April 2, 2018

Organizational Climate Studies and Other Evaluation Strategies: Experience from NSF's Advanced Cyberinfrastructure Projects

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XSEDE
Extreme Science and Engineering Discovery Environment

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Three Evaluation Strategies

- Climate Study
- Dashboard Display of KPIs and area metrics
- Logic Models

April 2, 2018

Annual Climate Study

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Purpose of the Climate Study

Support XSEDE's organizational health by providing data over time to:

- Better understand current working conditions
- Recognize successes and areas of concern
- Develop responses to improve working conditions
- Improve workplace efficiency and satisfaction

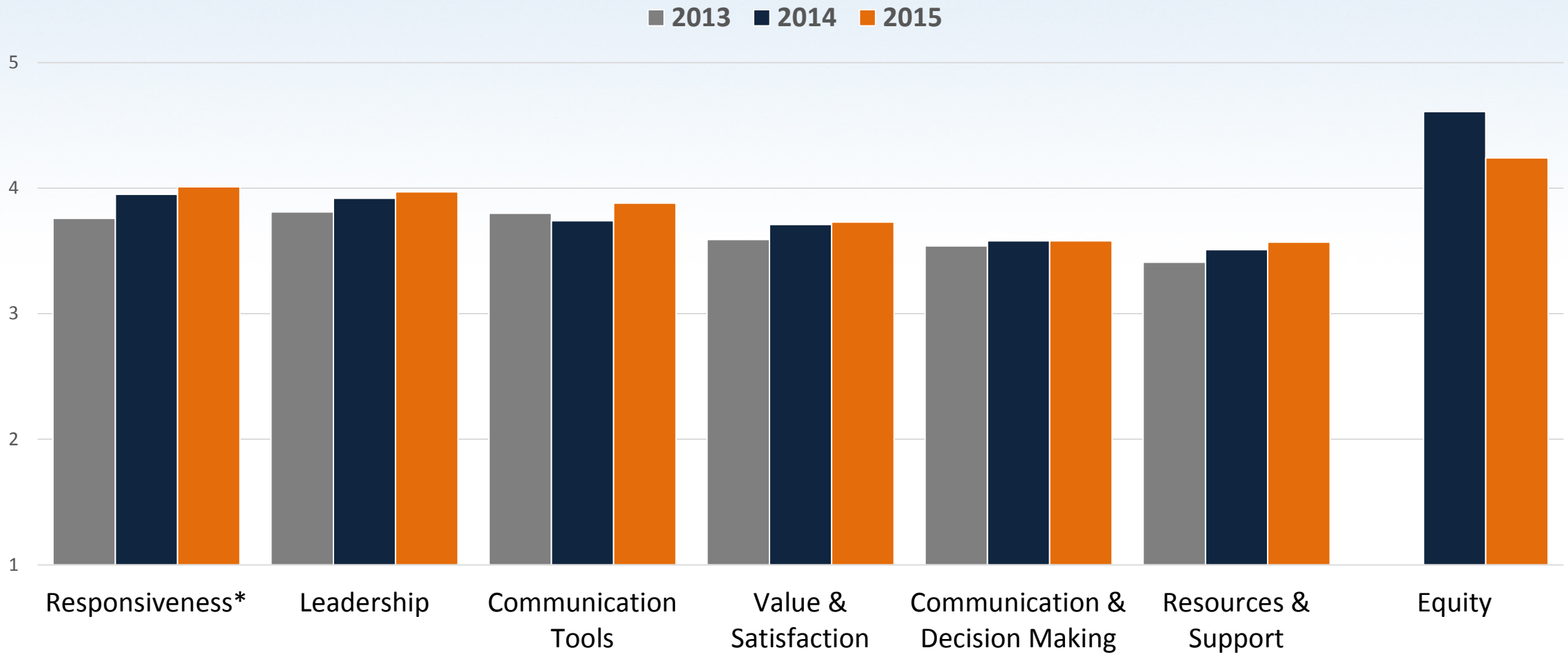
Method

- Annual on-line Survey to all XSEDE staff and leadership
  - Core items
  - XSEDE specific items
  - May/June administration
- Disaggregation by Level 2, 3, site, FTE, length of employment
  - Special requests by L2 and L3 managers
- EXTENSIVE dissemination and interaction around results
- Documentation of XSEDE response to results
  - Quarterly Meetings

