Urban Resilience to Extremes Sustainability Research Network (UREx SRN)

Education and Diversity Working Group (EDWG)

2015 – 2022 Evaluation Summative Report

University Office of Evaluation and Educational Effectiveness

Arizona State University

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Contents

OVERVIEW

ROADMAP FOR THE SUMMATIVE REPORT

This report consists of two sections: (1) a High-level Evaluation Summary of the extent to which project goals and objectives were met and (2) Highlighted Key Findings which provide some additional information about how conclusions were drawn regarding success of the UREx SRN. This report focuses primarily on outcomes for and feedback from graduate student and postdoctoral scholar associates and fellows both during and after their involvement in the UREx SRN. However, it also includes findings and insights regarding the summer Research Experience for Undergraduates (REU) programs, faculty members' perspectives, and data collected at or for special events.

Because of the extensive amount of data collected and analyzed, documents reviewed, and events observed over the course of seven years, not all important findings could be included in this summative report. Thus, the key findings section focuses primarily on quantitative findings that more easily lend to comparison across years, while key qualitative findings are noted in the high-level evaluation summary. For additional analysis and insight, readers are referred to past evaluation reports.

APPROACH

When evaluating the impact of participation in the UREx SRN on graduate student and postdoctoral scholar associates/fellows[1], two approaches may include the following:

1. Evaluate the knowledge, skills, confidence, etc. that UREx fellows have after participating in the network. Following this approach, evaluators focus on whether fellows have achieved, on average, a certain level of understanding and competency in regards to target knowledge and skills, respectively, regardless of the level of fellows' understanding and competency when they began.
2. Evaluate the gains in knowledge, skills, confidence, etc. that participants experience as they participate in the network. Following this approach, evaluators focus on the extent to which fellows experienced gains in their understanding and competency.

Both approaches have limitations but provide useful information, helping evaluators understand the impact of participation in the network. This report uses the first approach to highlight fellows' understanding and competency as reported annually by fellows in the spring follow-up surveys in Years 2 through 5. Fellows included in the analyses had been participating in the network for some time before completing the survey (i.e., at least one semester or over the summer). The second approach (evaluating gains in skills and knowledge) will be reported on in the forthcoming Cross-cohort Evaluation Report, which will examine gains for those who participated earlier in the launch of the network compared to those who joined about two years later.

[1] Hereafter, the term fellows is used for both associates and fellows.

PAST EVALUATION REPORTS AND DATA SOURCES

Findings and conclusions presented in this report are based on the review of the past evaluation reports and related sources of data, including surveys, interviews, and focus groups:

- Annual Evaluation Reports
  - 2016 – 2017
  - 2017 – 2018
  - 2018 – 2019
  - 2019 – 2020
- Cohort Baseline Reports
  - 2017 – 2019
  - 2018 – 2020
- Alumni Reports
  - Alumni Survey Report (2020)
  - Alumni Survey Report (2021)
- Early Career Symposium Report
  - Early Career Symposium Report (2021)
- REU Briefs
  - REU Program Evaluation Brief (2018)
  - REU Program Evaluation Brief (2019)
  - REU Program Evaluation Brief (2020)
  - REU Mentor Interview Brief (2019)
  - REU Mentor Interview Brief (2020)
- Mentor Report
  - Mentor Evaluation Report (2018-2019)
- Other Project Briefs
  - COMPASS Training Brief (2017)
  - Science Outside the Lab Brief (2018)
  - RULA IRES Summary Brief (2019)
  - EDWG Workshop Debrief (2018)
  - INTERN Data brief (2019)

Note that quotes included in this report may have been lightly edited for clarity and to correct typos.

EVALUATION SUMMARY: 2015 – 2022

OVERVIEW

The University Office of Evaluation and Educational Effectiveness (UOEEE) at Arizona State University provided external evaluation services from 2015 to 2022 for the Urban Resilience to Extremes Sustainability Research Network (UREx SRN), specifically related to the activities of the Education & Diversity Working Group (EDWG). The UOEEE collected evaluation data through surveys, interviews, focus groups, observation, and document review throughout the grant funding period. As reviewed below, the analysis of the data and resulting findings clearly indicate that the UREx SRN has successfully met EDWG goals and objectives.

This document is intended to provide a high-level summary of key evaluation findings and the extent to which objectives were achieved for each of the three EDWG goals and related objectives. In addition, the final evaluation data collection effort consisted of surveying UREx SRN alumni to understand their perceptions, as new professionals, of the ongoing impact of their participation in the network in relation to (1) the stated goals of the network and (2) the impact on their professional and career development and career trajectories. A summary of findings is provided following the evaluation summary.

PROGRAM OVERVIEW

The Urban Resilience to Extremes Sustainability Research Network (UREx SRN) has created a network of urban systems scholars from diverse disciplines to work in collaboration with city practitioners (e.g., city officials, park managers, NGOs) to address the challenges of urbanization and climate change. Specifically, the network focuses on producing knowledge that can prevent, mitigate, and solve crises related to extreme weather in cities. The network functions as a web of working groups and task forces, each with specific research and/or education foci. The Education and Diversity Working Group (EDWG) primarily focuses on (1) educational elements of the network and (2) efforts to bolster diverse participation and inclusion in network activities. As such, the goals of the EDWG are to:

I. Increase the capacity of the next generation of scientists to conduct and communicate interdisciplinary scientific research with complex datasets

II. Advance co-learning and collaboration among urban decision makers, scientists, and students across the project cities on urban resilience to climate change

III. Increase participation of diverse groups of people in the knowledge-implementation cycle

Please see Appendix A: EDWG Logic Model for a full review of the EDWG logic model. This report is intended to encompass all seven years (2015 – 2022) of evaluation data collected from the EDWG and the greater UREx SRN network. As some changes were made to the logic model over time, the most recent model is provided and used to organize findings.

Throughout the report, graduate fellows and associates are referred to as graduate fellows.

PRIMARY EVALUATION QUESTIONS

The three EDWG goals are used to guide the evaluation questions. The following details the EDWG evaluation questions and their relationship to the identified objectives.

Evaluation Question 1: How successful has the network been in increasing the capacity of the next generation of scientists to conduct and communicate interdisciplinary scientific research within complex datasets?

- Improving graduate students' and postdocs' interdisciplinary research and communication skills
- Increasing graduate students' and postdocs' computational science and data analysis skills
- Enhancing graduate students' leadership opportunities and mentoring skills
- Enhancing postdocs' skills for leading research initiatives, mentoring, and conducting research in an international context
- Enhancing graduate student learning on resilient urban infrastructure
- Exposing undergraduate students from diverse backgrounds and different institutions to research

Evaluation Question 2: How successful has the network been in advancing co-learning and collaboration among urban decision-makers, scientists, and students across the project cities on urban resilience to climate change?

- Creating a collaborative learning environment for the co-production of knowledge
- Increasing graduate students' and postdocs' professional networks for scientific collaboration
- Enhancing all participants' cross-cultural and interdisciplinary communication skills and awareness of diversity issues

Evaluation Question 3: How successful has the network been in increasing participation of diverse groups of people in the knowledge-implementation cycle?

- Recruiting students from underrepresented groups
- Increasing interaction between U.S. and Latin American students and postdocs
- Reaching out to K-12 educators and students
- Training all participants in cross-cultural communication and cultural competency
- Including local practitioners (city officials, park managers, NGOs) in knowledge development and utilization

EVALUATION SUMMARY

Evaluation findings from all seven years are summarized in the tables below. Data were collected for only a *few relevant objectives during the no-cost extension*. The extent each objective was met was rated as follows:

● = Objective met

◕ = Objective mostly met; some improvement possible

◑ = Objective met; moderate improvement needed

◔ = Objective somewhat met; substantial improvement possible

○ = Objective not met

Table 1. *Summary of Findings Related to Evaluation Question 1: How Successful Has the Network Been in Increasing the Capacity of the Next Generation of Scientists to Conduct & Communicate Interdisciplinary Scientific Research Within Complex Datasets?*

Objectives	Year 2 '16 – '17	Year 3 '17 – '18	Year 4 '18 – '19	Year 5 '19 – '20	NCE '20 – '22	Key Findings
Improving graduate students' and postdocs' interdisciplinary research and communication skills	Research Skills  Comm. Skills  Confidence 	Research Skills  Comm. Skills  Confidence  Collab. Exper. 	Research Skills  Comm. Skills  Confidence  Collab. Exper. 	Research Skills  Comm. Skills  Confidence  Collab. Exper. 	---	In annual surveys, fellows reported **proficiency**, on average, in: • Research skills (e.g., synthesizing results from a variety of data analyses, identifying contributions of fields outside your expertise in solving a problem). On average, graduate fellows reported somewhat lower ratings using knowledge systems analysis methods and computational science methods (e.g., agent-based modeling). Fellows also reported **proficiency**, on average, in: • Communication skills (e.g., communicating technical information within and outside their field, presenting research to scientists and non-scientists). In an event evaluation survey, fellows who participated in the COMPASS Science Communication Training during Year 4 reported, on average, **increased**: • Comfort in effectively communicating about science with those who are unfamiliar with it. • Likelihood of seeking opportunities to share their science. In annual surveys, fellows reported **confidence**, on average, in: • Research & communication skills (e.g., qualitative research, confidence in interdisciplinary research, communication with community practitioners, science communication). Fellows also reported some **experience** in: • **Collaboration** (e.g., involving partners from their own and other disciplines, outside of academia, and other countries). Fellows who participated in the 2018 Science Outside the Lab experience reported **gains**, on average, in: • Understanding how federal policy decisions are made, and the goals and implications of publicly-funded science. • Knowledge of potential career in science policy. • Confidence in seeking federal funding for research.

Objectives	Year 2 '16 – '17	Year 3 '17 – '18	Year 4 '18 – '19	Year 5 '19 – '20	NCE '20 – '22	Key Findings
Increasing graduate students' and postdocs' computational science and data analysis skills					---	In annual surveys, fellows reported **confidence**, on average, in: • Computational science, data analysis, and data visualization. However, graduate students reported somewhat lower levels of confidence in Years 2 and 4 in terms of their skills for computational science and data visualization.
Enhancing graduate students' leadership opportunities and mentoring skills	---				---	In annual surveys, fellows reported: • Having opportunities to mentor others. • Some confidence, on average, in providing mentoring. • Proficiency, on average, in mentoring skills (e.g., establishing a trusting relationship, providing constructive feedback, working with mentees to set clear expectations). • Having opportunities to lead (e.g., oversight of working groups and task force operations). • Confidence in their leadership skills. In interviews, fellows who mentored REUs reported: • Increased confidence as a mentor and communication skills. In focus groups during year 4, fellows noted: • Different types of mentoring experiences existed, including both formal (i.e., mentorship by a primary UREx SRN faculty advisor) as well as informal, "horizontal" experiences (i.e., mentorship by other members of the UREx SRN). • Mentoring experiences varied across institution in terms of having formal mentoring plans. • A need for training on project management skills to support participation as leaders in working groups and task forces. In response, UREx SRN continued efforts began in the spring of 2018 to refine & enhance mentoring practices within the network.[2]

[2] Efforts included building a set of lessons learned and guiding documents for mentoring opportunities. Through review of evaluative feedback, consultation with leadership, and network feedback, the EDWG coordinator drafted, iterated, and refined a set of mentoring guidelines, along with advisor and mentee planning checklists to support "multi-modal" mentoring practices across the network and beyond.

Objectives	Year 2 '16 – '17	Year 3 '17 – '18	Year 4 '18 – '19	Year 5 '19 – '20	NCE '20 – '22	Key Findings
Enhancing postdocs' skills for leading research initiatives, mentoring, and conducting research in an international context					---	In annual surveys, fellows reported: • Co-creating research publications, posters, presentations, and blogs). • Having opportunities to mentor others. • Confidence, on average, in providing mentoring. • Having opportunities to lead (e.g., oversight of working groups and task force operations; all or nearly all postdocs and one-third of graduate students reported participating in leadership opportunities). • Confidence, on average, in their leadership skills or satisfaction with leadership training received. In Year 2, 42.9% or three postdocs indicated they were not satisfied with their experience as a mentor. Later reports of regarding the mentoring experience were more positive. Fellows who mentored REUs reported: • Proficiency, on average, in mentoring skills (e.g., actively listening, providing constructive feedback, setting clear expectations) Please see the notes in the previous row regarding focus group findings about mentoring and UREx SRN response that also apply to postdoc fellows' experiences in mentoring.
Enhancing graduate student learning on resilient urban infrastructure					---	In annual surveys, fellows who participated in the Urban Resilience Reading Group (URRG): • Identified the URRG as one of the top components of the UREx SRN experience that led them to gain knowledge or skills (Years 2 and 3). • Increased their understanding of urban resilient infrastructure across disciplines "moderately," "quite a bit," or "very much so" (Years 4 and 5).

Objectives	Year 2 '16 – '17	Year 3 '17 – '18	Year 4 '18 – '19	Year 5 '19 – '20	NCE '20 – '22	Key Findings
Exposing undergraduate students from diverse backgrounds and different institutions to research	REU Summer 2016 ●	REU Summer 2017 ●	REU Summer 2018 ●	REU Summer 2019 ●	REU Summer 2020 ●	In annual surveys regarding programs hosted between 2017 and 2020, REUs generally reported "moderate," "good," or "great" gains, in: • Research skills and confidence • Collaboration skills and confidence • Understanding of the research process • Comfort discussing scientific concepts with others REUs generally agreed that they benefited from participation in the REU program in other ways: • Confirmation of their education plans and interest in a field of study, as well as clarification of field of study to pursue. • Preparation for advanced coursework. In addition to the findings noted above, Summer 2016 REU program evaluation data were collected by UREx SRN staff. The majority of REU undergraduate students reported their summer experience was very valuable (83.3%) or somewhat valuable (16.7%). All respondents reported the REU experience was "valuable" or "somewhat valuable" in regards to shaping their future thinking about graduate school and post-graduate careers. REUs participated at different institutions. For commentary on the background characteristics of REU participants, please see the table corresponding to Goal 3.

Table 2. *Summary of Findings Related to Evaluation Question 2: How Successful Has the Network Been in Advancing Co-Learning and Collaboration Among Urban Decision-Makers, Scientists, and Students Across the Project Cities on Urban Resilience to Climate Change?*

Objectives	Year 2 '16 – '17	Year 3 '17 – '18	Year 4 '18 – '19	Year 5 '19 – '20	NCE '20 – '22	Key Findings
Creating a collaborative learning environment for the co-production of knowledge	●	◕	●	●	---	In the annual survey for Year 2, fellows reported: • High satisfaction, on average, with the outcomes produced via working group or task force collaborative efforts or with their working group embeddedness. In focus groups during Year 3, fellows reported: • A great deal of co-creation was taking place within the UREx graduate student community, and less co-creation was occurring between students and researchers. • Participation in the URRG was often the impetus to begin collaborations between students. • Feeling the network's working groups were regularly siloed in their efforts and communication. In annual surveys in Years 4 and 5, the majority of fellows reported: • Participating in at least one working group or task force where they actively engaged in various network-related programming and urban resilience research. The most common were City Comparisons Working Group (CCWG) and the Scenarios Working Group (SWG). • Participation in the working group or task force meaningfully contributed to the achievement of its goals "moderately," "quite a bit," or "very much so." A fellow who took advantage of one of the internship opportunities offered in Year 4 reported in an interview: • Increased awareness and understanding of the challenges and opportunities involved in managing urban infrastructure. • Increased awareness and understanding of how city planning and governance processes work.

Objectives	Year 2 '16 – '17	Year 3 '17 – '18	Year 4 '18 – '19	Year 5 '19 – '20	NCE '20 – '22	Key Findings
Increasing graduate students' and postdocs' professional networks for scientific collaboration						Between approximately one-half and nearly all fellows reported: • Authoring or co-authoring UREx SRN-related productions (e.g., papers in preparation, journal publications, conference papers, podcasts) each year with UREx SRN collaborators or as a result of the training they received as a fellow. Fewer did so in Year 2 as the network was developing. On average, graduate fellows presented at ~1 conference at their institution and one conference outside of their institution, and postdoc fellows presented at ~1 conference at their institution and ~3 conferences outside of their institution per year, except for Year 2, in which participation was lower. Specific UREx SRN events facilitated networking and collaboration, such as: • All Hands Meetings that provided opportunities for fellows to network. Virtual All Hands Meetings were held in 2020 and 2021 on account of the COVID-19 pandemic. • The Early Career Symposium (ECS)[3] provided an opportunity to facilitate connections and form a network among early career professionals in positions related to green infrastructure who would not otherwise connect. Further, all eight graduate student and postdoc fellows who were part of the organizing team that planned and executed the ECS reported in interviews that they improved the following outcomes as a result of their leadership/participation: • Increased organizational and planning skills. • Opportunities to form meaningful connections and network through the planning process and the event itself.

[3] The Early Career Symposium, affiliated with the UREx SRN, consisted of a series of four sessions of the symposium in 2020. The purpose of the Early Career Symposium was to facilitate connections and form a network among early career professionals in positions related to green infrastructure who would not otherwise connect. Attendees at the events included early-career individuals, such as graduate students, postdoctoral scholars, and community professionals. Approximately 35 – 45 participants attended the event virtually from around the world.

