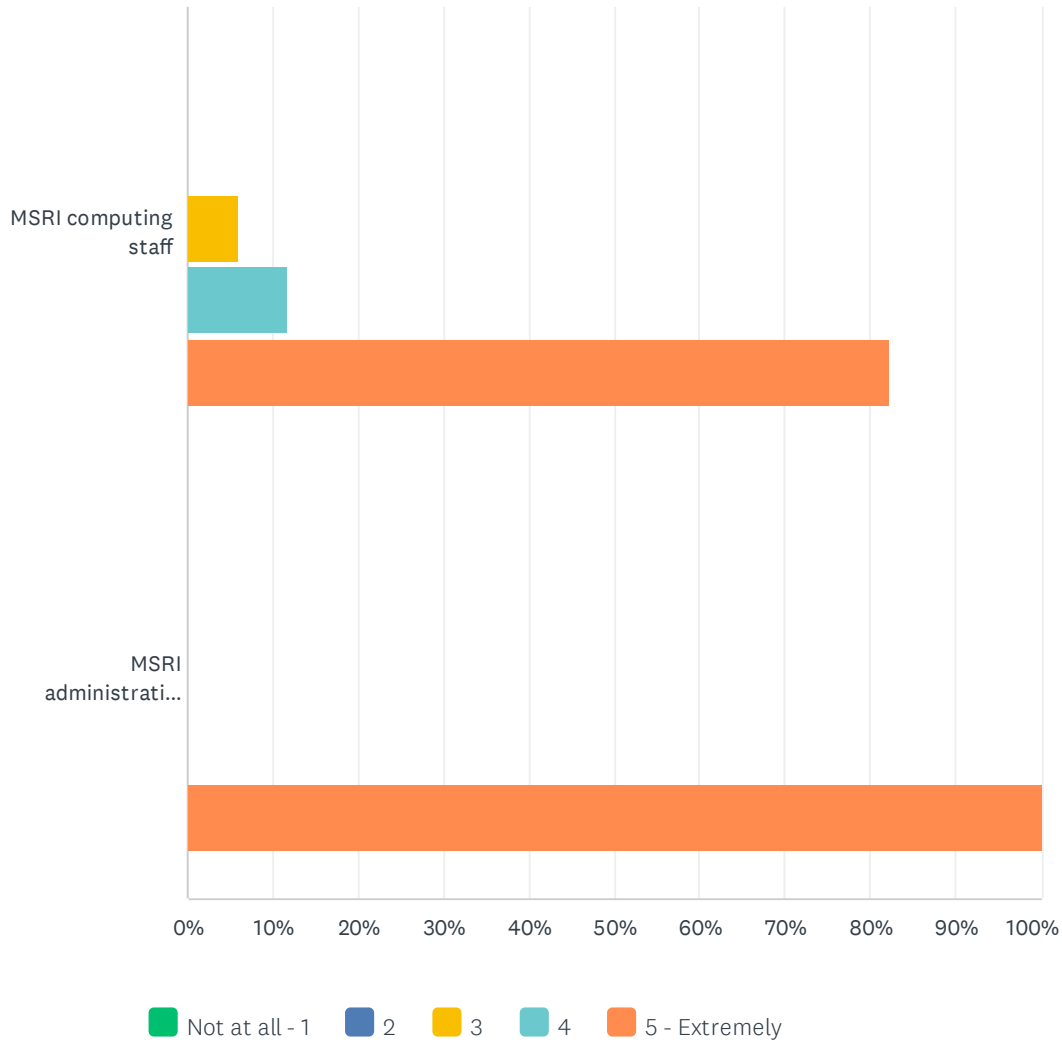
MSRI ADJOINT Retrospective Pre/Post Survey