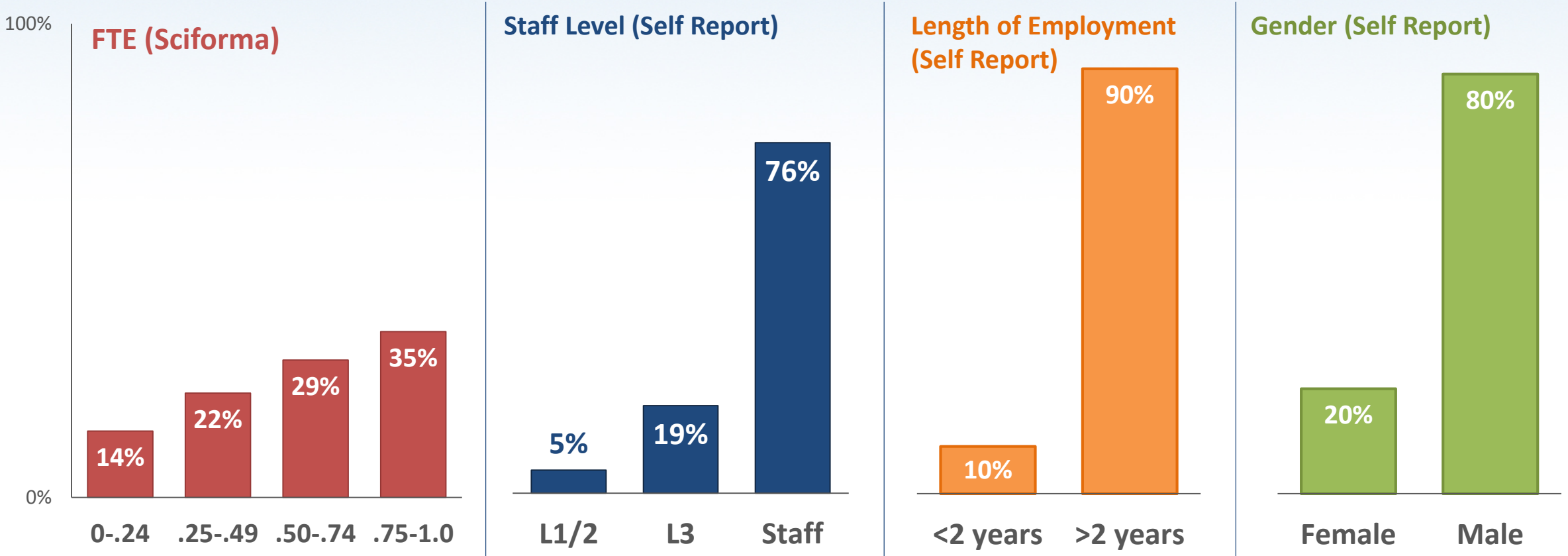
Six Climate Indices

- Responsiveness
- Leadership
- Communication Tools
- Values and Satisfaction
- Communication and Decision-making
- Resources and Support
- Equity

Index Scores Over Time (Scale 1 – 5)