Objectives	Year 2 '16 – '17	Year 3 '17 – '18	Year 4 '18 – '19	Year 5 '19 – '20	NCE '20 – '22	Key Findings
Enhancing all participants' cross-cultural and interdisciplinary communication skills and awareness of diversity issues					---	In annual surveys, fellows reported **proficiency**, on average, in: • Cross-cultural and interdisciplinary collaboration skills (e.g., identifying diversity issues in research, negotiating cross-cultural differences to accomplish common goals, leading the development of an interdisciplinary project). Graduate student fellows reported somewhat lower ratings related to working with community practitioners (city officials, park managers, NGOs) compared to their self-ratings of other interdisciplinary skills. In Year 4, during the focus groups with graduate student and postdoc fellows, the fellows shared their perceptions of how well the network was helping them think about diversity and inclusion issues within their work. Perceptions varied among the focus group members. On the one hand, several fellows noted that they had not been asked to consider issues of diversity in research until they participated in the UREx SRN, which they found beneficial and showed the intentional effort of the network to incorporate cultural competency. Similarly, graduate students were pleased that planning around the All Hands Meeting centered on equity and that organizers were mindful of diversity and inclusion. On the other hand, several fellows indicated that, although the network had made a concerted effort to have an open dialogue about issues of diversity and inclusion, think critically about these issues in the research being done, and be intentional in its efforts to be inclusive, these discussions did not always translate into the actions and activities of the SRN. Given this, a focus of Years 4 and 5 was to increase fellows' cross-cultural communication skills and awareness of diversity issues. For example, specific UREx SRN activities were designed to address these skills & diversity & inclusion, such as: • A breakout session held during the Day 1 plenary for the virtual 2020 All Hands Meeting. The session was specifically planned to encourage conversation around "equity and vulnerability in the face of a pandemic" and to consider diversity issues during the health crisis.

Table 3. *Summary of Findings Related to Evaluation Question 3: How Successful Has the Network Been in Increasing Participation of Diverse Groups of People in the Knowledge-Implementation Cycle?*

Objectives	Year 2 '16 – '17	Year 3 '17 – '18	Year 4 '18 – '19	Year 5 '19 – '20	NCE '20 – '22	Key Findings
Recruiting students from underrepresented groups	●	●	●	●	●	• The UREx SRN continued to make intentional efforts to increase diverse groups of people in the knowledge-implementation cycle through international research opportunities and including local practitioners in knowledge development and utilization. • Specific demographics are not reported to respect confidentiality, but among those recruited as graduate student and postdoc fellows or as REU participants were individuals from groups typically underrepresented in STEM (i.e., women and other individuals identifying as members of racial/ethnic groups NSF defines as underrepresented, "Blacks or African Americans, Hispanics or Latinos, American Indians or Alaskan Natives, Native Hawaiians and other Pacific Islanders") as well as first-generation college students.
Increasing interaction between U.S. and Latin American students and postdocs	◑	◑	●	●	---	In annual surveys for Years 4 and 5, fellows reported **agreement**, on average, that: • The UREx SRN celebrates diversity and inclusion within the network. • The UREx SRN encourages collaboration between US-based and Latin American-based fellows. • The Latinx perspective is an intentional focus of the UREx SRN. Fellows who participated in the Resilient Urban Latin America (RULA) International Research Experience for Students (IRES) opportunity in Year 5 reported in interviews that the experience: • Increased their awareness about cross-cultural considerations in research Efforts in Years 2 and 3 focused on recruitment and expanding the network beyond the United States, and were still in progress.

Objectives	Year 2 '16 – '17	Year 3 '17 – '18	Year 4 '18 – '19	Year 5 '19 – '20	NCE '20 – '22	Key Findings
Reaching out to K-12 educators and students	---	---	---	---	---	In Year 4, outside of the Education and Diversity Working Group, K-12 activities were facilitated at Syracuse University and Florida International University. Activities were not ultimately included in the UOEEE evaluation efforts.
Training all participants in cross-cultural communication and cultural competency	Limited Data Collected				---	In annual surveys, fellows reported high levels of **proficiency**, on average, in: • Cross-cultural communication skills. Specific UREx SRN activities helped enhance cross-cultural skills, including: • The opening plenary for the 2019 All Hands Meeting that covered community engagement in urban resilience work and, more specifically, the role that historical and systemic racism play in policy inequities and resource allocation. To keep the momentum of dialogue and efforts around diversity and inclusion at the 2019 All Hands Meeting in Baltimore, the network put out a call for the development of a Justice, Equity, Diversity, and Inclusion (JEDI) task force. Although some fellows expressed interest in attending and helping facilitate the task force, there was very limited capacity for involvement network-wide due to the fact that fellows were already engaged in numerous working groups, task forces, and research projects; therefore, this task force did not come to fruition.

Objectives	Year 2 '16 – '17	Year 3 '17 – '18	Year 4 '18 – '19	Year 5 '19 – '20	NCE '20 – '22	Key Findings
Including local practitioners (city officials, park managers, NGOs) in knowledge development and utilization	●	◑	●	●	---	In Year 2, the first UREx SRN Scenarios Workshop, designed to engage practitioners, took place in San Juan, Puerto Rico. Forty-five community practitioners met with the UREx SRN San Juan City Team for the one-day workshop In Year 3, fellows noted some concerns during focus groups regarding feeling disconnected from contact with the practitioners and communities of the network. They reported a strong desire for greater access to the practitioners. In Year 4, there was a specific shift in effort to increase the involvement and integration of practitioners into the SRN and the knowledge implementation cycle. This effort was partially evidenced in the increased number of community practitioners attending and presenting at the 2019 All Hands Meeting. In Year 5, nearly all fellows who participated in the SWG reported that their participation resulted in the meaningful co-production of knowledge "moderately," "quite a bit," or "very much so," underscoring the impact of the increased efforts that began in Year 4.

ALUMNI SURVEY FINDINGS

The perspective of UREx SRN alumni is valuable in understanding the success and impact of the network.

SUMMARY OF 2020 SURVEY FINDINGS

Some evaluation findings were directly related to the goals of the Education & Diversity Working Group (EDWG):

1. Increase the capacity of the next generation of scientists to conduct and communicate interdisciplinary scientific research with complex datasets.
    a. All graduate and postdoctoral alumni reported a positive impact of their participation in the UREx SRN on their understanding of extreme weather events, resilience, and applying a SETS framework.
2. Advance co-learning and collaboration among urban decision-makers, scientists, and students across the project cities on urban resilience to climate change.
    a. Graduate and postdoctoral alumni were generally heavily involved in interdisciplinary collaboration and direct collaboration with practitioners in their current work. Fewer, but still a majority, reported that their work involved international collaboration.
3. Increase the participation of diverse groups of people in the knowledge-implementation cycle.
    a. All graduate alumni and nearly all postdoctoral alumni also reported a positive impact on their understanding of diversity and equity issues in research. Two graduate student alumni raised concerns about the need for more attention to these issues and for steps to be taken to implement graduate students' recommendations.

Additional findings were related to the impact of UREx SRN participation on the professional and career development and career trajectories of UREx alumni.

- Graduate and postdoctoral alumni generally reported that their participation in the UREx SRN benefitted their career and professional development. Postdoctoral alumni generally reported greater benefits than graduate alumni. Further, *some* graduate alumni raised concerns regarding a perceived lack of guidance on developing job search skills, a perceived lack of opportunity for some graduate students to take on leadership roles, and poor alignment between the graduate students' degree program and the UREx SRN.
- Overall, respondents generally identified positive ways in which the UREx SRN impacted their career trajectory. However, one graduate alumnus reported no impact. Further, one graduate and one postdoctoral alumnus reported that their participation had a negative impact on their career trajectory.
- Both graduate and postdoctoral alumni provided recommendations for how the UREx SRN can better support current graduate students and postdoctoral fellows/associates in finding employment and/or succeeding in their employment. In addition to other recommendations, both alumni groups recommended providing more career guidance.

Alumni also identified the most impactful part of their UREx SRN experience. A majority of both alumni groups identified the networking opportunities provided by the UREx SRN as most impactful.

SUMMARY OF 2021 SURVEY FINDINGS

Some evaluation findings were directly related to the goals of the Education & Diversity Working Group (EDWG):

1. Increase the capacity of the next generation of scientists to conduct and communicate interdisciplinary scientific research with complex datasets.
    - Most graduate student alumni and all postdoctoral alumni reported an impact of participation in the UREx SRN on their understanding of extreme events in cities, resilience, and applying a SETS (Social, Ecological, and Technological Infrastructure Systems) framework. One-half or more reported a substantial impact. Further, graduate alumni who were more involved in the UREx SRN generally reported a greater impact of their participation in the network on their understanding.
2. Advance co-learning and collaboration among urban decision-makers, scientists, and students across the project cities on urban resilience to climate change.
    - Most graduate alumni are involved in interdisciplinary collaboration, direct collaboration with practitioners, and international collaboration in their current job or degree program. Further, although no causal claims can be made, greater involvement in the UREx SRN was associated with more extensive collaboration in the current job or degree program of UREx graduate alumni. All postdoctoral alumni were involved in interdisciplinary and direct collaboration with practitioners, while most were involved in international collaboration.
3. Increase the participation of diverse groups of people in the knowledge-implementation cycle.
    - Nearly all graduate alumni and all postdoctoral alumni reported a positive impact of their UREx SRN experience on their understanding of diversity and equity issues in research.

Additional findings were related to the impact of UREx SRN participation on the professional and career development and career trajectories of UREx alumni.

- Most graduate alumni and all postdoctoral alumni reported a positive impact of participation in the UREx SRN on their professional and career development, with one-half reporting substantial impact for most areas. Although no causal claims can be made regarding the impact of greater participation in the UREx SRN on professional and career development, graduate alumni who participated more in the UREx SRN generally reported a more significant impact on their professional and career development, with the possible exception of job searching skills.
- Two-thirds of respondents (66.7%) reported a positive impact, and six (33.3%) reported neither a positive nor a negative impact (or that the impact was yet to be determined). Of those who reported a positive impact, the most common impacts were the expansion of respondents' professional network, the creation of new career opportunities for the respondents, and assistance in identifying preferences for the type of work they will do in their careers.

HIGHLIGHTED KEY FINDINGS

FINDINGS RELATED TO EVALUATION QUESTION 1

- Evaluation Question 1: How successful has the network been in increasing the capacity of the next generation of scientists to conduct & communicate interdisciplinary scientific research within complex datasets?

OBJECTIVE A-1: IMPROVING GRADUATE STUDENTS' AND POSTDOCS' INTERDISCIPLINARY RESEARCH AND COMMUNICATION SKILLS

Communication Skills: Expertise

- On average, fellows rated themselves at approximately a 4.0 or 5.0 on a six-point scale (i.e., 6 = "Expert: you can utilize with a superior level of skill and teach to others"), indicating they had achieved proficiency in communication skills listed below. Average self-ratings were consistent across years.
- In an event evaluation survey, fellows who participated in the COMPASS Science Communication Training during Year 4 reported, on average, high levels of comfort in effectively communicating about science with those who are unfamiliar with it and likelihood of seeking opportunities to share science.

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Table 2. ***Fellows' Self-Rated Communication Skills*** *as Reported in the Annual Graduate Student (G) & Postdoctoral (P) Fellows Follow-up Survey & Compass Training Survey*

Key Indicators	Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey: Mean Scores Out of 6.0						
Explaining the perspectives of different disciplines on a problem	G	3.9	4.4	3.9	4.5	4.2
	P	4.9	5.0	4.6	4.3	4.7
Communicating technical information to individuals within your field	G	4.7	5.0	4.6	5.0	4.8
	P	5.1	5.0	4.7	5.2	5.0
Communicating technical information to individuals in other fields	G	4.0	4.5	4.0	4.5	4.2
	P	4.6	4.9	4.6	4.5	4.6
Presenting research to scientists	G	4.1	4.5	4.4	4.6	4.4
	P	4.9	5.1	5.1	5.2	5.1
Presenting research to non-scientists	G	4.2	4.4	4.4	4.3	4.3
	P	4.5	5.0	4.9	4.2	4.6
Speaking clearly and effectively	G	4.3	4.4	4.4	4.4	4.4
	P	4.4	4.5	5.0	4.5	4.6
n	G	21	22 - 23	25	15	---
	P	10	8	7	6	---
COMPASS Science Communication Training Evaluation Survey: Mean Scores Out of 10.0						
Effectiveness in communicating science with those who are unfamiliar with it	G & P	---	---	7.6	---	---
Comfort in talking about your science with those who are unfamiliar with it	G & P	---	---	7.9	---	---
Likelihood of seeking opportunities to share your science	G & P	---	---	8.1	---	---
n		---	---	15	---	---

Note. Annual GS and PD Fellows Survey respondents self-rated their skills using a scale ranging from 1 (*Beginner: you have no or little experience or basic knowledge*) to 6 (*Expert: you can utilize with a superior level of skill and teach to others*). COMPASS Training Evaluation Survey respondents self-rated their comfort-level using a scale ranging from 1 (*not comfortable*) to 10 (*very comfortable*).

Communication Skills: Competence

- On average, UREx fellows rated their confidence in using science communication skills as between approximately a 4.0 and 5.0 on a six-point scale (i.e., 6 = "Extremely: extremely confident you could be highly successful and could teach others how to be successful"), indicating they had achieved some expertise in science communication.
- Faculty mentors reported that, on average, they observed growth in their mentees in this area "quite a bit" (~4.0 on a 5.0 scale)

Table 3. ***Fellows' Self-Rated Confidence in Science Communication Skills*** *Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey and* ***Faculty Mentors Ratings of Growth in Fellows***

Key Indicators		Respondent	Year 2	Year 3	Year 4	Year 5	Average
GS/PD Fellows Follow-up/Faculty Mentor Surveys: Mean Scores Out of 6.0/5.0							
Science communication		G	4.1	4.5	4.8	4.6	4.5
		P	4.6	4.9	4.6	4.5	4.6
		F: G		3.9			---
	n	G	21	23	24 - 25	15	---
		P	10	8	6 - 7	6	---
		F: G		10			---

Note. Annual GS and PD Fellows Survey respondents reported their confidence in their skills using a scale ranging from 1 (*None: not at all confident you could do this*) to 6 (*Extremely: extremely confident you could be highly successful and could teach others how to be successful*). Faculty mentors rated the growth of their mentees on a scale ranging from 1 (*not at all*) to 5 (*very much*). F:G refer to the rating of graduate mentees by faculty mentors.

Research Skills

- The emphasis of Objective A-1 on research skills overlaps with that of Objective A-2 and Objective B-3. Some findings applying to A-1 are reported under Objective A-2 and Objective B-3.

Experience with Different Types of Collaboration

- On average, UREx fellows reported extensive experience in collaborating within their discipline, outside of their disciplines, and, in later years, involving practitioners and other partners outside of academia (approximately 4.0 or 5.0 on a six-point scale; i.e., 6 = "Expert: you have extensive experience"). UREx graduate student fellows reported less experience with collaborating with partners from other countries than did postdoctoral fellows.

Table 4. ***Fellows' Experience with Different Types of Collaboration*** *as Reported in the Annual Graduate Student (G) & Postdoctoral (P) Fellows Follow-up*

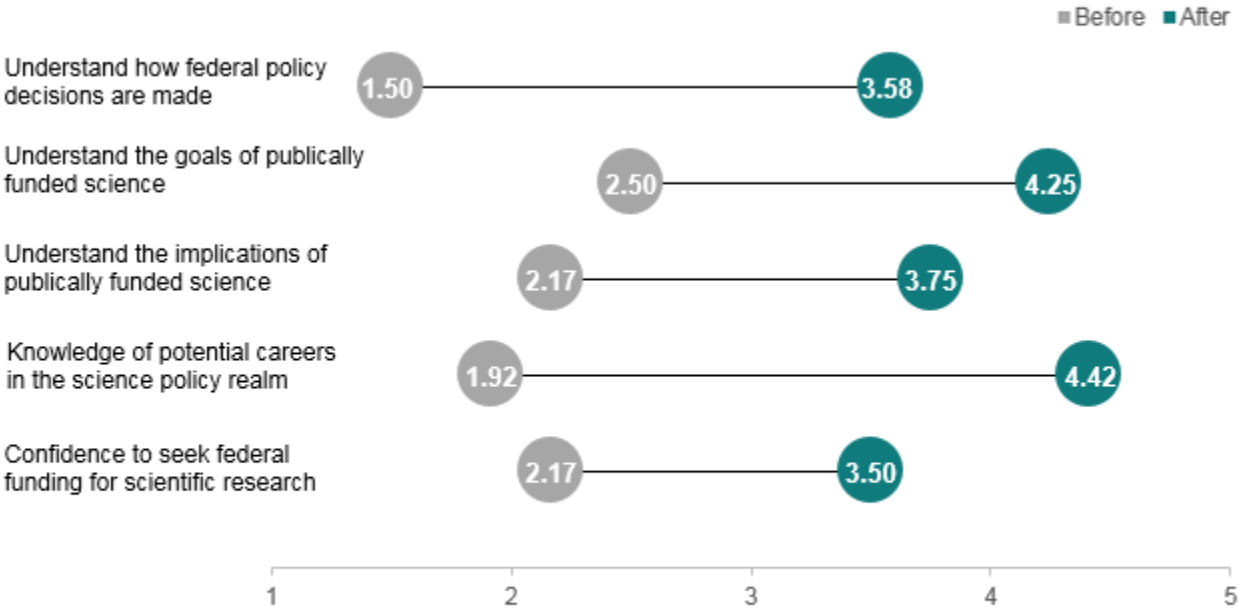
Key Indicators	Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey: Mean Score Out of 6.0						
Involving only partners in academia from your discipline	G	4.2	4.4	4.2	4.2	4.2
	P	4.6	4.6	4.7	4.7	4.7
Involving partners in academia from other disciplines	G	4.0	4.3	4.1	4.4	4.2
	P	4.6	4.9	5.4	5.3	5.1
Involving practitioners or other partners outside academia	G	3.3	4.3	3.8	3.9	3.8
	P	3.6	4.4	4.4	4.0	4.1
Involving partners from other countries	G	3.0	3.8	3.1	3.8	3.4
	P	3.8	4.1	4.3	5.0	4.3
n	G	21	23	24	15	---
	P	10	8	7	6	---

Note. Annual GS and PD Fellows Survey respondents self-rated their skills using a scale ranging from 1 (*Beginner: you have no or little experience*) to 6 (*Expert: you have extensive experience*).