	NOT AT ALL - 1	2	3	4	5 - EXTREMELY	TOTAL	WEIGHTED AVERAGE
continue collaboration with some or all members of your research group?	0.00% 0	0.00% 0	6.25% 1	12.50% 2	81.25% 13	16	4.75
initiate collaborations with any ADJOINT participants who are not in your research group?	5.88% 1	47.06% 8	11.76% 2	17.65% 3	17.65% 3	17	2.94
recommend ADJOINT to a friend?	0.00% 0	0.00% 0	12.50% 2	6.25% 1	81.25% 13	16	4.69



### Q30 How helpful was the support provided by:

Answered: 17 Skipped: 2



	NOT AT ALL - 1	2	3	4	5 - EXTREMELY	TOTAL	WEIGHTED AVERAGE
MSRI computing staff	0.00% 0	0.00% 0	5.88% 1	11.76% 2	82.35% 14	17	4.76
MSRI administrative support staff	0.00% 0	0.00% 0	0.00% 0	0.00% 0	100.00% 17	17	5.00

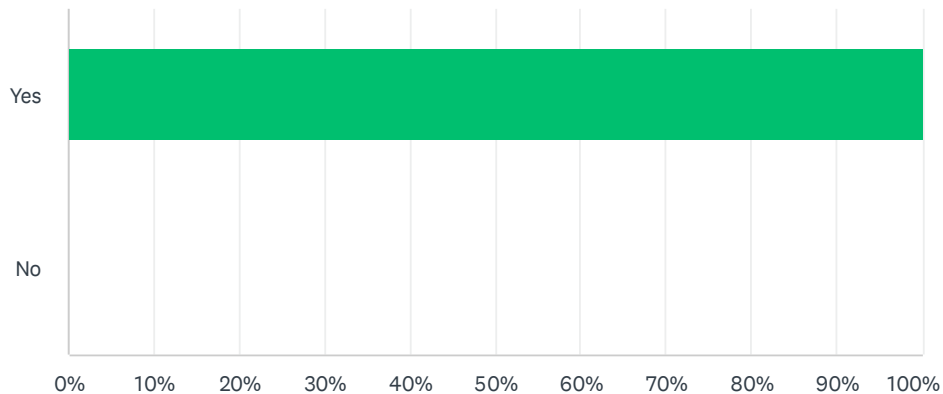
### Q31 Please provide any suggestions to improve the IT and/or administrative support provided by ADJOINT.

Answered: 7 Skipped: 12

#	RESPONSES	DATE
1	I found IT and administrative support to be extremely helpful.	7/9/2021 10:16 AM
2	IT was great getting our group all the technology needed for our meetings!	7/6/2021 8:33 AM
3	N/a	7/5/2021 1:57 PM
4	Turn this workshop into a semester-long workshop.	7/5/2021 12:39 PM
5	Great	7/5/2021 4:05 AM
6	I thought it was great, we really didn't utilize their services	7/2/2021 4:30 PM
7	They were wonderful and very helpful!!	7/2/2021 4:23 PM

## Q32 Should MSRI continue the ADJOINT program?

Answered: 17 Skipped: 2



ANSWER CHOICES	RESPONSES	
Yes	100.00%	17
No	0.00%	0
TOTAL		17

#	PLEASE ELABORATE ON YOUR RESPONSE.	DATE
1	This was a great experience for me and I anticipate that every scientist will benefit for such collaboration.	7/11/2021 8:37 PM
2	This was one of the best workshop experiences I've had. It's the first time I was able to do math in an environment around other people like me - it was enriching in ways I couldn't have even imagined before taking part.	7/9/2021 6:38 PM
3	I think this program is very important for the professional development of early career scholars in particular. I also think that it provides the opportunity for additional research collaborations and also contributes to an increased sense of belonging.	7/9/2021 10:46 AM
4	It's an absolute must!	7/6/2021 10:39 AM
5	The program was great in bringing together researchers who would not have normally been able to collaborate together.	7/6/2021 8:41 AM
6	This is an immensely valuable program for black mathematicians who starved of opportunities that come from being part of a vibrant research community in mathematics. The ADJOINT program is a vehicle for connecting networks of networks (across math sub-disciplines). I expect the collaborations that I have formed this summer to continue into the foreseeable future in form of research papers and grant proposals.	7/5/2021 2:10 PM
7	This was great. The workshop should be longer.	7/5/2021 12:40 PM
8	These collaborations are helpful	7/5/2021 4:08 AM
9	The program is great for establishing productive and research driven connections	7/4/2021 6:58 PM
10	This program is very helpful for faculty of the the African Diaspora in that it connects us in an effective and productive way. We often meet each other at major conferences, but that does not typically allow time for the development of new ideas and collaborations.	7/4/2021 12:15 PM
11	ABSOLUTELY! This is an incredible and beautiful program that does not exist anywhere else! It is a rare and wonderful unicorn that must be treasured and protected, as it nourishes	7/2/2021 4:42 PM