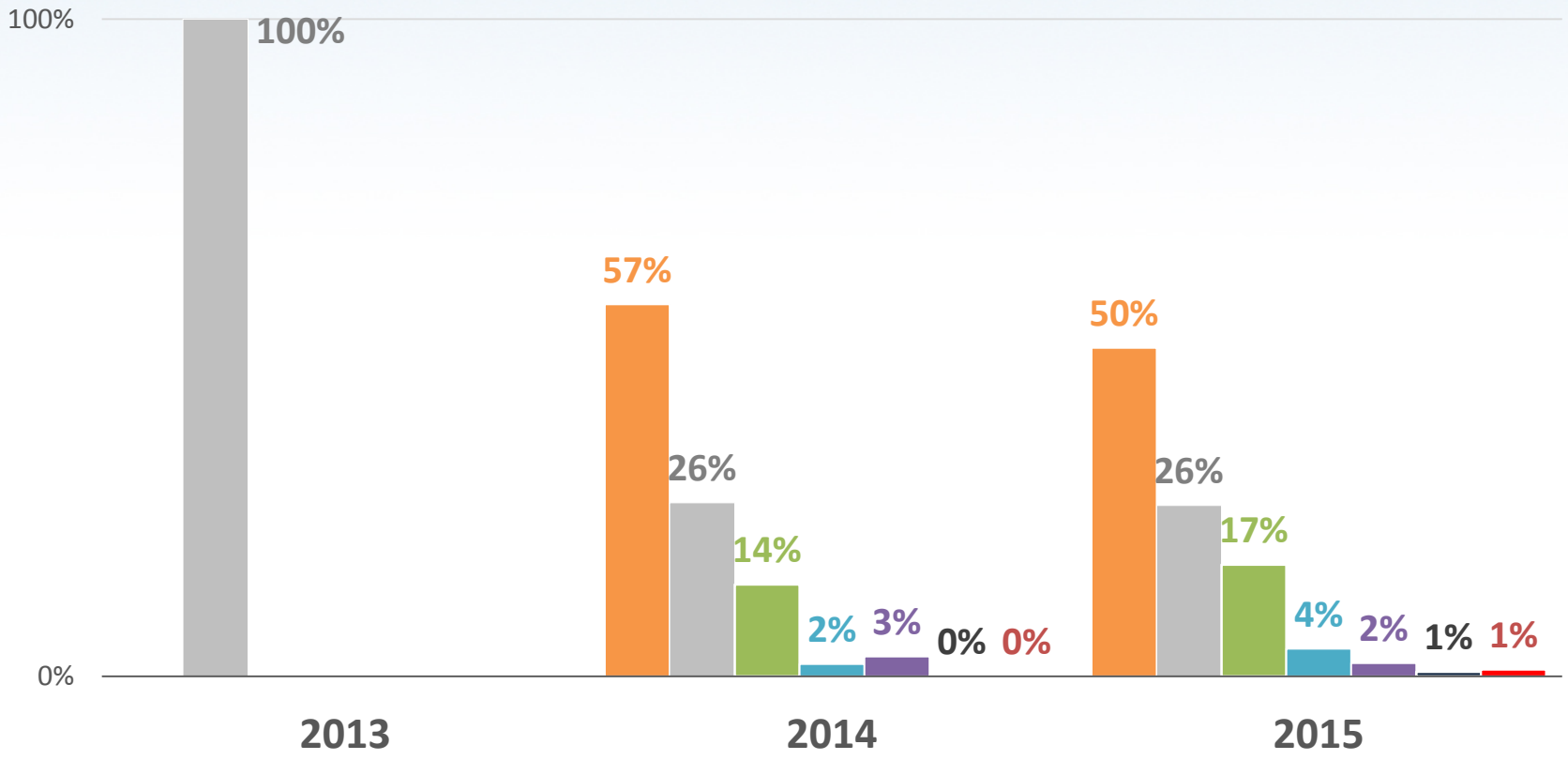


2015 Respondent Demographics



2015 Respondent Demographics Continued

Racial/ethnic diversity: Note that totals may not equal 100% since respondents could select more than one category.



2013 Recommendation: Promote staff directory on main XSEDE staff wiki page. Consider adopting a universal online document storage and collaboration solution.

2014-2015 XSEDE Response: Complete reorganization of wiki. Retirement and replacement of Sciforma in XSEDE2.0. Expansion of Communication Tools dimension in 2015 Climate Study.

Climate Study Results

Survey Item	Mean 2013	Mean 2014	Mean 2015
Q1A. The XSEDE staff wiki helps me find information across the project.	-	**3.26***	**3.58****
Q1C. The XSEDE staff wiki contains information that is useful to me and my work.	-	-	3.82
Q1E. The XSEDE staff wiki helps me to communicate effectively with other XSEDE staff.	3.04	2.99	3.18

Scale: Strongly Disagree (1) to Strongly Agree (5)

* $p < .05$, ** $p < .01$, *** $p < .001$

Range of comparable projects 2.83 to 3.74

"The wiki reorganization has helped me find things outside my level 3 WBS area"

"…It would also help to expand the use of good collaborative tools to a more complete integrated tool suite, e.g., integrated wiki/issue system/source control/code review system.

2013 Recommendation: Maintain detailed FTE assignments, coordinate with local supervisors, and regularly recognize outstanding work.

2014-2015 XSEDE Response: Detailed FTE assignments included in PY5 and XSEDE2.0 planning budgets. Internal newsletter highlights of staff work.

Climate Study Results

Survey Item	Mean 2013	Mean 2014	Mean 2015
Q7A. I am satisfied with the balance between my work for XSEDE and my work on other projects.	**3.33***	3.54	**3.59***
Q7D. I am satisfied with how my program area is managed.	**3.57****	3.75	**3.93****

Scale: Strongly Disagree (1) to Strongly Agree (5)

* $p < .05$, ** $p < .01$, *** $p < .001$

"I work for an XSEDE partner. I feel that my interactions with XSEDE staff are very good."

"…Perhaps there should be annual performance reviews, and the Level 3's could shift funds between people and institutions based on who is actually delivering."

Range of comparable projects 2.83 to 3.74

2013 Recommendation: Establish explicit procedures including time limits for XSEDE decision making.

2014-2015 XSEDE Response: Expanded communication & decision making dimension in 2014 Climate Study and again in 2015. All hands meetings implemented at sites. Retirement of projects lacking desired outcomes.

Climate Study Results

Survey Item	Mean 2013	Mean 2014	Mean 2015
Q3A. XSEDE's decision making process is efficient.	-	2.93	2.96
Q3B. I understand how decisions are made within the organization.	-	-	3.04
Q3C. I have input in decision making that relates to my work.	-	-	3.77
Q3D. When decisions are made, they are effectively communicated back to me.	-	-	3.55

Scale: Strongly Disagree (1) to Strongly Agree (5)

Range of comparable projects 2.83 – 3.74

" "Communication during and after decision making by senior leadership is better than before, but overall still not nearly good enough…However, I have confidence that the senior leadership is addressing this problem and headed in the right direction."

2014 Recommendation: Conduct deeper investigations of organizational climate as it relates to equity with staff from all groups.

2014-2015 XSEDE Response: Expanded equity dimension in 2015 Climate Study. Diversity speaker at June 2015 quarterly meeting.

Climate Study Results

Survey Item	Mean 2013	Mean 2014	Mean 2015
Q2b. I feel that XSEDE staff treat each other equally regardless of gender.	-	4.41	4.38
Q9. How often do you experience discrimination by other XSEDE staff?†	-	4.83	4.80

Scale: Strongly Disagree (1) to Strongly Agree (5)
†*Note Q9 has been reverse coded as 1 (Almost Always) to 5 (Never).*

"I'm sure that there is unconscious bias like with any human enterprise. I haven't personally seen anything I could point to as a clear case of discrimination, but different people can interpret the same event differently."