Science Outside the Lab (SOTL)

Twelve fellows who participated in the SOTL experience in July 2018 provided feedback. Participants reported gains in science policy knowledge and understanding from before and after the experience on a 5-point scale ranging from 1 (*low*) to 5 (*high*). Figure 1 provides the mean for each item before and after the experience. Paired samples *t*-tests indicated that each of these mean differences were statistically significant, providing further indication of meaningful growth in science policy knowledge and understanding for Science Outside the Lab participants.

Figure 1. *July 2018 Science Outside the Lab (SOTL) Impact*



Summer 2018 Science Outside the Lab Survey

Additionally, participants provided qualitative feedback about key insights and useable skills gleaned from the SOTL experience. Most notably, seven students (58.3%) indicated gaining 1) knowledge of federal policy and 2) science communication skills. Other common responses involved the importance of networking/collaboration (*n* = 5; 41.7%) and the importance of considering the impact of work on communities (*n* = 5; 41.7%).

OBJECTIVE A-2: INCREASING GRADUATE STUDENTS' AND POSTDOCS' COMPUTATIONAL SCIENCE AND DATA ANALYSIS SKILLS

Computational Science and Data Analysis Skills: Expertise

- On average, UREx fellows rated themselves at approximately a 4.0 on a six-point scale (i.e., 6 = "Expert: you can utilize with a superior level of skill and teach to others"), indicating they had achieved some proficiency in identifying the contributions of fields outside their own expertise in solving a problem, visualizing data, and synthesizing results from a variety of data analyses. On average, graduate fellows reported somewhat lower ratings using knowledge systems analysis methods and computational science methods (e.g., agent-based modeling).
- Average self-ratings were quite consistent across time, indicating UREx fellows consistently achieved a level of proficiency after participating.

Table 5. ***Fellows' Self-Rated Research Skills*** *Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey*

Key Indicators	Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey: Mean Scores Out of 6.0						
Identifying the contributions of fields outside your expertise in solving a problem	G	4.0	4.2	4.0	4.3	4.1
	P	4.7	4.9	4.7	4.5	4.7
Visualizing data	G	3.4	3.8	4.0	4.5	3.9
	P	3.9	4.0	4.1	4.5	4.1
Synthesizing results from a variety of data analyses	G	3.9	3.7	3.7	4.1	3.9
	P	4.8	5.0	5.1	5.3	5.1
Utilizing knowledge-systems analysis methods	G	3.5	3.6	3.2	3.2	3.4
	P	3.2	3.4	4.0	4.0	3.6
Utilizing computational science methods (e.g., Agent-based modeling)	G	3.1	3.0	3.2	3.2	3.1
	P	3.6	3.0	3.4	4.5	3.6
n	G	21	23	25	14 - 15	---
	P	10	6	5	6	---

Note. Annual GS and PD Fellows Survey respondents self-rated their skills using a scale ranging from 1 (*Beginner: you have no or little experience or basic knowledge*) to 6 (*Expert: you can utilize with a superior level of skill and teach to others*).

Computational Science and Data Analysis Skills: Confidence

- On average, fellows rated their confidence as approximately a 4.0 on a six-point scale (i.e., 6 = "Extremely: extremely confident you could be highly successful and could teach others how to be successful"), indicating they had achieved some confidence in data analysis, qualitative research methods, and data visualization. On average, graduate fellows reported less confidence in computational science methods (e.g., agent-based modeling).
- Average self-ratings were quite consistent across time, indicating participants consistently achieved a level of confidence after participating.
- Faculty mentors reported observing between "somewhat" or "quite a bit" of growth in data visualization and computations science and data analysis.

Table 6. ***Fellows' Self-Rated Confidence in Research Skills*** *Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey and* ***Faculty Mentors Ratings of Growth in Fellows***

Key Indicators	Respondent	Year 2	Year 3	Year 4	Year 5	Average
GS/PD Fellows Follow-up/Faculty Mentor Surveys: Mean Scores Out of 6.0/5.0						
Data analysis	G			3.9	4.5	4.2
	P			5.0	5.0	5.0
Qualitative research methods	G			4.0	4.1	4.1
	P			4.6	4.2	4.4
Data visualization	G	3.4	4.0	3.9	4.6	4.0
	P	4.1	4.5	4.3	4.5	4.3
	F: G		3.5			---
Computational science and data analysis/(Y4+) Computational science	G	3.3	3.9	3.3	3.5	3.5
	P	4.3	4.0	3.4	4.3	4.0
	F: G		3.4			---
n	G	21	23	24 - 25	15	---
	P	10	8	6 - 7	6	---
	F: G		10			---

Note. Annual GS and PD Fellows Survey respondents reported their confidence in their skills using a scale ranging from 1 (*None: not at all confident you could do this*) to 6 (*Extremely: extremely confident you could be highly successful and could teach others how to be successful*). Faculty mentors rated the growth of their mentees on a scale ranging from 1 (*not at all*) to 5 (*very much*). F:G refer to the rating of graduate mentees by faculty mentors.

Impact of Scenarios Working Group Participation on Data Analysis and Visualization Skills

- By Year 5, a majority of fellows reported that their participation in the Scenarios Working Group improved their data analysis and visualization skills "moderately," "quite a bit" or "very much so."

Table 7. ***Fellows' Reported Impact of Participation in the Scenarios Working Group on Data Analysis and Visualization Skills*** *Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey*

Key Indicators	Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey						
Extent participation in the scenarios working group improved data analysis and visualization skills: % "moderately," "quite a bit," or "very much so"	G			62.5	60.0	61.3
	P			50.0	75.0	62.5
n	G			8	5	---
	P			4	4	---

Note. Annual GS and PD Fellows Survey respondents reported the extent participation improved their skills using a scale ranging from 1 (*not at all*) to 5 (*very much so*).

Data Management Webinars

To allow information and resource sharing around sustainable data storage and access, the UREx SRN hosted two data management webinars in Year 5. Nineteen participants attended the virtual eRAMs workshop in October 2019. eRAMS is an open-source technology that provides cloud-based software solutions to store and manage data. The goal of the workshop was to inform the network on how to use eRAMS and its capabilities for storing, sharing, and visualizing data. Fifteen participants attended the virtual CHEx Working Group webinar in October 2019 discussing climate scenario information that has been gathered to-date and plans for the coming year.

Objective A-3: Enhancing Graduate Students' Leadership Opportunities and Mentoring Skills and Objective A-4: Enhancing Postdocs' Skills For Leading Research Initiatives, Mentoring, and Conducting Research In An International Context

Quality of Mentoring Received by Graduate Student and Postdoctoral Fellows

- A clear majority of fellows consistently rated the quality of the mentoring they received as "high" or "very high," reported that the mentoring they received met their expectations "mostly" or "completely," and indicated that their mentor recognized them as a colleague "mostly" or "very much." All together, these findings indicate that their mentors were good role models of mentoring.

Table 8. ***Quality of Mentoring Received by Fellows*** *as Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey*

Key Indicators	Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey						
Overall quality of mentoring received: % "high" or "very high"	G		83.3	86.4	100.0	89.9
	P			85.7	83.3	84.5
Extent mentoring received is meeting expectations: % "mostly" or "completely"	G		88.9	86.4	100.0	91.8
	P			85.7	83.3	84.5
Extent that mentor recognizes respondent as a colleague: % "mostly" or "very much"	G		70.6	72.7	50.0	64.4
	P			83.3	100.0	91.7
n	G		17 - 18	22	12	---
	P			6 - 7	4 - 6	---

Note. Annual GS and PD Fellows Survey respondents rated the quality of the mentoring they received using a scale ranging from 1 (v*ery low*) to 5 (*very high*). Respondents also rated the extent the mentoring they received was meeting their expectations using a scale ranging from 1 (*not at all*) to 5 (*completely*), as well as the extent their mentor recognizes them as a colleague using a scale ranging from 1 (*not at all*) to 5 (*very much*).

Quality of Mentoring Provided by Graduate Student and Postdoctoral Fellows

- By years four and five, one-half or more of fellows rated the quality of the mentoring they provided as “high” or “very high,” reported that the mentoring they provided met their expectations “mostly” or “completely,” and indicated that they recognized their mentee as a colleague “mostly” or “very much.”

Table 9. ***Quality of Mentoring Provided by Fellows*** *as Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey*

Key Indicators	Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey						
Overall quality of mentoring provided to mentee: % "high" or "very high"	G			75.0	50.0	62.5
	P		25.0	66.7	50.0	47.2
Extent own mentoring is meeting own expectations: % "mostly" or "completely"	G			75.0	100.0	87.5
	P		50.0	66.7	100.0	72.2
Extent that respondent recognizes mentee as a colleague: % "mostly" or "very much"	G			100.0	50.0	75.0
	P		75.0	100.0	50.0	75.0
n	G			21 - 22	3 - 4	---
	P		4	3	2	---

Note. Annual GS and PD Fellows Survey respondents rated the quality of the mentoring they provided using a scale ranging from 1 (*very low*) to 5 (*very high*). Respondents also rated the extent their mentoring was meeting their expectations using a scale ranging from 1 (*not at all*) to 5 (*completely*), as well as the extent they recognized their mentee as a colleague using a scale ranging from 1 (*not at all*) to 5 (*very much*).

Mentoring Skills Observed in Mentors by Graduate Student and Postdoctoral Fellows

- On average, UREx fellows highly rated the mentoring skills of their mentors, again indicating that their mentors were good role models of mentoring.

Table 10. ***Mentoring Skills Observed in Mentors by Graduate Student and Postdoctoral Fellows*** *as Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey*

Key Indicators	Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey: Mean Score Out of 7.0						
Actively listening during your interactions	G		6.1	6.6	6.5	6.4
	P			6.5	6.5	6.5
Providing you constructive feedback	G		6.1	6.6	6.4	6.4
	P			6.7	5.8	6.3
Establishing a trusting relationship with you	G		6.0	6.4	6.6	6.3
	P			6.3	6.3	6.3
Interacting with your communication style	G		5.9	6.2	6.5	6.2
	P			6.5	6.3	6.4
Coordinating effectively with your co-mentors	G		5.8	6.1	6.3	6.1
	P			6.0	6.0	6.0
Working with you to set clear expectations of the mentoring relationship	G		5.9	5.9	6.1	6.0
	P			6.5	5.8	6.2
Employing strategies to improve communication with you	G		5.8	5.9	6.1	5.9
	P			6.2	6.2	6.2
n	G		16 - 17	21 - 22	12	---
	P			6 - 7	6	---

Note. Annual GS and PD Fellows Survey respondents rated the mentoring skills they observed in their mentor using a scale ranging from 1 (*not at all skilled*) to 7 (*extremely skilled*).

Mentoring Skills Observed in Self by Graduate Student and Postdoctoral Fellows

- On average, UREx fellows highly rated the mentoring skills of their mentors. There were some lower ratings by postdocs, but because only a few postdoctoral fellows responded in general, and even fewer had been mentors, the lower ratings may be primarily a reflection of the experience of one mentor.

Table 11. ***Mentoring Skills Observed in Self by Graduate Student and Postdoctoral Fellows*** *as Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey*

Key Indicators	Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey: Mean Score Out of 7.0						
Establishing a trusting relationship	G			6.5	6.0	6.3
	P		6.3	5.7	4.5	5.5
Coordinating effectively with your mentees' co-mentors	G			6.3	6.3	6.3
	P		5.7	5.3		5.5
Actively listening during your interactions with mentees	G			6.0	6.0	6.0
	P		6.3	6.0	6.0	6.1
Providing you constructive feedback	G			6.3	5.8	6.0
	P		6.3	5.7	5.0	5.6
Interacting with your mentees' communication style	G			6.5	5.3	5.9
	P		6.5	5.3	3.5	5.1
Employing strategies to improve communication with your mentees	G			6.3	5.3	5.8
	P		6.0	5.3	5.0	5.4
Working with mentees to set clear expectations of the mentoring relationship	G			5.7	5.0	5.3
	P		5.3	5.0	6.0	5.4
n	G			20 - 22	4	---
	P		3 - 4	3	2	---

Note. Annual GS and PD Fellows Survey respondents rated the mentoring skills they observed in their own mentoring using a scale ranging from 1 (*not at all skilled*) to 7 (*extremely skilled*).

Fellow's Leadership and Mentoring Skills

- On average, UREx fellows highly rated their confidence for leadership and mentoring junior scholars.
- Faculty mentors reported that graduate students experienced, on average, between "somewhat" and "quite a bit" of growth in mentoring junior scholars, but reported "quite a bit" of growth in mentee's leadership skills.

Table 12. ***Fellows' Self-Rated Confidence in Leadership and Mentoring Skills*** *as Reported in the Annual Graduate Student (G) & Postdoctoral (P) Fellows Follow-up Survey and* ***Faculty Mentors Ratings of Growth in Fellows***

Key Indicators	Respondent	Year 2	Year 3	Year 4	Year 5	Average
GS/PD Fellows Follow-up/Faculty Mentor Surveys: Mean Scores Out of 6.0/5.0						
Leadership	G	3.9	4.3	4.4	4.5	4.3
	P	4.2	4.6	4.6	4.7	4.5
	F: G		4.1			---
Mentoring junior scholars	G	3.5	4.0	3.8	3.8	3.8
	P	4.7	5.1	5.0	4.8	4.9
	F: G		3.4			---
n	G	21	23	25	15	---
	P	10	8	7	6	---
	F: G		10			---

Note. Annual GS and PD Fellows Survey respondents reported their confidence in their skills using a scale ranging from 1 (*None: not at all confident you could do this*) to 6 (*Extremely: extremely confident you could be highly successful and could teach others how to be successful*). Faculty mentors rated the growth of their mentees on a scale ranging from 1 (*not at all*) to 5 (*very much*). F:G refer to the rating of graduate mentees by faculty mentors.

Co-creation of Products/Publications with Mentees

- In response to the 2019 Annual Survey:
  - **Four graduate fellows** indicated that they **provided mentoring to six students in the last year**: five undergraduate students and one graduate student. Two graduate mentors provided mentoring to two students, and the other two graduate mentors provided mentoring to one student. **All graduate mentors reported co-creating 1-2 products** (e.g., publications, posters, presentations, blogs) **with mentees in the last year**.
  - **Three postdoc fellows** indicated that they **provided mentoring to graduate students and/or undergraduate students in the last year**. One postdoc is providing mentoring to two junior scholars (one graduate student and one undergraduate student), one postdoc is providing mentoring to three graduate students, and one postdoc is providing mentoring to one graduate student. **All postdoc mentors indicated that they did not co-produce** any publications, presentations, posters, or blogs **with their mentees** in the last year.
- In response to the 2020 Annual Survey:
  - **Three graduate fellows** indicated that they **provided mentoring to eight students in the last year**: two graduate fellows mentored two REU students and one graduate fellow mentored four junior scholars. **All graduate mentors reported co-creating 1-2 products** (e.g., publications, posters, presentations, blogs) **with mentees**.
  - **Two postdoc fellows** indicated that they **provided mentoring to one REU each in the last year**. **Postdoc mentors reported co-creating 1-2 products** (e.g., publications, posters, presentations, blogs) **with mentees** and one mentor noted that they were "continuing to connect with the student throughout the school year as they apply for jobs, etc."

OBJECTIVE A-5: ENHANCING GRADUATE STUDENT LEARNING ON RESILIENT URBAN INFRASTRUCTURE

- In Years 4 and 5, most fellows reported that participating in the Urban Resilience Reading Group (URRG) increased their understanding of resilient urban infrastructure across disciplines "moderately," "quite a bit," or "very much so."