## MSRI ADJOINT Retrospective Pre/Post Survey

mathematicians of the African diaspora, not just within ADJOINT but throughout the mathematics community.

12	please continue the ADJOINT program. It's exciting to think about the research community that is growing out of this program from year to year. It crosses mathematical disciplines but the ADJOINT experience keeps us connected.	7/2/2021 4:28 PM
13	The experience is unique and provides so much enrichment.	7/2/2021 4:23 PM
14	I will benefit greatly from this experience. I have new research group and I am very excited about what is to come. I don't think this would have happened without ADJOINT.	7/2/2021 3:26 PM
15	It was helpful in expanding my network and developing new research areas.	7/2/2021 2:54 PM
16	I would never have had the opportunity to develop a collaboration with any of the wonderful people in my group without the Adjoint program. I very thankful to the program for reaching out to me with an invitation to run a group.	7/2/2021 2:28 PM

## Q33 Over the coming year, what suggestions would you have for ADJOINT professional development workshops or panels?

Answered: 10 Skipped: 9

#	RESPONSES	DATE
1	-Effective Mentorship -Work-life balance -Team Science -Preparing for Promotion	7/9/2021 10:46 AM
2	Honestly, just time for research, and maybe a virtual social event, or in person at JMM 2022 in Seattle!	7/6/2021 10:39 AM
3	Writing retreats, grant writing retreats, reading	7/6/2021 8:41 AM
4	N/a	7/5/2021 2:10 PM
5	Tenure panel.	7/5/2021 12:40 PM
6	Get together/reunion	7/5/2021 4:08 AM
7	Perhaps include some optional weekend activities.	7/4/2021 6:58 PM
8	Grant writing, securing mentors, applying for tenure track positions/ promotions, institutional transitions, maintaining in majority institutions	7/4/2021 12:15 PM
9	(1) Negotiating higher pay/higher position while you are incumbent. (2) Working towards an administrative position. (3) Leveraging your network to increase the participation of traditionally underserved populations in mathematics. (4) Finding funding for your research group to meet after ADJOINT	7/2/2021 4:42 PM
10	Add a panel on leading from below (i.e. how can we empower our students and ourselves to make change).	7/2/2021 2:54 PM

**Q34 What research areas would you suggest for future ADJOINT programs? If possible, please suggest the names of potential Research Leaders in the future.**

Answered: 9 Skipped: 10

#	RESPONSES	DATE
1	Stochastic modeling with applications	7/11/2021 8:37 PM
2	Spatiotemporal Statistics and Health Disparities - Loni Tabb Statistical Genetics for Admixed Populations - Tim Thornton Data Science and Functional Imaging - Jeff Goldsmith Clinical Trials - Leslie McClure	7/9/2021 10:46 AM
3	Combinatorics, Abstract Algebra,	7/6/2021 10:39 AM
4	Algorithms and bias in mathematics	7/5/2021 2:10 PM
5	Topological applications in mathematical biology	7/5/2021 4:08 AM
6	Zero forcing and Graph theory to be possibly led by Prof. Michael Young Associate Professor of Mathematics and Scott D. Hannah Faculty Fellow at Iowa State University.	7/4/2021 6:58 PM
7	Economics, math finance, math education Research leaders - - Suzanne Weekes, Talitha Washington	7/4/2021 12:15 PM
8	Trachette Jackson, Gaston N'Gerekata, Erica Graham	7/2/2021 4:42 PM
9	Ilesanmi Adeboye (Wesleyan University)	7/2/2021 3:26 PM

## Q35 Do you have suggestions for how to continue building community among mathematical and statistical research scientists from the African Diaspora?