Range of comparable projects not available

April 2, 2018

Pilot TEOS Area Metrics Tableau Dashboard Demonstration

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XSEDE has a complex system of KPIs and area metrics

- Dashboard was developed to provide real time access to metrics for L1, L2, and L3 and program managers.
  - Easy quarterly and annual reporting
  - Consistent definitions and data pulls
  - Promotes longitudinal analysis
  - Better understand user base
  - Promote data based decision-making and transparency

L2 Area Metrics Sample

Cumulative and Quarterly Data

XSEDE
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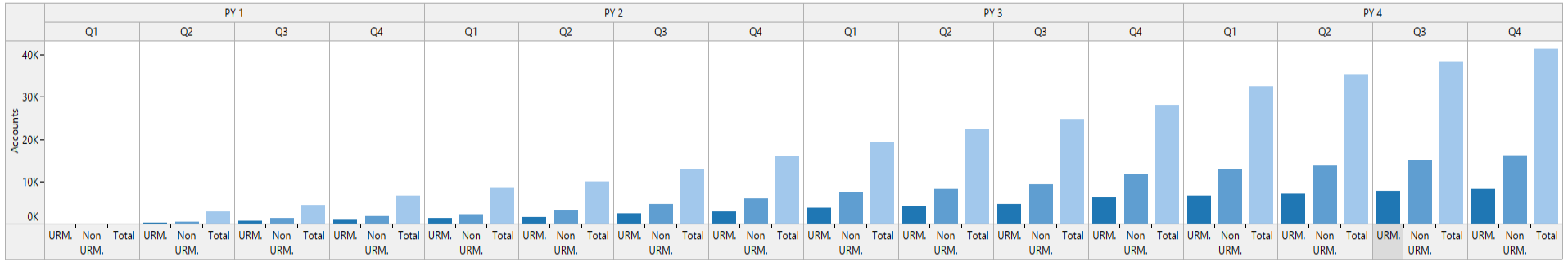
KPI & Metrics Dashboard

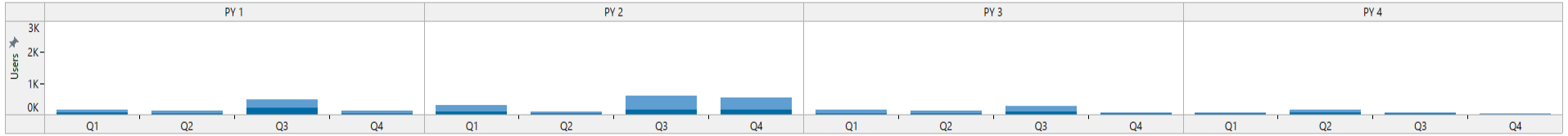
Project Year: (All), Null, PY 1, PY 2
Project Quarter: (All), Null, Q1, Q2
URM., Non URM., Total

1.6 Education & Outreach

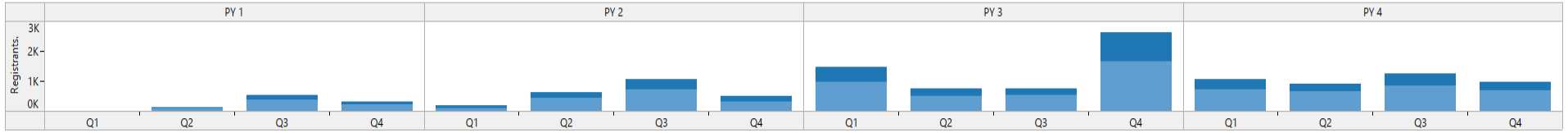
and % of individuals who have first time access to an allocation, are participants in XSEDE events, or create portal accounts. Target is 10% increase per year.