Table 13. ***Impact of Participation in the Urban Resilience Reading Group (URRG) on Understanding of Resilient Urban Infrastructure Across Disciplines as*** *Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey*

Key Indicators		Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey							
Extent participation in URRG increased understanding of resilient urban infrastructure across disciplines: % "moderately," "quite a bit," or "very much"		G			88.2	90.0	89.1
		P			60.0	100.0	80.0
	n	G			17	10	---
		P			5	2	---

Note. Annual GS and PD Fellows Survey respondents rated the impact of their participation in the URRG using a scale ranging from 1 (*not at all*) to 5 (*very much so*).

OBJECTIVE A-6: EXPOSING UNDERGRADUATE STUDENTS FROM DIVERSE BACKGROUNDS AND DIFFERENT INSTITUTIONS TO RESEARCH

Impact of Participation in the REU Program on Skills, Confidence, and Competencies

- A clear majority of REU program participants reported extensive gains as a result of their involvement in the program.

Table 14. ***REUs' Gains from the Research Experience for Undergraduates (REU) Program*** *as Reported in the REU Survey*

Key Indicators	Respondent	2018	2019	2020	Average
Research Experience for Undergraduates Survey: % Good or Great Gains					
Confidence in my ability to do research	REU	100.0	90.0	100.0	96.7
Confidence in my ability to contribute to science	REU	100.0	90.0	100.0	96.7
Confidence in my ability to do well in future science courses	REU	100.0	70.0	100.0	90.0
Developing patience with the slow pace of research	REU	90.0	100.0	87.5	92.5
Comfort in discussing scientific concepts with others	REU	90.0	100.0	87.5	92.5
Understanding what everyday research work is like	REU	100.0	80.0	87.5	89.2
Comfort in working collaboratively with others	REU	100.0	77.8	87.5	88.4
Ability to work independently	REU	90.0	80.0	87.5	85.8
Confidence in my ability to conduct data analyses	REU		70.0	75.0	72.5
	n	10	9 - 10	8	---

Note. REU Survey respondents rated the impact of their participation in REU program using a scale ranging from 1 (*no gains*) to 5 (*great gains*).

Impact of Participation in the REU Program on REU's Preparation for the Future

- Overall, a clear majority of REU program participants agreed or strongly agreed they received extensive benefits from program participation including resume enhancement, confirmation of their interest in their field of study, clarification on which field of study to pursue, and preparation for advanced coursework or thesis work. REUs reported less agreement regarding benefits related to introducing them into a new field of study or helping them decide to enroll in a STEM masters or Ph.D. program. Given that REUs agreed that the REU program clarified and confirmed their interests, it may be that the REUs had already decided to enroll in a STEM graduate program and/or were already interested in a UREx SRN-related field. If so, fewer REUs would then report benefits related to learning of new fields and deciding to enroll in a STEM graduate program, consistent with the findings in the table below.

Table 15. ***REUs' Gains from the Research Experience for Undergraduates (REU) Program*** *as Reported in the REU Survey*

Key Indicators	Respondent	2018	2019	2020	Average
Research Experience for Undergraduates Survey: % Agree or Strongly Agree					
My resume has been enhanced by my research experience	REU	100.0	100.0	100.0	100.0
Confirmed my interest in my field of study	REU	80.0	100.0	75.0	85.0
Prepared me for advanced coursework or thesis work	REU	90.0	80.0	62.5	77.5
Clarified which field of study I want to pursue	REU	80.0	50.0	87.5	72.5
Introduced me to a new field of study I want to pursue	REU	30.0	50.0	50.0	43.3
Helped me decide to enroll in a STEM Masters program	REU	60.0	60.0	37.5	52.5
Helped me decide to enroll in a STEM PhD program	REU	30.0	50.0	25.0	35.0
	n	10	9 - 10	8	---

Note. REU Survey respondents rated their agreement using a scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*).

In addition to the findings noted above, Summer 2016 REU program evaluation data were collected by UREx SRN staff. The majority of REU undergraduate students reported their summer experience was very valuable (83.3%) or somewhat valuable (16.7%). All respondents reported the REU experience was "valuable" or "somewhat valuable" in regards to shaping their future thinking about graduate school and post-graduate careers.

REUs participated at different institutions. For commentary on the background characteristics of REU participants, please see the corresponding section in the Evaluation Summary.

Sense of Community

- All but one REU (90.0%) in 2019 and all (100.0%) in 2020 indicated "yes" or "kind of" regarding whether there was a sense of community among REUs.

FINDINGS RELATED TO EVALUATION QUESTION 2

- Evaluation Question 2: How successful has the network been in advancing co-learning and collaboration among urban decision-makers, scientists, and students across the project cities on urban resilience to climate change?

OBJECTIVE B-1: CREATING A COLLABORATIVE LEARNING ENVIRONMENT FOR THE CO-PRODUCTION OF KNOWLEDGE

Involvement in Working Groups and/or Task Forces

- A clear majority of graduate student fellows and all postdoctoral fellows were involved in one or more workgroups and one or more taskforces.

Table 16. ***Fellows' Involvement in Workgroups and Taskforces*** *as Reported in the Annual Graduate Student (G) & Postdoctoral (P) Fellows Follow-up*

Key Indicators		Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey							
% Involved in any workgroup		G	100.0		84.0	73.3	85.8
		P	100.0		100.0	100.0	100.0
% Involved in any taskforce		G	57.1		80.0	80.0	72.4
		P	80.0		100.0	100.0	93.3
	n	G	21		25	15	---
		P	10		7	6	---

Extent Participation in Scenarios Workshops Resulted in Meaningful Co-production of Knowledge

- One-half or more of fellows who participated in the scenarios workshop reported that participation led to meaningful co-production of knowledge (see Table 17 below).

Fellows' Perceptions of Contribution to Working Groups'/Task Forces' Goals and Satisfaction with Outcome or Product

- A clear majority of postdoctoral fellows and a majority of graduate student fellows reported that their participation in the working group/task force meaningfully contributed to its goals.
- Fellows reported satisfaction with the outcomes or production of the working group(s)/task force(s) they participated in.

Table 17. ***Fellows' Perceptions of their Contribution to Working Groups'/Task Forces' Goals and Satisfaction with Outcome or Product*** *as Reported in the Annual Graduate Student (G) & Postdoctoral (P) Fellows Follow-up*

Key Indicators	Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey						
Extent participation in the scenarios workshops resulted in the meaningful co-production of knowledge: % "moderately," "quite a bit," or "very much so"	G			62.5	80.0	71.3
	P			50.0	100.0	75.0
Extent respondent's participation in working group/task force has meaningfully contributed to its goals: % "moderately," "quite a bit," or "very much so"	G			72.7	76.9	74.8
	P			85.7	100.0	92.9
Satisfaction with the outcomes or products of working group/task force collaborative efforts: Mean score out of 5.0	G			3.5	3.9	3.7
	P			3.9	4.2	4.0
n	G			17 - 22	5 - 13	---
	P			4 - 7	4 - 6	---

Internship

A fellow who took advantage of one of the internship opportunities offered in Year 4 reported in an interview:

- Increased awareness and understanding of the challenges and opportunities involved in managing urban infrastructure.
- Increased awareness and understanding of how city planning and governance processes work.

Objective B-2: Increasing Graduate Students' and Postdocs' Professional Networks for Scientific Collaboration

Research Products Authored with UREx SRN Collaborators or Using Training Gained through Network

- Most postdoctoral fellows and approximately one-half of graduate students authored or co-authored at least one research product with a UREx SRN collaborator or using training gained through the network.
- The most common products were journal publications and conference papers.

Table 18. ***Authored or Co-authored Products During the Past Year with UREx SRN Collaborators or Using Training*** *as Reported in the Annual Graduate Student (G) & Postdoctoral (P) Fellows Follow-up Survey*

Key Indicators	Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey						
In the past year, authored or co-authored any research products with any UREx SRN collaborators or using training gained through UREx SRN?	G	42.9	50.0	48.0	57.1	49.5
	P	70.0	66.7	57.1	83.3	69.3
Of those authoring/co-authoring any research product, % who had at least one:						
Journal publications	G	44.4	40.0	50.0	50.0	46.1
	P	0.0	50.0	75.0	80.0	51.3
Papers in preparation	G	77.8	80.0	66.7	75.0	74.9
	P	71.4	100.0	100.0	80.0	87.9
Refereed conference papers	G	44.4	40.0	33.3	12.5	32.6
	P	28.6	50.0	50.0	40.0	42.2
Non-refereed conference papers	G	33.3	50.0	33.3	12.5	32.3
	P	42.9	75.0	50.0	20.0	47.0
Non-refereed publications (e.g., blogs, popular magazine, digital magazines)	G			8.3	25.0	16.7
	P			25.0	20.0	22.5
Book chapters	G			0.0	25.0	12.5
	P			25.0	60.0	42.5
Other publications	G	0.0	20.0	25.0	12.5	14.4
	P	42.9	25.0	50.0	20.0	34.5
n	G	21 Any; 9 Specific	24 Any; 10 Specific	25 Any; 12 Specific	14 Any; 8 Specific	---
	P	10 Any; 7 Specific	8 Any; 4 Specific	7 Any; 4 Specific	6 Any; 5 Specific	---

Academic Conference Activities

- Conference attendance and presentation at both internal and external conferences/scientific speaking forums was high in later years, with postdoctoral fellows presenting at conferences more than graduate student fellows.
- Conference attendance and presentations, as well as collaboration on research production reviewed in the previous section, provided numerous opportunities for scientific collaboration across several forums and mediums, and fellows used these opportunities to expand their professional presentation and discussion skills.

Table 19. ***Attendance and Presentations at Academic Conferences*** *as Reported in the Annual Graduate Student (G) & Postdoctoral (P) Fellows Follow-up Survey*

Key Indicators		Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey							
Attendance at conference at respondent institution		G	50.0	52.6	68.0	80.0	62.7
		P	60.0	60.0	50.0	60.0	57.5
Attendance at conference outside of respondent institution		G	50.0	78.9	78.3	64.3	67.9
		P	70.0	100.0	85.7	100.0	88.9
Presented at conference at respondent institution		G	25.0	57.9	47.8	60.0	47.7
		P	40.0	40.0	28.6	60.0	42.2
Presented at conference outside of respondent institution		G	40.0	63.2	56.0	42.9	50.5
		P	30.0	100.0	57.1	100.0	71.8
	n	G	20	19	23 - 25	14 - 15	---
		P	10	5 - 6	6 - 7	5 - 6	---

UREx SRN Events that Increased UREx Fellows' Professional Networks for Scientific Collaboration

Specific UREx SRN events facilitated networking and collaboration, such as:

- All Hands Meetings that provided opportunities for fellows to network. Virtual All Hands Meetings were held in 2020 and 2021 on account of the COVID-19 pandemic.
- The Early Career Symposium (ECS)[4] provided an opportunity to facilitate connections and form a network among early career professionals in positions related to green infrastructure who would not otherwise connect.

Further, all eight graduate student and postdoc fellows who were part of the organizing team that planned and executed the ECS reported in interviews that they improved the following outcomes as a result of their leadership/participation:

- Increased organizational and planning skills.
- Opportunities to form meaningful connections and network through the planning process and the event itself.

Additional information is available in the Early Career Symposium Evaluation Report.

[4] The Early Career Symposium, affiliated with the UREx SRN, consisted of a series of four sessions of the symposium in 2020. The purpose of the Early Career Symposium was to facilitate connections and form a network among early career professionals in positions related to green infrastructure who would not otherwise connect. Attendees at the events included early-career individuals, such as graduate students, postdoctoral scholars, and community professionals. Approximately 35 – 45 participants attended the event virtually from around the world.

Objective B-3: Enhancing All Participants' Cross-Cultural and Interdisciplinary Communication Skills and Awareness of Diversity Issues

Expertise

- On average, UREx fellows rated their expertise in cross-cultural and interdisciplinary communication skills as between approximately a 4.0 and 5.0 on a six-point scale (i.e., 6 = “Extremely: extremely confident you could be highly successful and could teach others how to be successful”) for most skills, indicating they had achieved a level of competency. Graduate student fellows generally rated their skills lower than postdoctoral fellows, particularly regarding leading the development of interdisciplinary research projects and working with community stakeholders/practitioners.

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Table 20. ***Fellows' Self-Rated Cross-Cultural and Interdisciplinary Skills*** *as Reported in the Annual Graduate Student (G) & Postdoctoral (P) Fellows Follow-up Survey*

Key Indicators	Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey: Mean Scores Out of 6.0						
Working collaboratively as part of a research team	G	4.5	4.6	4.3	4.5	4.5
	P	4.8	5.0	4.6	5.0	4.8
Working collaboratively as part of an interdisciplinary research team	G			4.2	4.2	4.2
	P			4.9	5.5	5.2
Leading the development of a research project	G	3.6	3.7	3.3	3.8	3.6
	P	4.2	4.4	4.1	4.8	4.4
Leading the development of an interdisciplinary research project	G			3.1	3.6	3.3
	P			3.9	4.7	4.3
Identifying diversity issues in research	G	3.7	3.8	4.0	4.3	3.9
	P	4.1	4.4	4.1	4.5	4.3
Identifying how my cultural background may influence my work	G	3.5	4.0	4.0	4.3	3.9
	P	3.9	4.5	4.1	4.2	4.2
Negotiating cross-cultural differences to accomplish common goals	G	3.3	3.9	3.5	3.8	3.6
	P	3.9	4.0	4.0	4.2	4.0
Working with community stakeholders/(Y4+) Working with community practitioners (city officials, park managers, NGOs)	G	3.7	3.9	3.4	3.3	3.6
	P	3.9	4.4	4.0	3.7	4.0
n	G	21	23	24 - 25	15	---
	P	10	8	7	6	---

Note. Annual GS and PD Fellows Survey respondents self-rated their skills using a scale ranging from 1 (*Beginner: you have no or little experience or basic knowledge*) to 6 (*Expert: you can utilize with a superior level of skill and teach to others*).

Confidence

- On average, UREx fellows rated their confidence in their cross-cultural and interdisciplinary communication skills as between approximately a 4.0 and 5.0 on a six-point scale (i.e., 6 = "Extremely: extremely confident you could be highly successful and could teach others how to be successful"), indicating they had achieved some confidence interdisciplinary communications, cross-cultural communication, and communication with community practitioners and stakeholders.
- Faculty mentors reported that, on average, they observed growth in their mentees in these areas "quite a bit."

Table 21. ***Fellows' Self-Rated Confidence in Communication Skills*** *Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey and* ***Faculty Mentors Ratings of Growth in Fellows***

Key Indicators	Respondent	Year 2	Year 3	Year 4	Year 5	Average
GS/PD Fellows Follow-up/Faculty Mentor Surveys: Mean Scores Out of 6.0/5.0						
Interdisciplinary research	G	4.4	4.7	5.1	4.9	4.8
	P	5.0	5.6	5.5	5.3	5.4
	F: G		4.1			---
Interdisciplinary communication	G	4.5	4.4	4.5	4.5	4.5
	P	4.9	5.5	5.0	5.2	5.1
	F: G		4.1			---
Cross-cultural communication	G	3.4	4.0	4.0	4.3	3.9
	P	4.2	4.6	4.4	4.3	4.4
	F: G		3.9			---
Communication with practitioners and stakeholders/(Y4+) Communicating with community practitioners (city officials, park managers, NGOs)	G	3.9	4.3	4.4	4.1	4.2
	P	4.6	5.0	4.6	4.2	4.6
	F: G		3.9			---
n	G	21	23	24 - 25	15	---
	P	10	8	6 - 7	6	---
	F: G		10			---

Note. Annual GS and PD Fellows Survey respondents reported their confidence in their skills using a scale ranging from 1 (*None: not at all confident you could do this*) to 6 (*Extremely: extremely confident you could be highly successful and could teach others how to be successful*). Faculty mentors rated the growth of their mentees on a scale ranging from 1 (*not at all*) to 5 (*very much*). F:G refer to the rating of graduate mentees by faculty mentors.

FINDINGS RELATED TO EVALUATION QUESTION 3

- Evaluation Question 3: How successful has the network been in increasing participation of diverse groups of people in the knowledge-implementation cycle?

OBJECTIVE C-1: RECRUITING STUDENTS FROM UNDERREPRESENTED GROUPS

- The UREx SRN continued to make intentional efforts to increase diverse groups of people in the knowledge-implementation cycle through international research opportunities and including local practitioners in knowledge development and utilization.
- Specific demographics are not reported to respect confidentiality, but among those recruited as graduate student and postdoc fellows or as REU participants were individuals from groups typically underrepresented in STEM (i.e., women and other individuals identifying as members of racial/ethnic groups NSF defines as underrepresented, "Blacks or African Americans, Hispanics or Latinos, American Indians or Alaskan Natives, Native Hawaiians and other Pacific Islanders") as well as first-generation college students.

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OBJECTIVE C-2: INCREASING INTERACTION BETWEEN U.S. AND LATIN AMERICAN STUDENTS AND POSTDOCS

- Most fellows reported agreement that the UREx SRN celebrates diversity and inclusion within the network, encourages collaboration between US-based and Latin American-based fellows, and ensures that the Latinx perspective is an intentional focus.