Answered: 9 Skipped: 10

#	RESPONSES	DATE
1	Reach out to all heads of department and schools from mathematics and engineering. Also, some people from industry might be interested in joining the ADJOINT community. Not sure if ADJOINT can work with people out of the USA, if yes reach out to some institutions in Africa .	7/11/2021 8:37 PM
2	More programs like this.	7/9/2021 10:49 AM
3	There's so few of us, I believe having a committee to find each and every one of us amongst universities and the industry!	7/6/2021 10:42 AM
4	N/a	7/5/2021 2:16 PM
5	Promote the computing infrastructure for collaboration online. A subscription to CoCalc - Collaborative Calculation and Data Science as <a href="https://cocalc.com/">https://cocalc.com/</a> would solve all matter relating to programming/computing infrastructure as well latex editing	7/4/2021 7:02 PM
6	Regular and consistent gatherings, some structured, some social to allow us to get to know each other and make connections.	7/4/2021 12:19 PM
7	more conferences like the workshop on mathematics and racial justice	7/2/2021 4:44 PM
8	a reunion at MSRI, possibly an ADJOINT mini-conference?	7/2/2021 4:28 PM
9	Create an informal peer-group, where there are matches b/w 2 ppl at similar levels to find communi. ty	7/2/2021 2:59 PM

## Q36 What recommendations would you have for publicizing the ADJOINT program?

Answered: 9 Skipped: 10

#	RESPONSES	DATE
1	Social media, spreading word to former participants and research leaders to encourage others to participate, conference presentations and publications about the design, implementation, and findings from the program.	7/9/2021 10:49 AM
2	Advertising in AMS, MAA, NAM publications, and social media, mostly Twitter	7/6/2021 10:42 AM
3	N/a	7/5/2021 2:16 PM
4	Conferences: SMB, SIAM, JMM	7/5/2021 4:12 AM
5	Advertising on YouTube Math video recording of seminar talks.	7/4/2021 7:02 PM
6	Using all the major mathematical science organizations' publications/newsletters.	7/4/2021 12:19 PM
7	Send flyers/emails to the chairs of math departments at HBCUs	7/2/2021 4:44 PM
8	more social media advertising?	7/2/2021 4:28 PM
9	Send out to the URM subgroups of professional organizations (i.e. MIF for INFORMS).	7/2/2021 2:59 PM



## Q37 What suggestions would you have for future MSRI programs?

Answered: 4 Skipped: 15

#	RESPONSES	DATE
1	A program in stochastic modeling will be beneficial in many research areas because many situations in real life include uncertainties that are sometimes best described by a stochastic model.	7/11/2021 8:37 PM
2	Opportunities for the research leaders to get to meet with each other throughout the two weeks.	7/9/2021 10:49 AM
3	I would like to see more interactions between ADJOINT and MSRI summer undergraduate program.	7/5/2021 2:16 PM
4	Incorporate some of the positive aspects of meeting via Zoom	7/4/2021 7:02 PM

### Q38 If you have additional comments about ADJOINT and/or MSRI, please provide them here:

Answered: 4 Skipped: 15

#	RESPONSES	DATE
1	The only request is for the professional development sessions to be held at the end of the research day (they tended to fall in the middle of the day and we would often lose the momentum we had built up in the morning).	7/9/2021 6:40 PM
2	I loved it; hopefully we can all be in person next summer for a reunion!	7/6/2021 10:42 AM
3	Thank you for bringing together an amazingly diverse group of mathematicians to engage in a transformative research experience.	7/5/2021 2:16 PM
4	Thank you!	7/2/2021 2:31 PM