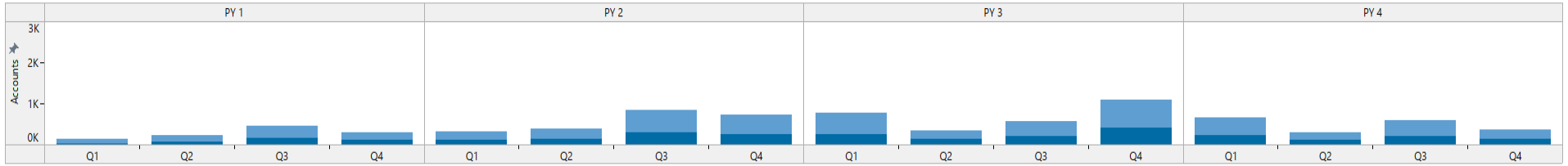
First time access to an allocation



First time participants in XSEDE events with portal registration

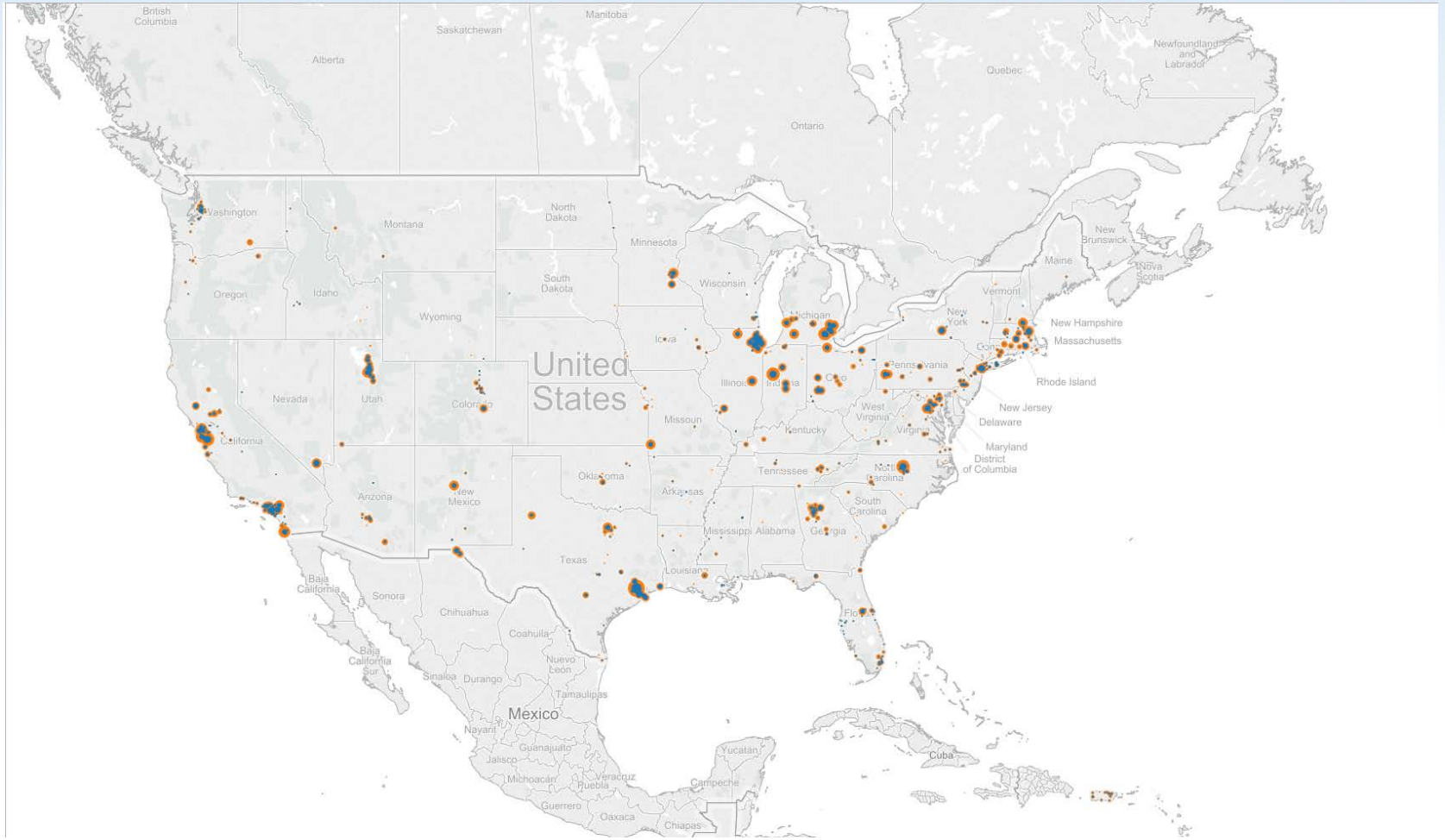


New Portal Accounts



1.6 L2 | 1.6 Education and Outreach L3 | Sheet 14 | Sheet 13 | Allocation by Race / Ethnicity ... | Non URM | New URM and Non URM Accounts | KPI3 | # First time access to an allocation | # New Portal Accounts | # First time participants in XSEDE ... | # and % | # and % non acumulative | Allocatio

Spatial Distribution



- [x] Black/African American
- [x] Black/African American, Ame...
- [x] Black/African American, Hisp...
- [x] Black/African American, Nati...
- [x] caucasian
- [x] Hispanic/Latino
- [x] Hispanic/Latino, Not Specified
- [x] Native Hawaiian/Other Pacifi...
- [x] Not Specified
- [x] other
- [x] pacific_islander
- [x] White
- [x] White, American Indian/Alas...
- [x] White, Asian
- [x] White, Asian, Black/African A...
- [x] White, Asian, Black/African A...
- [x] White, Asian, Not Specified
- [x] White, Black/African American
- [x] White, Black/African America...
- [x] White, Hispanic/Latino
- [x] White, Native Hawaiian/Othe...
- [x] White, Not Specified