Table 22. ***Fellows' Agreement that UREx SRN Encouraged Interaction Between U.S. and Latin American Student and Postdocs and Celebrated Diversity and Inclusion*** *as Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey*

Key Indicators	Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey: % who "agree" or "strongly agree"						
The UREx SRN encourages collaboration between US-based and Latin American-based fellows	G			84.0	93.3	88.7
	P			57.1	100.0	78.6
The UREx SRN celebrates diversity and inclusion within the network	G			88.0	93.3	90.7
	P			57.1	83.3	70.2
The Latinx perspective is an intentional focus of the UREx SRN	G			76.0	78.6	77.3
	P			71.4	50.0	60.7
n	G			25	14 - 15	---
	P			7	6	---

Note. Annual GS and PD Fellows Survey reported their level of agreement using a scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*).

- Fellows who participated in the Resilient Urban Latin America (RULA) International Research Experience for Students (IRES) opportunity in Year 5 reported in interviews that the experience:
  - Increased their awareness about cross-cultural considerations in research

Objective C-3: Reaching Out to K-12 Educators and Students

- In Year 4, outside of the Education and Diversity Working Group, K-12 activities were facilitated at Syracuse University and Florida International University. Activities were not ultimately included in the UOEEE evaluation efforts.

Objective C-4: Training All Participants in Cross-Cultural Communication and Cultural Competency

As reported under Objective B-3, fellows generally reported high levels of proficiency, on average, in cross-cultural and interdisciplinary communication skills and awareness of diversity issues

Specific UREx SRN activities helped enhance cross-cultural skills, including:

- The opening plenary for the 2019 All Hands Meeting that covered community engagement in urban resilience work and, more specifically, the role that historical and systemic racism play in policy inequities and resource allocation.

To keep the momentum of dialogue and efforts around diversity and inclusion at the 2019 All Hands Meeting in Baltimore, the network put out a call for the development of a Justice, Equity, Diversity, and Inclusion (JEDI) task force. Although some fellows expressed interest in attending and helping facilitate the task force, there was very limited capacity for involvement network-wide due to the fact that fellows were already engaged in numerous working groups, task forces, and research projects; therefore, this task force did not come to fruition.

Objective C-5: Including Local Practitioners (City Officials, Park Managers, NGOs) in Knowledge Development and Utilization

- In Year 2, the first UREx SRN Scenarios Workshop, designed to engage practitioners, took place in San Juan, Puerto Rico. Forty-five community practitioners met with the UREx SRN San Juan City Team for the one-day workshop
- In Year 3, fellows noted some concerns during focus groups regarding feeling disconnected from contact with the practitioners and communities of the network. They reported a strong desire for greater access to the practitioners.
- In Year 4, there was a specific shift in effort to increase the involvement and integration of practitioners into the SRN and the knowledge implementation cycle. This effort was partially evidenced in the increased number of community practitioners attending and presenting at the 2019 All Hands Meeting.
- As reported under Objective B-1, in Year 5, nearly all fellows who participated in the Scenarios Working Group (SWG) reported that their participation resulted in the meaningful co-production of knowledge "moderately," "quite a bit," or "very much so," underscoring the impact of the increased efforts that began in Year 4.

FEEDBACK AND SATISFACTION

Select quantitative findings regarding participants feedback are summarized here. Additional findings are highlighted in the Evaluation Summary above and in the annual reports.

FELLOWS' SATISFACTION WITH THEIR EXPERIENCE IN THE UREX SRN AND RATING OF THE EFFECTIVENESS OF ITS ORGANIZATIONAL STRUCTURE

- A majority of fellows were satisfied with their experience, and the percentage of respondents who were "mostly" or "extremely" satisfied grew over time.
- Although the percentage of respondents rating the UREx SRN as "mostly" or "extremely" effective was lower in earlier years, by Year 5 two-thirds or more of graduate student and postdoctoral fellows did so.
- Explanations provided by some fellows regarding their ratings are provided in Table 24 below.

Table 23. ***Fellows' Satisfaction with their Experience in the UREx SRN and Rating of the Effectiveness of its Organizational Structure*** *as Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey*

Key Indicators		Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey							
Satisfaction with experience to date: % "mostly" or "extremely" satisfied		G	68.4	76.5	76.0	92.9	78.5
		P	70.0	100.0	83.3	100.0	88.3
Perceived effectiveness of organizational structure of UREx: % "mostly" or "extremely" effective		G	31.6	82.4	45.8	69.2	57.3
		P	50.0	50.0	50.0	83.3	58.3
	n	G	19	17 - 18	21 - 25	15	---
		P	10	6	6 - 7	6	---

Note. Annual GS and PD Fellows Survey reported their level of satisfaction using a scale ranging from 1 (*extremely dissatisfied*) to 6 (*extremely satisfied*) and rated the effectiveness of the organizational structure of UREx using a scale ranging from 1 (*not effective at all*) to 5 (*extremely effective*).

Table 24. ***Fellows' Explanation of Their Level of Satisfaction with their Experience in the UREx SRN*** *as Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey*

Year	Fellows' Explanations of Ratings of Satisfaction with Experience to Date with the UREx SRN
	Explanation Provided by Fellows Who Were "Mostly" or "Extremely" Satisfied
Spring 2017	Co-working with and learning from excellent researchers are extremely valuable experience for my academic career.
Spring 2017	Slow progress on some of our research, but I think we'll keep improving as we move into year 3. It's been really great to be part of this network and have a space for lots of exciting collaborative research, and to have a community of other postdocs as well.
Spring 2017	Although it has been a valuable experience for me I am looking forward to better opportunities in the future.
Spring 2017	I am generally satisfied but I sometimes feel that I cannot participate in working groups because conversations are very theoretical.
Spring 2017	He aprendido mucho y sigo aprendiendo.
Spring 2017	Overall, things have gone very well and I look forward to what the next year holds.
Spring 2018	UREx SRN is a great opportunity for me to understand research activities and academic trends. Through UREx SRN networks […]I could learn about how diverse research activities and networks contributes to the sustainability (or resilience) of society in the US.
Spring 2018	It has really turned out to be an even better fit than what I had imagined.
Spring 2018	The research network itself is mostly a great experience. The difficulty for me arises in balancing the work I do for the network with the work I have to do as a regular doctoral student. Interdisciplinary research requires a lot, and I mean A LOT, of reading and planning and actual work to produce products. There is no real sense in 'interdisciplinarity' as a specialty, either--it's not like my thorough experience doing interdisciplinary work excludes me from all of the normal monodisciplinary rigor. Ultimately, it is just more complex and demanding work. Some of this is resolved by collaborating with disciplinary experts, but much of it isn't. So, my experience with UREx is incredibly valuable but is difficult to manage.
Spring 2018	Me gusta que es un proyecto grande con mucha interacción y con impacto en mi ciudad. [I like that it is a large project with a lot of interaction and impact in my city.]
Spring 2018	I wish I could have accomplished more (writing and publication), but the research experience was invaluable.
Spring 2018	There are some folks that I had hoped to generate collaborations with, which haven't come to fruition yet, but generally I have very much enjoyed being part of lots of exciting collaborative research efforts.
Spring 2018	My experience got off to a slow start but will have a spectacular finish.
Spring 2018	It varies, some days I feel I can really take the bull by the horns and work with people in a way that makes sense to me and seems to add value to our collective work, other days it feels harder to make meaningful contributions. Too much of the project is about capturing graduate student and postdoc labor for purposes that graduate students and postdocs do not have time or room to determine themselves (though certainly some aspects of the project are fantastic precisely because there is that room).

Year	Fellows' Explanations of Ratings of Satisfaction with Experience to Date with the UREx SRN
Spring 2018	I am mostly satisfied, however, I feel that there is still lack of communication and feedback from the groups and individuals.
Spring 2018	It is a really good platform to grow.
Spring 2018	Gained real world experience.
Spring 2018	I love the work that the UREx SRN does and I think it's really important and I'm thrilled to be a part of it. I love that I have the opportunity to actually interact with stakeholders and develop research projects that are actually useful to them. Sometimes, it's not totally clear what resources are available to me from the UREx SRN as a grad student, especially when it comes to research costs. I wish that was more clear.
Spring 2019	UREx SRN provided a regular-based meeting opportunity with other faculty members (e.g., professors and postdocs) which is invaluable to my research and career development.
Spring 2019	I have been very pleased to be able to work and network with researchers from a variety of disciplines and backgrounds. I have an excellent mentor who encourages me to pursue research topics I am interested in.
Spring 2019	I feel that the network is extremely supportive of my research goals and professional aspirations.
Spring 2019	Great resources for students.
Spring 2019	The program cares about graduate student success.
Spring 2019	They've given me the opportunity to become a new breed of scientist.
Spring 2019	It has been truly lovely to work with such a diverse and thoughtful group of people, and my experience would have been even more positive had I had a mentor in-person committed to supporting my own research agenda -- as it is, I feel people are too busy or simply have different research interests from mine.
Spring 2019	It was very difficult to get oriented last semester, and now that I am finally settled in and making a direct contribution the fellowship support is ending so my ability to contribute will be much reduced.
Spring 2019	Me ha gustado las colaboraciones que se han hecho con diversos investigadores y el impacto que se ha logrado en la ciudad. La relación con agentes de gobierno y la apertura para utilizar nuestros productos. También la experiencia de otras ciudades y de los avances que tienen en el tema ha ayudado mucho en el aprendizaje. [I liked the collaborations that have been made with various researchers and the impact that has been achieved in the city. The relationship with government agents and the openness to use our products. The experience of other cities and the advances they have made in the subject have also helped a lot in learning.]
Spring 2019	Me encuentro muy satisfecho porque realmente he encontrado una comunidad académica activa, alineada con mis más profundos intereses profesionales, con una visión crítica que da pie a realmente repensarse la práctica de la resiliencia y la sostenibilidad y con un ámbito práctico donde ejercer esta influencia. [I am very satisfied because I have really found an active academic community, aligned with my deepest professional interests, with a critical vision that gives rise to really rethinking the practice of resilience and sustainability, and with a practical environment in which to exert this influence.]
Spring 2019	I am very satisfied and looking forward to the following years.

Year	Fellows' Explanations of Ratings of Satisfaction with Experience to Date with the UREx SRN
Spring 2019	Es una red de colaboracion abierta a trabajar multiples angulos de un tema. permite crear alianzas entre instituciones academicas, organizaciones publicas y sectores del gobierno, lo cual crea un grupo de expertos trabajando temas relacionados a resiliencia. [It is a collaborative network open to work multiple angles of a topic. It allows creating alliances between academic institutions, public organizations and government sectors, which creates a group of experts working on issues related to resilience.]
Spring 2019	I love the work that UREx is doing and feel like my research specifically fits into many of the goals that UREx has. I just sometimes feel overwhelmed by the amount of things going on in the UREx.
	Explanation Provided by Fellows Who Were "Somewhat" Satisfied
Spring 2017	It would be much better if there are any opportunities that I can participate in and receive any financial supports.
Spring 2018	I really appreciate the opportunity to learn and work with others. I also feel, however, that size of the network makes it hard to effectively tailor the timelines and expectations in a way that is appropriate for the nature of each discipline.
Spring 2019	Network is wonderful; project work has been difficult to coordinate remotely.
Spring 2019	As expressed before, at times it is difficult to integrate UREx work with schoolwork and other demands. Partly this is due to the "fragmented" nature of the network, split across time zones, and usually secondary to all participants' main job roles.
	Explanation Provided by Fellows Who Were "Somewhat" Dissatisfied
Spring 2017	I don't see a clear integration of the different disciplines, especially the social science component.
Spring 2017	I find that the reading group may require more work than should be required for a 1 credit seminar. Although I enjoy meeting with my peers and discussing new topics each week, I believe that the added work takes away from my research priorities.
Spring 2017	I don't have enough time to really tap into what is going on. We are unsure how to collaborate.
Spring 2018	I enjoy interacting with students from various disciplines and institutions.
	Explanation Provided by Fellows Who Were "Mostly" Dissatisfied
Spring 2017	Me ha gustado la red y considero que se obtendrán buenos productos en el corto plazo. [I liked the network and I believe that good products will be obtained in the short term.]

Fellows' Satisfaction with Program Components, Mentoring, and Opportunities for Collaboration and Cross-Cultural Research

- Fellows generally indicated they were satisfied with their experience. Some components that had lower ratings in some years include cross-cultural communication training, mentoring others, and the Urban Resilience Reading Group.

Table 25. ***Fellows' Satisfaction with Program Components, Mentoring, and Opportunities for Collaboration and Cross-Cultural Research*** *as Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey*

Key Indicators	Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey: Satisfaction Mean Score Out of 5.0						
Scenarios workshops	G	3.5	2.8	4.2	4.3	3.7
	P	4.0	3.3	3.3	4.0	3.7
Working group embeddedness	G	3.3				3.3
	P	3.4				3.4
Student-designed collaborative research	G	3.2				3.2
	P	3.3				3.3
Collaborative learning experiences	G			4.2	4.4	4.3
	P			4.3	4.5	4.4
Cross-cultural research opportunities	G			4.0	4.4	4.2
	P			3.7	3.7	3.7
Cross-cultural collaboration	G			3.9	4.1	4.0
	P			4.0	3.7	3.8
Cross-cultural communication training	G			3.8	3.6	3.7
	P			3.4	3.3	3.4
n	G	10 - 15	16	16 - 19	8 - 12	---
	P	5 - 9	6	4 - 6	3 - 6	---

Note. Annual GS and PD Fellows Survey reported their level of satisfaction using a scale ranging from 1 (*extremely dissatisfied*) to 6 (*extremely satisfied*).

Table 25 (continued). ***Fellows' Satisfaction with Program Components, Mentoring, and Opportunities for Collaboration and Cross-Cultural Research*** *as Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey*

Key Indicators	Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey: Satisfaction Mean Score Out of 5.0						
Mentoring from peers and postdocs/(Y4+) Receiving mentoring	G	3.8	3.4	4.6	4.6	4.1
	P	4.2	3.0	4.0	4.5	3.9
Mentoring undergraduates and peers/(Y4+) Providing mentoring	G	3.3	2.5	4.0	3.5	3.3
	P	3.9	3.5	3.5	4.4	3.8
Leadership training/(Y4+) Leadership opportunities	G			3.9	4.1	4.0
	P	3.6	3.0	4.5	4.3	3.9
n	G	7 - 18	15 - 16	14 - 21	8 - 12	---
	P	8 - 9	6	4 - 6	3 - 6	---

Note. Annual GS and PD Fellows Survey reported their level of satisfaction using a scale ranging from 1 (*extremely dissatisfied*) to 6 (*extremely satisfied*).

Table 25 (continued). ***Fellows' Satisfaction with Program Components, Mentoring, and Opportunities for Collaboration and Cross-Cultural Research*** *as Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey*

Key Indicators	Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey: Satisfaction Mean Score Out of 5.0						
Urban Resilience Reading Group (URRG)	G	3.2	2.8	3.6	4.1	3.4
	P	4.3	2.5	4.0	4.3	3.8
Science communication workshop	G	4.4				---
	P	4.2				---
Travel funding	G	4.1	3.4	4.6	4.6	4.2
	P	4.0	3.8	4.0	4.7	4.1
n	G	16 - 19	16	20	8 - 12	---
	P	6 - 10	6	3 - 6	3 - 6	---

Note. Annual GS and PD Fellows Survey reported their level of satisfaction using a scale ranging from 1 (*extremely dissatisfied*) to 6 (*extremely satisfied*).

What Fellows Liked Best About The UREx SRN

Fellows shared what they liked best about the UREx SRN. All responses to the annual follow-up surveys were combined and coded to identify themes and trends. Table 26 presents the themes as well as the prevalence of each theme each year. Table 27 presents illustrative examples of each theme. There were no dramatic shifts[5] in the proportion of themes over time, suggesting there was consistency in what fellows experienced as they began and continued their involvement in the UREx SRN.

Table 26. ***Fellows' Explanations of What They Liked Best About the UREx SRN: Patterns Over Time*** *as Reported in the Annual Graduate Student & Postdoctoral Fellows Follow-up Survey*

What Fellows Liked Best About the UREx SRN	Frequency	Percentage
Network/Community of Researchers		
Spring 2017 (*n* = 19)	5	26.3%
Spring 2018 (*n* = 17)	6	35.3%
Spring 2019 (*n* = 24)	11	45.8%
Spring 2020 (*n* = 14)	6	42.9%
Collaboration Opportunities Between Diverse Backgrounds/Disciplines		
Spring 2017 (*n* = 19)	10	52.6%
Spring 2018 (*n* = 17)	7	41.2%
Spring 2019 (*n* = 24)	5	20.8%
Spring 2020 (*n* = 14)	4	28.6%
Resources and Opportunities Provided		
Spring 2017 (n = 19)	1	5.3%
Spring 2018 (n = 17)	1	5.9%
Spring 2019 (n = 24)	8	33.3%
Spring 2020 (n = 14)	3	21.4%
Components of the UREx SRN Project		
Spring 2017 (n = 19)	3	15.8%
Spring 2018 (n = 17)	0	0.0%
Spring 2019 (n = 24)	4	16.7%
Spring 2020 (n = 14)	2	14.3%

[5] The number of respondents who answered the question varied from year to year and the number was small in some years. Consequently, if just one or two additional respondents provided a response consistent with a theme, then there could be a large shift in the *percentage* of respondents that would be disproportional to the actual number of additional respondents. Thus, only dramatic shifts (e.g., ~50.0% or more) were considered in determining whether there was a change in the prevalence of a theme over time.