gender

- [ ] (All)
- [x] F
- [x] M
- [ ] N

gender

F
M

Scale

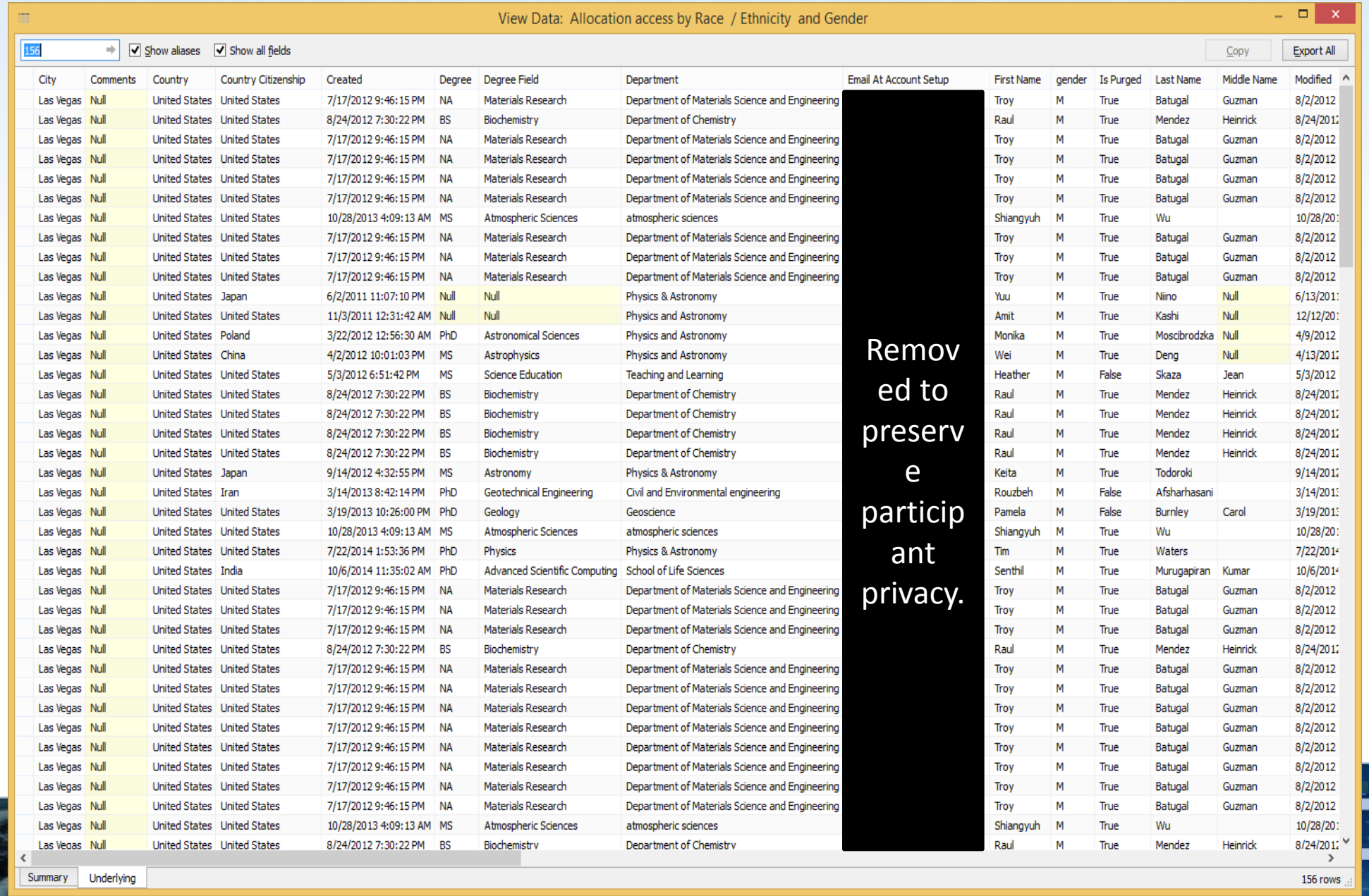
1
100
200
300
381

L2: Area Metrics

Cumulative and Quarterly Data

	Project Year / Project Quarter															
	PY 1				PY 2				PY 3				PY 4			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
% New Account (Total New Accounts / Cumulative Total)	28%	21%	39%	17%	15%	17%	28%	16%	18%	9%	10%	19%	8%	6%	8%	5%
New Non URM	327	338	925	481	527	750	1,706	1,158	1,607	786	1,087	2,387	1,172	904	1,262	965
New Racial / Ethnic minorities, Women and MSI.	172	144	543	274	272	360	799	590	797	435	507	1,391	606	440	616	423
Total New accounts	499	482	1,468	755	799	1,110	2,505	1,748	2,404	1,221	1,594	3,778	1,778	1,344	1,878	1,388
Cumulative Total	1,799	2,281	3,749	4,504	5,303	6,413	8,918	10,666	13,070	14,291	15,885	19,663	21,441	22,785	24,663	26,051

Underlying Data



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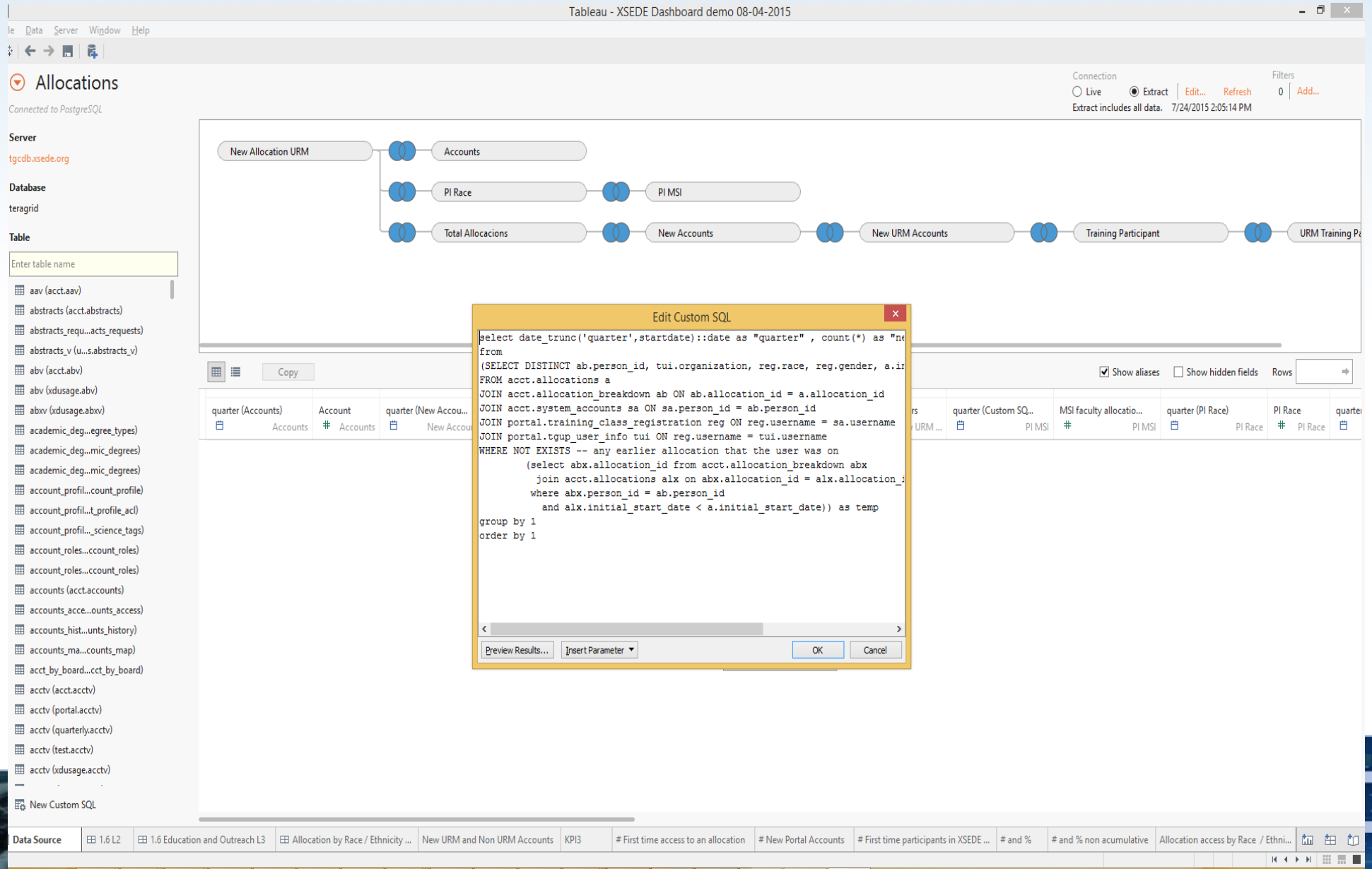
Underlying Queries



April 2, 2018

Logic Models

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Michael Culbertson, I-STEM, UIUC

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Logic Models represent intended program operation

- Make program components and processes explicit
- Identify different understandings and promote consensus
- Clarify points for intervention and evaluation