What Fellows Liked Best About the UREx SRN	Frequency	Percentage
Research Topic(s)		
Spring 2017 (*n* = 19)	**0**	0.0%
Spring 2018 (*n* = 17)	3	17.6%
Spring 2019 (*n* = 24)	3	12.5%
Spring 2020 (*n* = 14)	0	0.0%
Diversity		
Spring 2017 (*n* = 19)	1	5.3%
Spring 2018 (*n* = 17)	2	11.8%
Spring 2019 (*n* = 24)	1	4.2%
Spring 2020 (*n* = 14)	1	7.1%
Learning/Professional Development Opportunity		
Spring 2017 (*n* = 19)	1	5.3%
Spring 2018 (*n* = 17)	0	0.0%
Spring 2019 (*n* = 24)	2	8.3%
Spring 2020 (*n* = 14)	0	0.0%

Table 27. ***Illustrative Examples of Fellows' Explanations of What They Liked Best About the UREx SRN*** *as Reported in the Annual Graduate Student & Postdoctoral Fellows Follow-up Survey*

Year	Illustrative Examples of What Fellows Liked Best About the UREx SRN
	Network/Community of Researchers
Spring 2017	People who are part of and who I interact with and accordingly their research.
Spring 2017	All the people, working in a network, the particular group closest to me here at ASU, and the opportunity to influence that group/network.
Spring 2017	Meeting and working with some really great people.
Spring 2018	Mentoring and research networks.
Spring 2018	Meeting new researchers.
Spring 2018	A great group of people tackling a very timely and critical set of issues.
Spring 2018	The sense of comradery with my peers and those in my working group.
Spring 2019	The international network and comparative research.
Spring 2019	Network of scientists and practitioners with similar interests and goals.
Spring 2020	The sense of community.
Spring 2020	The people. Everyone is so nice and passionate and caring. It's great to work with and be inspired by these folks.
Spring 2020	Networking opportunities.
	Collaboration Opportunities Between Diverse Backgrounds/Disciplines
Spring 2017	Me gusta que se fomenta el trabajo colaborativo e interdisciplinario. [I like that collaborative and interdisciplinary work is encouraged.]
Spring 2017	Opportunity to collaborate with professionals across the country and abroad.
Spring 2017	La colaboración entre personas capacitadas y también tomadores de decisiones. [Collaboration with skilled individuals and also decision makers.]
Spring 2017	Having motivated and smart people thinking on ways to make cities more resilient and the fact that practitioners are invited into the conversation.
Spring 2017	I really enjoy having the opportunity to collaborate with such a large and diverse group of people to work toward developing solutions to one of the biggest challenges facing our cities.
Spring 2018	I like all of the people and locations it has brought together, in dedication to working through complex issues.
Spring 2018	The focus on doing use-driven research in an interdisciplinary way.
Spring 2018	People from various disciplines, places, and culture.
Spring 2018	Me gusta que es una red grande que incluye a ciudades de América Latina y el enfoque multidisciplinario. [I like that it is a large network that includes Latin American cities and the multidisciplinary approach.]
Spring 2019	Love the co-production aspect of working with both academics AND city practitioners and stakeholders.
Spring 2020	The early career researchers are supportive and keen to collaborate.

Year	Illustrative Examples of What Fellows Liked Best About the UREx SRN
Spring 2020	The network of people I am connected to across multiple different disciplines is what I like best about the UREx SRN. There are a number of people I now feel comfortable emailing and asking questions of (either research or professional advice). I now have new project proposals, etc. in the works with this network. The openness of the people in UREx SRN to openly collaborate (people who are NOT the usual researcher that is afraid to share) is the best part of the UREx SRN!
	Resources and Opportunities Provided
Spring 2017	Flexibility of research areas and support for these initiatives.
Spring 2018	Fellowship opportunities.
Spring 2019	It has been really valuable to be able to pursue our own research interests within the context of the project.
Spring 2019	All of the resources and opportunities that being part of the network provides. Funding to collaborate, do interesting research, and to travel to share that work with others.
Spring 2019	The opportunities it affords to meet brilliant established and emerging scientists and practitioners, and to meet with them, even if it is just virtually and "having your voice heard."
Spring 2019	The UREx SRN has done a great job of supporting students and post-docs as the focus of research collaborations, and provides fuel for these young professionals to take the skills they learn into a diverse workforce.
Spring 2020	The support for students and early-career researchers to take on leadership roles.
Spring 2020	Financial support for research and travel...Access to Latin American cities.
	Components of the UREx SRN Project
Spring 2017	I like the grad student reading group and task forces, each allows for greater participation.
Spring 2017	The leader teams are great and I like having some Postdocs in contact with the graduate students.
Spring 2017	Me gusta las reuniones anuales, donde podemos presentar nuestro avances, haciendo nuevas redes de colaboración y aprendiendo ideas nuevas para implementar en nuestros trabajos. [I like the annual meetings, where we can present our progress, making new collaboration networks and learning new ideas to implement in our work.]
Spring 2019	Grupos de trabajo… [Working groups.]
Spring 2019	The topic of how cities must deal with climate change weather events.
Spring 2020	I have thoroughly enjoyed the focus on near-peer and multi-modal mentorship. I think this is a strong point in the UREx SRN and will serve as the basis for future research network success.
Spring 2020	I like this semester's URRG career roundtable discussion.
	Research Topic(s)
Spring 2018	The research.
Spring 2019	How closely UREx SRN objectives tie with my own research interests.
	Diversity
Spring 2017	Diversity and large scale.
Spring 2018	The diversity.
Spring 2019	Diversidad de personas.
Spring 2020	Due to the diversity of the network, I receive a holistic view of possible approaches to climate change effects.

Year	Illustrative Examples of What Fellows Liked Best About the UREx SRN
	Learning/Professional Development Opportunity
Spring 2017	It's offering an opportunity to engage in topics that the different partners might not have dealt with in details in the past. In this way it's a good learning experience.
Spring 2019	La posibilidad de expandir mmi ámbito de actuación profesional. [The possibility of expanding my scope of professional activity.]
Spring 2019	Pushes me to work on a lot of papers (publications), posters, etc., which I may not have done otherwise.

How Participating in the UREx SRN Impacted Fellows' Experience as a Graduate Student or Postdoc?

UREx SRN fellows were asked to explain how participating in the UREx SRN impacted their experience as a graduate student or postdoc. All responses to the annual follow-up surveys were combined and coded to identify themes and trends. Table 28 presents the themes as well as the prevalence of each theme each year. Table 29 presents illustrative examples of each theme. There were no dramatic shifts[6] in the proportion of themes over time, suggesting there was consistency in what fellows experienced as they participated in the UREx SRN.

Table 28. ***Fellows' Explanations of How Participating in the UREx SRN Impacted Fellows' Experience as a Graduate Student or Postdoc: Patterns Over Time*** *as Reported in the Annual Graduate Student & Postdoctoral Fellows Follow-up Survey*

How Participating in the UREx SRN Impacted Fellows' Experience as a Graduate Student or Postdoc	Frequency	Percentage
Helped Develop Interdisciplinary and Cross-Cultural Collaboration Skills and Facilitate Opportunities for Collaboration		
Spring 2017 (*n* = 25)	8	32.0%
Spring 2018 (*n* = 15)	6	40.0%
Spring 2019 (*n* = 25)	5	20.0%
Spring 2020 (*n* = 14)	7	50.0%
Networking/Connections		
Spring 2017 (*n* = 25)	1	4.0%
Spring 2018 (*n* = 15)	4	26.7%
Spring 2019 (*n* = 25)	8	32.0%
Spring 2020 (*n* = 14)	2	14.3%
Expanding Research Skills/Experience/Perspectives/Interests		
Spring 2017 (*n* = 25)	5	20.0%
Spring 2018 (*n* = 15)	5	33.3%
Spring 2019 (*n* = 25)	3	12.0%
Spring 2020 (*n* = 14)	1	7.1%
Professional Development		
Spring 2017 (*n* = 25)	1	4.0%
Spring 2018 (*n* = 15)	0	0.0%
Spring 2019 (*n* = 25)	6	24.0%
Spring 2020 (*n* = 14)	2	14.3%
Opportunities to Apply Knowledge, Skills, and Research		
Spring 2017 (*n* = 25)	5	20.0%

[6] The number of respondents who answered the question varied from year to year and the number was small in some years. Consequently, if just one or two additional respondents provided a response consistent with a theme, then there could be a large shift in the *percentage* of respondents that would be disproportional to the actual number of additional respondents. Thus, only dramatic shifts (e.g., ~50.0% or more) were considered in determining whether there was a change in the prevalence of a theme over time.

How Participating in the UREx SRN Impacted Fellows' Experience as a Graduate Student or Postdoc	Frequency	Percentage
Spring 2018 (*n* = 15)	0	0.0%
Spring 2019 (*n* = 25)	3	12.0%
Spring 2020 (*n* = 14)	1	7.1%
Direction on Thesis/Dissertation and Research Program		
Spring 2017 (*n* = 25)	3	12.0%
Spring 2018 (*n* = 15)	2	13.3%
Spring 2019 (*n* = 25)	1	4.0%
Spring 2020 (*n* = 14)	1	7.1%
Personal Growth/Fulfillment		
Spring 2017 (*n* = 25)	1	4.0%
Spring 2018 (*n* = 15)	0	0.0%
Spring 2019 (*n* = 25)	2	8.0%
Spring 2020 (*n* = 14)	1	7.1%
Cross-Cultural Interactions		
Spring 2017 (*n* = 25)	2	8.0%
Spring 2018 (*n* = 15)	1	6.7%
Spring 2019 (*n* = 25)	0	0.0%
Spring 2020 (*n* = 14)	0	0.0%
Miscellaneous		
Spring 2017 (*n* = 25)	3	12.0%
Spring 2018 (*n* = 15)	1	6.7%
Spring 2019 (*n* = 25)	3	12.0%
Spring 2020 (*n* = 14)	0	0.0%

Table 29. ***Illustrative Examples of Fellows' Explanations of How Participating in the UREx SRN Impacted Fellows' Experience as a Graduate Student or Postdoc*** *as Reported in the Annual Graduate Student & Postdoctoral Fellows Follow-up Survey*

Year	Illustrative Examples of How Participating in the UREx SRN Impacted Fellows' Experience as a Graduate Student or Postdoc
	Helped Develop Interdisciplinary and Cross-Cultural Collaboration Skills and Facilitate Opportunities for Collaboration
Spring 2017	I also find myself working with colleagues that I might not otherwise have come to understand how much their work overlaps with my own, for example with the knowledge systems innovation task force. I think there are some challenges here, however, since I'm not sure how successful I've been in sharing my own work with others.
Spring 2017	It has given me lots of exposure and practice with interdisciplinary/interdisciplinary research. It has also introduced me to a large and diverse network of people/collaborators that I likely would have never come in contact with under a typical postdoc.
Spring 2017	I have greatly benefited from the wide platform to form interdisciplinary research collaborations between network cities that I would not have the opportunity to do otherwise.
Spring 2018	It has challenged me to more carefully consider and effectively communicate the assumptions and limitations underlying my research approaches. Together with the members of my working group, we have devised new ways to move beyond these limitations. I have developed an appreciation for these collaborations and seen the power of bring multiple perspectives for research innovations.
Spring 2018	Established connections to co-author papers and work on collaborative projects together.
Spring 2019	Participating in UREx SRN has given me much needed perspective in my field, where I can integrate other field of research into my work.
Spring 2019	My participation in the UREx SRN has provided tremendous opportunity to collaborate with a range of interdisciplinary scientists across the US and Latin America. I have been very pleased with the quality of research to come from these collaborations and has instilled a new sense of confidence when leading diverse research teams.
Spring 2019	Ha impactado positivamente en la manera de trabajar interdisciplinaria. También me ha ayudado en relacionarme con agentes del gobierno activamente e impactar en la realización de políticas públicas. Por otro lado, el poder colaborar con prestigiosos investigadores de universidades de USA me ha ayudado a aprender de sus trabajos y productos. [It has had a positive impact on my interdisciplinary work. It has also helped me to actively interact with government agents and have an impact on the implementation of public policies. On the other hand, being able to collaborate with prestigious researchers from US universities has helped me learn from their work and products.]
Spring 2020	My ability to interact and collaborate across disciplines, has been transformative to my work.
Spring 2020	My experience as a UREx SRN fellow has provided numerous opportunities to engage with interdisciplinary scholars of many disciplines. I have gained the confidence to build upon truly interdisciplinary ideas that require the support from academics and practitioners alike.
Spring 2020	I have become more aware of the need to integrate different solutions for a resilient future.
	Networking/Connections
Spring 2017	Network connections.
Spring 2018	I am exposed to a greater network of researchers who are interested in the similar subject; receive support from the network.

Year	Illustrative Examples of How Participating in the UREx SRN Impacted Fellows' Experience as a Graduate Student or Postdoc
Spring 2019	La afectado positivamente en la medida que me ha nutrido teóricamente y me ha abierto una ventana de interacción con otros actores relevantes en mi campo de interés profesional. [It has positively affected it to the extent that it has nourished me theoretically and has opened a window for interaction with other relevant actors in my field of professional interest.]
Spring 2019	Enhanced opportunities to apply for additional funding, work with other graduate students.
Spring 2019	This has really been my first research experience where I feel that the other researchers view me as a colleague rather than either just a token or a technician/assistant. It's really been a valuable experience.
Spring 2020	The UREx community is my cohort and mentors moreso than my college.
Spring 2020	Participating in the UREx SRN let me get to know great researchers and scientists in the fields. Cooperating and interviewing them gave me a chance to learn how they conduct their research and thinking about my career path after graduate school.
	Expanding Research Skills/Experience/Perspectives/Interests
Spring 2017	I've been exposed to new ideas and new ways of thinking about the world and research.
Spring 2017	I have gained valuable knowledge and experience.
Spring 2018	It's provided me with a number of research opportunities to practice and expand my methodological skill base as well as introduce me to core theories and concepts I can use to inform my dissertation.
Spring 2018	I'm leaning about research skills, recent academic foci, and new perspectives while indirectly experiencing and understanding the roles of mentors as project leaders.
Spring 2019	I can say that it has changed my life and career focus. I am now an urban sustainability and resilience scientist.
Spring 2020	It has given me the opportunity to expand my ideas of public work and how can science be of use. It is not easy to fully grasp the complexities of policy-making and resilience work, but through UREx I have been able to at least get a much clearer sense of where I, as a student, am positioned within this bigger scheme.
	Professional Development
Spring 2017	The UREx SRN has exposed me to different ideas, cultures and contexts that have ultimately guided me to a research topic that I am incredibly passionate about.
Spring 2019	I have become better in project management skills.
Spring 2019	A lot, I have learned interview skills, writing skills, data presentation skills, how to communicate with a team on an academic paper, I created my first posters (3) and will be presenting one thanks to the support of UREX at the All Hands meeting.
Spring 2019	I feel like I'm a more well-rounded scientist because of my involvement in UREx than I would be otherwise.
Spring 2019	It has taught me how to efficiently engage with people, especially virtually, pushing me out of my isolated comfort zone.
Spring 2020	As a post-doc, UREx SRN has opened a number of doors for me in terms of connections to other projects and researchers to advance my career; I also will have a number of excellent publications with senior researchers at the end of this project, helping my career as well.
Spring 2020	Participating has introduced me to a variety of project leadership styles and group dynamics, which is useful for deciding how I want to lead groups. I also am getting used to coordinating and leading groups across a geographically diverse network.

Year	Illustrative Examples of How Participating in the UREx SRN Impacted Fellows' Experience as a Graduate Student or Postdoc
	Opportunities to Apply Knowledge, Skills, and Research
Spring 2017	It helped to understand the complexities of scientific collaborations and integration of scientific knowledge into real life projects.
Spring 2019	I feel more embedded in active application of research than I would in a purely student role.
Spring 2019	It has opened my eyes to the challenges of implementing systemic change in urban environments and the possibilities and challenges of interdisciplinary research.
Spring 2020	Ha sido un importante referente para abrir puertas en mi proceso de investigación. [It has been an important reference to open doors in my research process.]
	Direction on Thesis/Dissertation and Research Program
Spring 2017	Most of the work I was planning to do in my case study city was related to the project so there have been a lot of synergies.
Spring 2017	It's given me a concrete project to develop dissertation ideas around.
Spring 2018	It expanded the range of collaborators both for my dissertation and UREx related research.
Spring 2019	The experience in UREx network has tremendously impacted my research.
Spring 2020	Participating in UREx SRN as a graduate student led me to make my dissertation work comparative and [redacted]; I had access to multiple different mentors and senior researchers during this time who were able to advise me (informally) through time as I finished my dissertation; also, as a grad student, I was exposed to what post-docs were (I had never seen one at work before) and it encouraged me to apply for post-docs after graduating. As a post-doc, UREx SRN has opened a number of doors for me in terms of connections to other projects and researchers to advance my career; I also now have extensive experience as an interdisciplinary collaborator and this looks good on applications; I also will have a number of excellent publications with senior researchers at the end of this project, helping my career as well.
	Personal Growth/Fulfillment
Spring 2017	I really find that I have a meaningful role to play. All this helps build confidence.
Spring 2019	There are more meetings that overlap with engaging with my base institution (can't always go to departmental seminar); however, this project gives me a sense of purpose. I have a lot of pride in the work I do and the knowledge I gain with UREx SRN.
Spring 2019	Some positive impacts are: 1) reputation-building, […].
Spring 2020	The biggest thing is learning by the examples of others to be more proactive and self-directed in my research and work habits.
	Cross-Cultural Interactions
Spring 2017	Relaciones interculturales, aprendizaje de otros miembros de la red, conversaciones constructivas, ayuda en la comunicación de mi trabajo. [Cross-cultural relationships, learning from other members of the network, constructive conversations, help in the communication of my work.]
Spring 2017	I am learning how to discuss with other people with different background. In addition, as an international student, these activities are substantially improving my English language skills.
Spring 2018	Participation has also given me opportunities for international research and stakeholder interaction that I would not have otherwise.