Allocations are an important metric in XSEDE

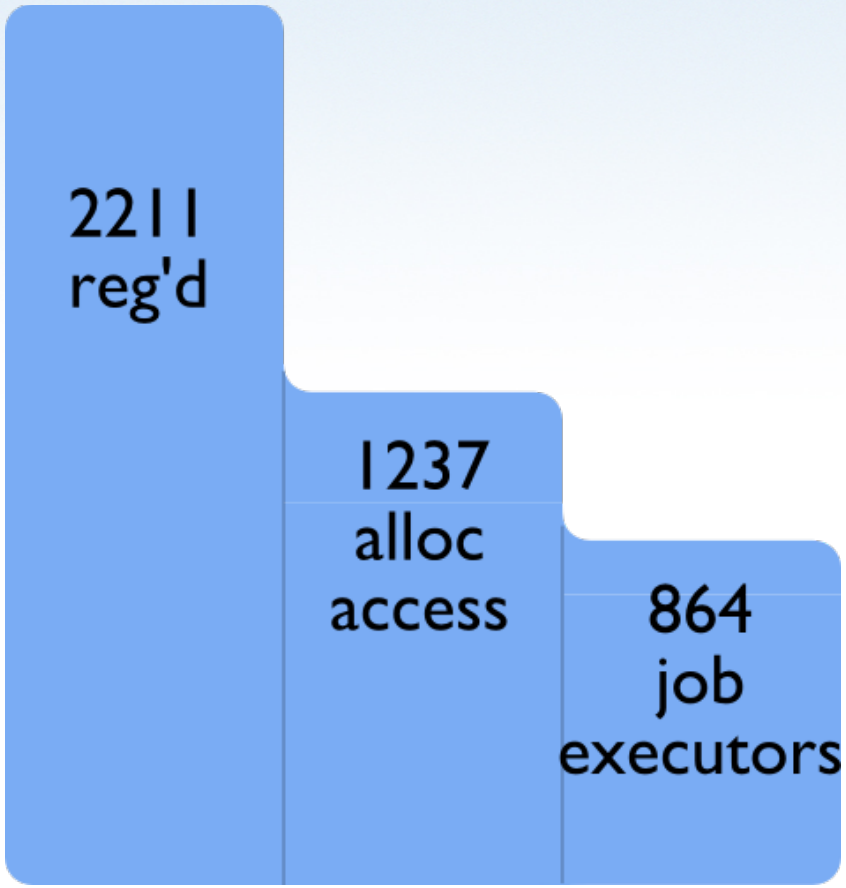
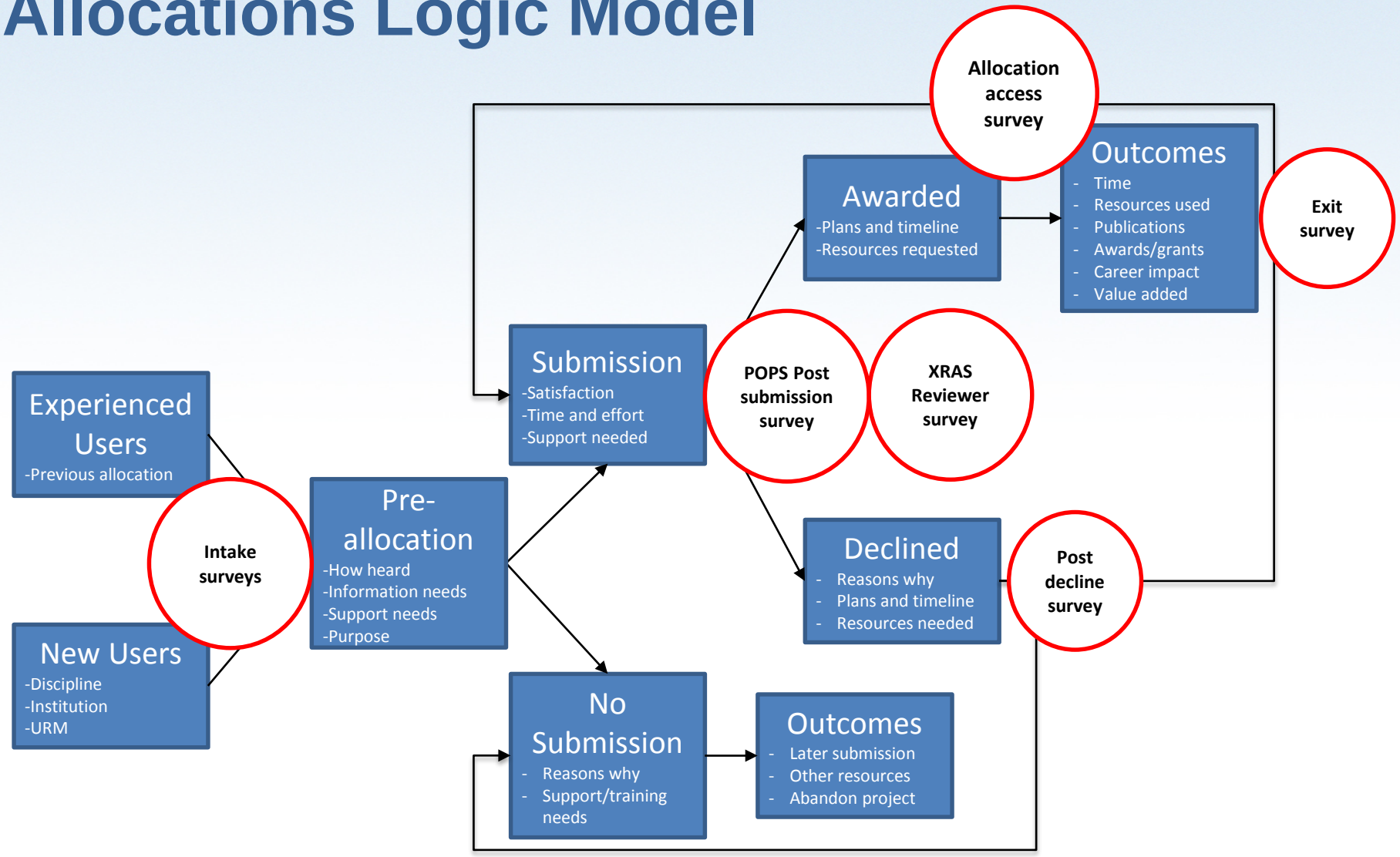


Figure 1. Training Registrants as of February 2013

Allocations Logic Model



Surveys

Table 1. Survey suite related to allocations

Items on…	Intake	POPS Post Submission	XRAS Reviewer	Allocation Access	Exit	Declined
Computational experience	X	X		X	X	X
Training needs	X			X	X	X
Access/use of other computational resources	X			X	X	X
Champion interaction	X			X	X	X
Demographics	X	X		X	X	X
Submission process		X				
Review process			X			X
New portal account	X					
Allocation plans				X		
Allocation achievements					X	
Alternative plans						X

Discussion

- Are the annual Climate Study and other strategies useful for promoting continuous improvement and a positive working environment within XSEDE?
- Are these findings useful or applicable to other large NSF investments?
  - Communication & decision making in virtual organizations
  - New staff orientation needs
  - Less than .50 FTE

Discussion

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