Year	Illustrative Examples of How Participating in the UREx SRN Impacted Fellows' Experience as a Graduate Student or Postdoc
	Miscellaneous
Spring 2017	I am happy with all the experiences that I have had through UREx except the funding allocation.
Spring 2018	Very positively.
Spring 2019	Some negative impacts: 1) little room to develop publications outside of UREx; 2) limited time to work on publication within UREx; 3) not enough support for my career development, I have to spend a lot of time on the job market, and while I have some support in this regard when I ask for it, there is too much other work to do to really support this critical aspect of a postdoc's life.

SRN INFLUENCE ON CAREER TRAJECTORY AND PLANS AND PREPARATION FOR JOB MARKET

SRN INFLUENCE ON CAREER TRAJECTORY

- On average, fellows rated the impact of their participation in UREx on their career goals at approximately 5.0 out of a 7.0 scale, indicating substantial impact. The extent of impact was consistent over time.

Table 30. ***Fellows' Report of the Extent Their Participation in UREx Influenced Their Career Goals*** *as Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey*

Key Indicators		Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey							
Extent experience participating in the UREx SRN influenced career goals		G	4.2	5.2	4.9	4.6	4.7
		P	4.4	3.6	5.0	5.2	4.5
	n	G	19	17	25	13	---
		P	10	5	6	6	---

Note. Annual GS and PD Fellows Survey reported the extent their participation in UREx influenced their career goals using a scale ranging from 1 (*not at all; no change or refinement in focus*) to 7 (*extremely; change in focus, occupation, or workforce sector*).

After fellows rated the extent to which their UREx SRN participation has or has not influenced their career goals, they were asked to explain why. All responses to the annual follow-up surveys were combined and coded to identify themes and trends. Table 31 presents the themes as well as the prevalence of each theme each year. Table 32 presents illustrative examples of each theme. There were no dramatic shifts[7] in the proportion of themes over time, suggesting there was consistency in what fellows experienced as they began and continued their involvement in the UREx SRN.

Table 31. ***Fellows' Explanations of Why Their Experience in the UREx SRN Has or Has Not Influenced Their Career Goals: Patterns Over Time*** *as Reported in the Annual Graduate Student & Postdoctoral Fellows Follow-up Survey*

How Career Goals Have or Have Not Changed	Frequency	Percentage [a]
Different/Newfound Direction		
Spring 2017 (*n* = 18)	5	27.8%
Spring 2018 (*n* = 15)	4	26.7%
Spring 2019 (*n* = 21)	10	47.6%
Spring 2020 (*n* = 15)	4	26.7%
More In-Depth Understanding of Potential Career Options and the Skills Necessary to Succeed		
Spring 2017 (*n* = 18)	4	22.2%
Spring 2018 (*n* = 15)	4	26.7%
Spring 2019 (*n* = 21)	5	23.8%
Spring 2020 (*n* = 15)	5	33.3%
Skill Advancement and Building Connections		
Spring 2017 (*n* = 18)	2	11.1%
Spring 2018 (*n* = 15)	5	33.3%
Spring 2019 (*n* = 21)	2	9.5%
Spring 2020 (*n* = 15)	2	13.3%
Stayed the Same/Reinforced		
Spring 2017 (*n* = 18)	3	16.7%
Spring 2018 (*n* = 15)	2	13.3%
Spring 2019 (*n* = 21)	2	9.5%
Spring 2020 (*n* = 15)	3	20.0%

[7] The number of respondents who answered the question varied from year to year and the number was small in some years. Consequently, if just one or two additional respondents provided a response consistent with a theme, then there could be a large shift in the *percentage* of respondents that would be disproportional to the actual number of additional respondents. Thus, only dramatic shifts (e.g., ~50.0% or more) were considered in determining whether there was a change in the prevalence of a theme over time.

How Career Goals Have or Have Not Changed	Frequency	Percentage [a]
No Change Attributed to UREx		
Spring 2017 (*n* = 18)	4	22.2%
Spring 2018 (*n* = 15)	0	0.0%
Spring 2019 (*n* = 21)	2	9.5%
Spring 2020 (*n* = 15)	1	6.7%

Note. [a] Percentages are based on the number of written responses to the question rather than the total number of fellows who completed the respective survey.

Table 32. ***Illustrative Examples of Fellows' Explanations of Why Their Experience in the UREx SRN Has or Has Not Influenced Their Career Goals*** *as Reported in the Annual Graduate Student & Postdoctoral Fellows Follow-up Survey*

Year	Illustrative Examples of How Career Goals Have or Have Not Changed
	Different/Newfound Direction
Spring 2017	This experience has given me many new skills as well as connections with practitioners in cities who are passionate about resilience. I had not thought about working for city governments or being a practitioner in a city after grad school. Now I am seriously considering it.
Spring 2017	It has inspired me to continue to work toward achieving interdisciplinary/interdisciplinary research and research that has direct relevance to local-level issues/challenges.
Spring 2018	Participation in the UREx SRN has opened my eyes to a wider range of possible careers for scientists beyond academia. By interacting with people outside my discipline and outside academia, in general, I've been exposed to more ideas and possibilities.
Spring 2018	Me ha afectado en buscar trabajar de manera interdisciplinaria y en buscar siempre redes de colaboración. [It has affected how I seek to work in an interdisciplinary way and in always looking for collaboration networks.]
Spring 2018	Working with practitioners have helped me to realize that I would like to work for a governmental agency, where some of the projects can actually take place or be done and at the same time is possible to conduct very interesting research.
Spring 2019	Has gotten me more interested in operationalizing resilience, the idea of doing very applied work.
Spring 2019	I no longer want to pursue a tenure track position, at least not in the US. I would prefer to work at the intersection of research and policy however.
Spring 2019	I didn't want to go into academia when I entered grad school, and I still don't, but UREx has pushed me to be more interdisciplinary in the way that I approach and think about various topics. I'd like to take that perspective into a non-academic role – hopefully one in the realm of science policy.
Spring 2020	More interested in working for the federal government after Science Outside the Lab.
Spring 2020	Through my experience, I have learned the importance of bridging high quality academic research with science policy at local and federal levels. With this newfound interest, I am currently searching for future positions in the realm of science policy advocacy.
Spring 2020	Before joining the UREx SRN, I had little information about the job market for sustainable scientists. After joining the URRG, talking with the practitioners and alumni gave me a clear picture of the potential jobs and positions my personality could fit in.
	More In-Depth Understanding of Potential Career Options and the Skills Necessary to Succeed
Spring 2017	UREx experience has influenced my career goals, helped me to understand that there is much to be done to integrate scientific knowledge into decision making and communication skills are very important.
Spring 2018	It has allowed me to spend time exploring and engaging with problems that threaten large populations of people, and it's difficult to not start caring deeply about what I do. I have worked with a number of people and agencies for whom I could see myself working in the future.

Year	Illustrative Examples of How Career Goals Have or Have Not Changed
Spring 2018	UREx experience helped me to understand more clearly what kind of professional I want to be in the future. The collaboration of disciplines and scientists with practitioners helped me to understand that I can do a work of similar nature in the future and do not have to choose a strictly academic or practitioner path. I want to be able to combine them in my work.
Spring 2019	Taking part in the UREx SRN Science Outside the Lab in DC last summer helped me understand what science policy is and made me interested in pursuing a science policy career. I'll likely still apply to some academic jobs as well after graduation, but UREx SRN has helped me find and understand non-academic options that I am excited about.
Spring 2020	I understand better what various kinds of practitioners do, as well as the limitations of being an academic. I understand that messaging is critical when trying to present your academic work to practitioners and lay audiences.
	Skill Advancement and Building Connections
Spring 2017	I got familiar with different people that helps me to choose my future career.
Spring 2017	Creo que el conocimiento generado por la red es muy util e interesante y me gustaría seguir trabajando en este tipo de actividades. UREx me ha permitido desarrollar mi propia investigación y volverme un poco más independiente. [I think that the knowledge generated by the network is very useful and interesting and I would like to continue working on this type of activity. UREx has allowed me to develop my own research and become a little more independent.]
Spring 2018	My experience has helped me identify my strengths with advanced hydrologic modeling and statistical analyses. This has given me a sense of empowerment and a desire to improve and share these tools with those outside my immediate field.
Spring 2019	My career goal is being an expert in academia and the experience in UREx has equipped me with required skills and expertise.
Spring 2020	Collaboration and communication skills have advanced.
	Stayed the Same/Reinforced
Spring 2017	I still have essentially the same career goals.
Spring 2018	I was already likely targeting academic positions and ended up pursuing an academic position.
Spring 2019	I have the same career goals now as before I started to participate in UREx.
Spring 2020	My career goals have mostly stayed the same. However, the state of the academic job market has led me to consider other options.
Spring 2020	I've always known that I didn't want to go into academia. My involvement in UREx SRN has reinforced that and helped me realize that science-policy is where I'd like to end up.
	No Change Attributed to UREx
Spring 2017	I choose a response in the middle of the scale because I do not know what my career goals are yet, or at least they do not translate obviously into a recognized career path. I think UREx helps me see what R1 tenure track jobs look like, which may be helpful for me, but I may end up following a different career path from this.

Year	**Illustrative Examples of How Career Goals Have or Have Not Changed**
Spring 2019	My experience has provided limited opportunities to develop my career goals mostly because there are few people around me (besides postdocs and grad students) who have time to discuss career goals or who share my career goals. There is very little support for [a type of] research in UREx, but I think I have tapped into most of the people who do support this.
Spring 2020	My career goals have not changed particularly as a result of UREx SRN itself.

FELLOW'S ANTICIPATED FUTURE WORK

- Fellows expected that their future work would involve positions in academic settings, government agencies, and non-profit organizations, but many fellows also expected to be involved in other positions.

Table 33. ***Fellows' Report of the Extent Their Future Work Will Involve Specific Positions*** *as Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey*

Key Indicators	Fellow	Year 2	Year 3	Year 4	Year 5	Average
Annual GS and PD Fellows Follow-up Survey: % "some," "most," or "all"						
Position in an academic setting	G	94.7	82.4	95.8	78.6	87.9
	P	100.0	83.3	83.3	83.3	87.5
Research position in a government agency	G	94.7	81.3	63.6	92.9	83.1
	P	77.8	50.0	100.0	83.3	77.8
Position in another non-profit organization	G	63.2	64.7	73.9	92.9	73.7
	P	55.6	66.7	66.7	16.7	51.4
Public official or other government policymaker	G	57.9	76.5	70.8	64.3	67.4
	P	33.3	33.3	50.0	66.7	45.8
Position in a policy advocacy organization	G	63.2	58.8	66.7	85.7	68.6
	P	77.8	50.0	66.7	33.3	57.0
Position in a private company	G	52.6	33.3	65.2	35.7	46.7
	P	22.2	66.7	33.0	16.7	34.7
n	G	19	15 - 17	22 - 24	14	---
	P	9	6	6	6	---

Note. Annual GS and PD Fellows Survey reported the extent their future work will involve the positions listed above using a scale ranging from 1 (*not at all*) to 5 (*all*).

How UREx SRN Participation Prepared Fellows For the Current Job Market

Fellows shared how UREx SRN participation prepared them for the current job market. All responses to the annual follow-up surveys were combined and coded to identify themes and trends. Table 34 presents the themes as well as the prevalence of each theme each year. Table 35 presents illustrative examples of each theme. There were no dramatic shifts[8] in the proportion of themes over time, suggesting there was consistency in what fellows experienced as they began and continued their involvement in the UREx SRN.

Table 34. ***Fellows' Explanations of How UREx SRN Participation Prepared Them for the Current Job Market: Patterns Over Time*** *as Reported in the Annual Graduate Student & Postdoctoral Fellows Follow-up Survey*

How UREx SRN Participation Prepared Fellows for the Current Job Market	Frequency	Percentage
Provided Experience in Applied Collaborative Research		
Spring 2017 (*n* = 15)	6	40.0%
Spring 2018 (*n* = 16)	7	43.8%
Spring 2019 (*n* = 22)	9	40.9%
Spring 2020 (*n* = 15)	6	40.0%
Improved Professional Skills: Communication, Collaboration and Networking		
Spring 2017 (*n* = 15)	5	33.3%
Spring 2018 (*n* = 16)	5	31.3%
Spring 2019 (*n* = 22)	4	18.2%
Spring 2020 (*n* = 15)	4	26.7%
Professional Connections		
Spring 2017 (*n* = 15)	5	33.3%
Spring 2018 (*n* = 16)	0	0.0%
Spring 2019 (*n* = 22)	8	36.4%
Spring 2020 (*n* = 15)	0	0.0%
Mentorship		
Spring 2017 (*n* = 15)	0	0.0%
Spring 2018 (*n* = 16)	0	0.0%
Spring 2019 (*n* = 22)	0	0.0%
Spring 2020 (*n* = 15)	1	6.7%

[8] The number of respondents who answered the question varied from year to year and the number was small in some years. Consequently, if just one or two additional respondents provided a response consistent with a theme, then there could be a large shift in the *percentage* of respondents that would be disproportional to the actual number of additional respondents. Thus, only dramatic shifts (e.g., ~50.0% or more) were considered in determining whether there was a change in the prevalence of a theme over time.

Miscellaneous/Unspecified		
Spring 2017 (*n* = 15)	0	0.0%
Spring 2018 (*n* = 16)	2	12.5%
Spring 2019 (*n* = 22)	1	4.5%
Spring 2020 (*n* = 15)	1	6.7%
Unsure		
Spring 2017 (*n* = 15)	0	0.0%
Spring 2018 (*n* = 16)	1	6.3%
Spring 2019 (*n* = 22)	0	0.0%
Spring 2020 (*n* = 15)	2	13.3%
Not Prepared		
Spring 2017 (*n* = 15)	0	0.0%
Spring 2018 (*n* = 16)	1	6.3%
Spring 2019 (*n* = 22)	1	4.5%
Spring 2020 (*n* = 15)	1	6.7%

Table 35. ***Illustrative Examples of Fellows' Explanations of How UREx SRN Participation Prepared Them for the Current Job Market*** *as Reported in the Annual Graduate Student & Postdoctoral Fellows Follow-up Survey*

Year	Illustrative Examples of How UREx SRN Participation Prepared Fellows for the Current Job Market
	Provided Experience in Applied Collaborative Research
Spring 2017	Sobre todo la parte del trabajo en colaboración con profesionales de otras instituciones y países. Trabajo multidisciplinario, multicultural y a distancia. [Especially the part of the work in collaboration with professionals from other institutions and countries. Multidisciplinary, multicultural and remote work.]
Spring 2017	Great experience in collaboration and applied research.
Spring 2017	It has provided beneficial research experience on complex/interdisciplinary problems.
Spring 2018	I'm preparing for my dissertation prospectus and two journal publications. The results of this work such as a PhD degree, research network experience, and publications will contribute to my competitiveness.
Spring 2018	I don't know what the current job market is like. But I get to sometimes work with practitioners and government officials, and I do not feel like our skills and goals are so different. So, I hope it is preparing me well.
Spring 2018	Cross-sector collaborative experience is valuable.
Spring 2018	I have gained experience working with a lot of people deemed highly successful in their careers, and this is a very positive thing for me. I have learned a bit about how different people navigate the job market, including other postdocs.
Spring 2019	I've […] learned about how to collaborate with different experts through UREx research network.
Spring 2019	It has introduced me to large collaborative projects, working with practitioners and provided an in-depth understanding of US climate adaptation and resilience governance documents.
Spring 2019	It has helped me be more prepared for environmental justice environments relating to resilience and climate change.
Spring 2019	I want to work in academia; therefore, UREx exposes me to and challenges me within that environment.
Spring 2019	I can probably find a job easily in the non-profit, city/state/fed government, and private sectors. I am also preparing and may be able to land an assistant professor position in the future. The one issue is that there is so much stuff going in in UREx that I haven't been able to actually publish all of this great work over the years. This has hindered my chances at getting an academic job afterwards, but I remain hopeful that I can eventually publish and be included on publications related to the work I've done thus far.
Spring 2020	By introducing me, and giving me an opportunity to work with leading north American academics and practitioners.
Spring 2020	Gaining experience and skills within my field of study.
Spring 2020	Lots of great opportunities to beef up my CV with high-ranking pubs, references, and network.
	Improved Professional Skills: Communication, Collaboration and Networking
Spring 2017	I am sharpening a lot of communication and networking skills. I could do better to develop my own independent research areas -- UREx takes up a lot of time away from this, in a sense. UREx is a huge asset for opening my access to certain tenure track opportunities, I believe.

Year	Illustrative Examples of How UREx SRN Participation Prepared Fellows for the Current Job Market
Spring 2017	I am improving communication and collaboration skills with experts and practitioners from a variety of fields.
Spring 2017	UREx SRN is substantially improving my abilities for networking.
Spring 2017	Interdisciplinary collaboration is a huge advantage of this network and I think is an important skill within and outside of academia.
Spring 2017	Seguridad profesional, mejor manera de comunicarme, relacionarme y también ofrece un ambiente idóneo para aprender a llevar nuestro mensaje a otro tipo de comunidad (no solo la científica).
Spring 2018	Collaborative, communication, computer and problem solving skills are essential in a globalization era. These are skills that I had to develop, enhance and practice within the working groups of URExSRN.
Spring 2018	UREx has helped me to gain experience in communication with different stakeholders and understand complexities of SETS. I hope that these skills will help me in successful collaboration and decision making in the future.
Spring 2018	My participation enables me to market myself as someone who can effectively work in a team-based setting.
Spring 2018	My experience through UREx prepared me as an interdisciplinary researcher.
Spring 2018	Me ha preparado en escuchar y entender distintas maneras de pensar desde otros enfoques disciplinarios.
Spring 2019	I am learning so many skills in research, writing and communication.
Spring 2019	I feel prepared to communicate effectively with the general public and researchers outside of my discipline. The confidence I've gained in communication makes me feel prepared for any job I may have in the future.
Spring 2019	It has improved me to prepare to work efficiently in interdisciplinary academic settings.
Spring 2019	Tener competencias de trabajo en equipo interdisciplinario, comunicación de las ciencias para informar la política pública, a funcionarios y a residentes de comunidades.
Spring 2020	Improving my communication across disciplines, as well as including non-academics in knowledge production has expanded my network.
Spring 2020	Communication, communication, communication! I think one of the biggest perks of UREx is being able to network with non-academic partners. Communication is very different and learning this expands possibilities of possible future professional work.
Spring 2020	I believe my professional networking skills have improved.
Spring 2020	Lessons I've learned about how to collaborate and proceed with projects will be valuable in all future work.
	Professional Connections
Spring 2017	Lots of great connections for future collaborations, lots of leads for jobs.
Spring 2017	Climate change adaptation will happen at the city level and especially in private industry. I feel like there will be many opportunities here upon my graduation. I wanted to work for a government research entity, but that may not be possible in the current job market. The skills I am learning and the people I am interacting with give me a diverse network and experience to call on for a future career.

Year	Illustrative Examples of How UREx SRN Participation Prepared Fellows for the Current Job Market
Spring 2019	Creates a large network of people who are friendly and approachable, and might know about upcoming work opportunities.
Spring 2019	I think I have already begun to build a network of connections, and a skill set, which will directly benefit me in a future job search, and in turn entities I would work for and with.
Spring 2019	I hope that it prepares me for the job market… I'm at least meeting non-academic people through UREx and being exposed to non-academic jobs (especially through the Science Outside the Lab experience last summer).
Spring 2019	It may help to list it on my CV, the network of researchers and practitioners may come in handy.
Spring 2019	Mostly expanding my network at ASU and my horizons in terms of job opportunities.
	Mentorship
Spring 2020	Via mentoring and getting advices from senior researchers.
	Miscellaneous/Unspecified
Spring 2018	The UREx SRN has provided very useful preparation for the current job market.
Spring 2018	Very high.
Spring 2019	Urban ecology should also include social and technological drivers and that is something that lacks in my field.
Spring 2020	Staying aware of opportunities.
	Unsure
Spring 2018	To be honest, I'm not sure what exact sort of job title I am hoping for and haven't really been looking at job openings, so I'm not sure.
Spring 2020	I hope very well, but I am always uncertain. Honestly, I feel that I will have to do a lot of limiting of the descriptions of my specialties and kinds of work I have done and can do when I head into the job market.
Spring 2020	I think it has prepared me well… Or I hope so…
	Not Prepared
Spring 2018	Has not. In fact, has reduced my preparation because of slow projects that have either failed or not been published in a timely manner.
Spring 2019	Creo que aun dista de hacerlo, me gustaría poder emplear más tiempo y tener una aproximación más intima con UREXSRN, quizá una estancia intensiva de actualización, un proceso intenso de inmersión, de comunicación, de formulación de horizontes laborales, de proyectos prácticos. [I think that it is still far from being prepared, I would like to be able to spend more time and have a more intimate approach with UREx SRN, perhaps an intensive extended stay, an intense process of immersion, communication, formulation of work horizons, practical projects]
Spring 2020	Has not.

ALUMNI EXPERIENCES

- For a summary of how alumni survey findings link to UREx SRN objectives, please see the Evaluation Summary section.

ALUMNI FELLOWS' REPORT OF IMPACT OF UREX PARTICIPATION ON CAREER PREPARATION

- A majority of the former graduate student and postdoctoral fellows reported an impact of their participation in UREx on expanding their networks and confidence in employability, career trajectory, and leadership roles. Participation also impacted fellows' job searching skills, but for fewer fellows than for other outcomes.

Table 36. ***Alumni's Report of the Extent Their Experience in the UREx SRN Impacted Their Career Preparation*** *as Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey*

Key Indicators		Year	2020	2021	Average
Alumni Survey: % "somewhat," "quite a bit," or "very much"					
Job searching skills		G	54.5	52.6	53.6
		P	40.0	75.0	57.5
Expansion of your professional network		G	81.8	89.5	85.7
		P	100.0	100.0	100.0
Confidence in your employability		G	72.7	78.9	75.8
		P	83.3	87.5	85.4
Confidence in your career trajectory		G	72.7	78.9	75.8
		P	83.3	87.5	85.4
Confidence in taking on leadership roles		G	63.6	78.9	71.3
		P	83.3	100.0	91.7
	n	G	11	18 - 19	---
		P	5 - 6	7 - 8	---

Note. Alumni Survey respondents reported the extent their experiences with UREx impacted the outcomes listed above using a scale ranging from 1 (*not at all*) to 5 (*very much*).

Alumni Fellows' Involvement in Collaboration

- All or nearly all of the former graduate student and postdoctoral fellows were engaged in interdisciplinary collaboration in their current job or degree program. Most were involved in direct collaboration with practitioners, while fewer but still a substantial portion were engaged in international collaboration.

Table 37. ***Alumni's Report of the Extent Their Work or Degree Program Involves Collaboration*** *as Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey*

Key Indicators	Year	2020	2021	Average
Alumni Survey: % "somewhat," "quite a bit," or "very much"				
Interdisciplinary collaboration	G	90.9	89.5	90.2
	P	100.0	100.0	100.0
International collaboration	G	45.5	78.9	62.2
	P	33.3	57.1	45.2
Direct collaboration with practitioners (e.g., city officials, park managers, NGOs)	G	81.8	78.9	80.4
	P	83.3	57.1	70.2
n	G	11	18 - 19	---
	P	5 - 6	7 - 8	---

Note. Alumni Survey respondents reported the extent their current work for a job or degree program involves collaboration using a scale ranging from 1 (*not at all*) to 5 (*very much*).

Alumni Fellows' Understanding of Key UREx SRN-related Concepts

- A majority of former graduate student and postdoctoral fellows reported understanding extreme events in cities, understanding of resilience, applying a SETS framework, and understanding of diversity and equity issues in research.

Table 38. ***Alumni's Report of their Understanding of Key UREx SRN-related Concepts*** *as Reported in the Annual Graduate Student (G) and Postdoctoral (P) Fellows Follow-up Survey*

Key Indicators		Year	2020	2021	Average
Alumni Survey: % "somewhat," "quite a bit," or "very much"					
Understanding of extreme events in cities		G	100.0	94.7	97.4
		P	100.0	100.0	100.0
Understanding of resilience		G	90.9	84.2	87.6
		P	100.0	87.5	93.8
Understanding of applying a SETS framework		G	81.8	89.5	85.7
		P	100.0	100.0	100.0
Understanding of diversity and equity issues in research		G	63.6	73.7	68.7
		P	66.7	75.0	70.9
	n	G	11	18 - 19	---
		P	5 - 6	7 - 8	---

Note. Alumni Survey respondents reported the extent their experiences with the UREx SRN impacted their understanding of key UREx SRN-related concepts listed above using a scale ranging from 1 (*not at all*) to 5 (*very much*).

APPENDIX A: EDWG LOGIC MODEL

Goal	Objective	Input	Output	Short-term Impact
(A) Increase the capacity of the next generation of scientists to conduct and communicate interdisciplinary scientific research with complex datasets.	**A-1:** Improve graduate students' and postdocs' interdisciplinary research and communication skills	Science communication workshops (COMPASS trainings; years 2 & 4)	# GFs and PFs attending # GFs and PFs reporting increased confidence in science communication pre- and post-program	Graduate students and postdocs improve skills and confidence in science communication
		Student-designed research projects through working groups/task forces	# publications with authors from multiple disciplines and institutions	Graduate students and postdocs improve skills and confidence in interdisciplinary research
		Science Outside the Lab programming (year 4)	# of GFs and PFs who participate in programming	Graduate students and postdocs increase understanding of the interaction between science and policy
	A-2: Increase graduate students' and postdocs' computational science and data analysis skills	Data workshops/webinars (years 4-5)	# data workshops/webinars # GFs and PFs participating in workshops/webinars	Graduate students and postdocs learn about sustainable data storage and access
		Scenarios participation (years 2-5)	# research products (theses, dissertations, publications) using analysis and visualization skills	Graduate students and postdocs employ analysis and visualization skills gained through participation in their research products
	A-3: Enhance graduate students' leadership opportunities and mentoring skills	Mentorship opportunities	# GFs mentoring REUs	Graduate students mentor undergraduate students
			# GFs reporting increased confidence in mentoring skills and abilities	Graduate students gain mentoring skills/abilities
		Access to mentoring	# GFs receiving mentoring	Graduate students report access to quality mentorship and mentor support
			# of co-products between mentor and mentee	Graduate students co-create products/publications with mentees
		Leadership opportunities	# GFs participating in leadership roles # GFs reporting increased confidence in leadership skills and abilities	Graduate students report increased confidence in leading/taking leadership roles

Goal	Objective	Input	Output	Short-term Impact
	A-4: Enhance postdocs' skills for leading research initiatives, mentoring, and conducting research in international context	Mentorship opportunities	# PFs mentoring GFs or REUs	Postdocs mentor graduate students and/or undergraduate students
			# PFs reporting increased confidence in mentoring skills and abilities	Postdocs co-create products/publications with mentees
			# co-products between mentor and mentee	Postdocs co-create products/publications with mentees
		Access to mentoring	# PFs receiving mentoring	Postdocs report access to quality mentorship and mentor support
		Leadership opportunities	# PFs participating in leadership roles	Postdocs report increased confidence in leading/taking leadership roles
			# PFs reporting increased confidence in leadership skills and abilities	
	A-5: Enhance graduate student learning on resilient urban infrastructure	Participation in URRG	# GFs and PFs participating in URRG	Graduate students and postdocs report increased connections and understanding of resilient urban infrastructure across disciplines
	A-6: Expose undergraduate students from diverse backgrounds and different institutions to research	UREx SRN REU program: funding including for summer residency and travel funds	# REUs reporting confidence in computational science and data analysis skills pre- and post-program	REUs gain confidence in computational and data analysis skills
			# REUs reporting satisfaction with final research products	REUs gain knowledge and foresight about the research process for future science-related endeavors
			# REUS reporting satisfaction with program structure and processes	REUs gain preparedness for graduate school and future science-related endeavors
		Virtual meetings with students and mentors across the network	# of attended virtual meetings and/or workshops	REUs communicate and collaborate with peers across the network
		Partnerships with existing REU and internship programs among our institutions	# undergraduate students in partner programs	REUs experience an increased community of practice (cohort effect), additional opportunities for information-sharing, and a sense of connectedness with other REUs
			# REUs reporting a sense of community	

Goal	Objective	Input	Output	Short-term Impact
(B) Advance co-learning and collaboration among urban decision makers, scientists, and students across the project cities on urban resilience to climate change	**B-1:** Create collaborative learning environment for the co-production of knowledge	Workgroup embeddedness	# GFs and PFs reporting satisfaction with outcomes produced via collaborative efforts	Graduate students and postdocs report significant contributions to the workgroup goals
		Facilitate internship opportunities for students with city practitioners	# internship opportunities available # GFs in internship experience	Students learn how city planning and governance processes work; Students gain awareness of the challenges and opportunities involved in managing urban infrastructure
		Scenarios participation (years 2-5)	# GFs and PFs participating by type	Graduate students and postdocs report meaningful collaborations that contribute to the co-production of knowledge across disciplines and/or with local practitioners
	B-2: Increase graduate students' and postdocs' professional networks for scientific collaboration	Early career symposium (year 6; planning in year 5)	GFs and PFs organize the early career symposium	Graduate students and postdocs increase organizational and planning skills
		Early career events at All Hands Meeting	# attendees by type (fellow, practitioner, researcher)	Graduate students and postdocs report meaningful connections and networking
		Science Outside the Lab programming (year 4)	# GFs and PFs who participate in programming	Graduate students and postdocs increase their professional networks
	B-3: Enhance all participants' cross-cultural and interdisciplinary communication skills and awareness of diversity issues	Training for all UREx participants to improve cross-cultural communication skills and cultural competency (at All Hands meetings, at Working Group meetings, online)	# GF and PF participants reporting heightened awareness of diversity issues in scientific research and the science community	Graduate students and postdocs increase their awareness of diversity issues in scientific research and the science community
			# GF and PF participants reporting confidence in cross-cultural communication skills	Graduate students and postdocs increase cross-cultural communication skills
			# GF and PF participants reporting improved cross-disciplinary/ interdisciplinary communication and collaboration skills	Graduate students and postdocs increase cross/interdisciplinary communication and collaboration skills, including direct work with city practitioners
			# research products from cross-cultural collaboration	Increased number of cross-city/interdisciplinary/transnational publications
		Working groups established across institutions, disciplines, and political boundaries	# collaborative reports and publications	Graduate students and postdocs contribute to publications with authors from multiple disciplines and institutions
		RULA IRES Experience [supplemental funding]	# RULA IRES participants with UREx mentors	Graduate students and postdocs increase their understanding of and competency in facilitating cross-cultural and interdisciplinary research

Goal	Objective	Input	Output	Short-term Impact
(C) Increase participation of diverse groups of people in the knowledge-implementation cycle	**C-1:** Recruit students from under-represented groups	Recruit from minority-serving institutions and programs by leveraging local programs and national initiatives	# of graduate student participants from under-represented groups	Increased number of cross-cultural/diverse interactions and experiences
			# REU participants from underrepresented groups	REUs will feel more collaborative by having a more diverse group
			# of recruitment partners	More examples of leadership by diverse groups from different aspects of the project
	C-2: Increase interaction between U.S. and Latin American students and postdocs	Research collaborations between U.S. and Latin American students and postdocs [partially funded by RULA IRES]	# of cross-cultural program participants	Increased knowledge and confidence in research in international context Increased awareness of cross-cultural research considerations
			#/% reporting impacts/gains	Increased rate of new collaborators representing diverse groups
	C-3: Reach out to K-12 educators and students	Leverage existing student and public outreach programs in cities of our network: SU K-12 outreach and "Eyes on the Rise" app utilization (year 5)	# of programs incorporating UREx research or educational products	Expanded reach of SRN research and programming to K-12 populations
		Develop teacher-training workshops through "Ecology Explorers"	# of cities with teacher-training workshops	Increased use of UREx SRN data in classroom projects and by the public in general
	C-4: Train participants in cross-cultural communication and cultural competency	Participant Training for all UREx participants to improve cross-cultural communication skills and cultural competency (at All Hands meetings, at Working Group meetings, online)	# SRN members trained in cross-cultural communication and cultural competency	Increased confidence in cross-cultural communication skills
			# SRN members reporting increased awareness of diversity issues in scientific research/the science community	Increased awareness of diversity issues in scientific research and the science community
		Call for collaboration on Diversity, Equity, and Inclusion Taskforce (DEIT)	# SRN members responding to call # DEIT meetings/attendees	Increased opportunities to learn about diversity and inclusion
	C-5: Include local practitioners (city officials, park managers, NGOs) in knowledge development and utilization	Include practitioners (city officials, park managers, NGOs) in scenarios and transitions activities	#/% of fellows reporting collaboration and communication with practitioners (city officials, park managers, NGOs)	Increased opportunities to work with practitioners and increased confidence in these working relationships