

Impact Highlights Report

ADVANCE Project TRACS

TRANSFORMATION
THROUGH
RELATEDNESS,
AUTONOMY &
COMPETENCE
SUPPORT





ADVANCE Project TRACS Leadership from left: Co-Directors, Sara Rushing and Ian Handley, and Director, Jessi Smith.



MONTANA
STATE UNIVERSITY

ADVANCE
Project TRACS

PI and Director: Jessi L. Smith, Department of Psychology,
Social Science Research Team Lead

Co-Director: Sara Rushing, Department of Political Science,
Faculty Family Advocate

Co-Director: Ian Handley, Department of Psychology,
Co-Lead Cultural Attunement

Co-PI: Waded Cruzado, University President

Co-PI: Martha Potvin, Former MSU Executive Vice President
for Academic Affairs and Provost (2012-2016)



The material presented is based upon work supported by the National Science Foundation (NSF) under Grant No. 1208831 (ADVANCE Project TRACS). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

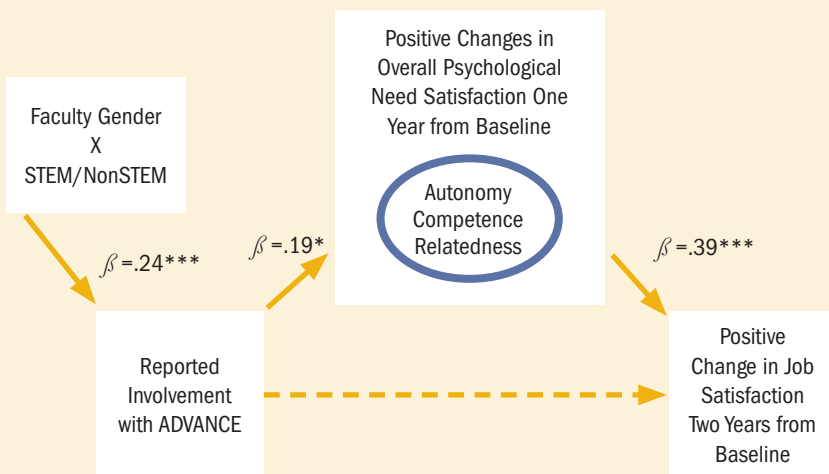
Summary:

Improved gender equity, job satisfaction, inclusiveness and diversity:

ADVANCE Project TRACS improved gender equity for women faculty in science, technology, engineering, math (STEM), and social and behavioral sciences (SBS) at MSU. Women are now hired at parity with men, are actualizing their research potential, and have more options to better integrate work-life demands. Longitudinal data shows that involvement with ADVANCE Project TRACS significantly improved all faculty members' feelings of job satisfaction over time, no matter their gender or field of study (Smith, Handley et al., in press, see Figure 1). ADVANCE catalyzed MSU into a more inclusive, equitable, and diverse university for faculty.



FIGURE 1. The Indirect Effect of Involvement with Project TRACS on Positive Changes in Job Satisfaction among Faculty Over Time.



Standardized beta coefficients are included to depict the strength and direction of the association of the given direct pathway (solid line). The greater the Beta value, the greater the impact of the preceding variable on the following variable, with $*p < .05$ and $***p < .001$. Faculty gender coded as 1=female, 0=male and STEM field coded as 1=STEM and 0=nonSTEM. **Results show a significant positive indirect effect between Project TRACS involvement, no matter the person's gender or field of study, and Job Satisfaction** (dotted line, bootstrapped, 95% CI .0006 to .108). —Smith, J. L., Handley, I. M., Rushing, S. A., Belou, R., Shanahan, E.A., Skewes, M. C., Kambich, L., Honea, J., Intemann, K. (in press). *Added Benefits: How Supporting Women Faculty in STEM Improves Everyone's Job Satisfaction*. *Journal of Diversity in Higher Education*.

Above: Jamie McEvoy, Earth Sciences



Enhancing Cultural Attunement

The enhancing cultural attunement initiative: During the five years of ADVANCE Project TRACS, MSU saw a **67%** increase in the number of women faculty hires in STEM/SBS (see Table 1). All told, **48.6%** of MSU tenure track hires in STEM/SBS were women, up from **25%** over the five preceding years. MSU went from 60 women faculty in STEM/SBS at the start of ADVANCE to **100 women** at the end of ADVANCE (see Figure 2 and Table 2).

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The Project TRACS *Broadening the Search Process* was largely responsible for the improvement in faculty hiring as evidenced by a randomized and controlled trial test of our three-step faculty search intervention based in self-determination theory. Results were published in the peer-reviewed journal *Bioscience* (Smith et al., 2015) and featured in several national media outlets. The data show that the numbers of women candidates considered for and offered tenure-track positions were significantly higher in the intervention groups compared with those in controls. Searches in the intervention were 6.3 times more likely to make an offer to a woman candidate, and women who were made an offer were 5.8 times more likely to accept the offer from an intervention search.

Project TRACS also led the training of 37 people from 29 departments/units who served as Equity Advocates and organized 52 educational workshops and lectures on gender bias, inclusion, and diversity (see page 7 for more information about the Equity Advocate program).

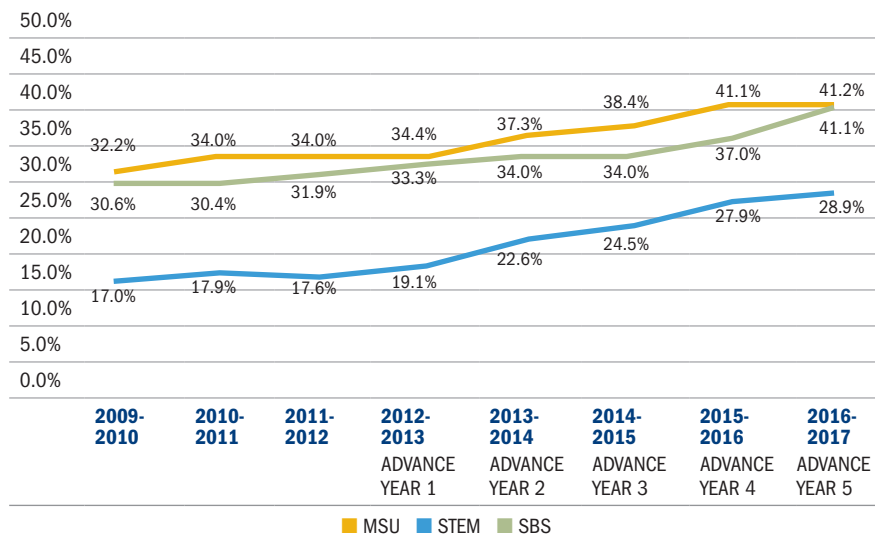
Smith, J. L., Handley, I. M., Zale, A. V., Rushing, S. A., & Potvin, M. (2015). Now Hiring! Empirically Testing a 3-Step Intervention to Increase Faculty Gender Diversity in STEM. *BioScience*, 65(11), 1084-1087. doi:10.1093/biosci/biv138.

TABLE 1. Tenure-Track Faculty Hires at Montana State University over 10 years.

						ADVANCE					
						2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	
		2007-2008	2008-2009	2009-2010	2010-2011	2011-2012					
SBS	Women	1		1		1	1	4	2	2	3
	Men	1	1	3	1	2		5	2	2	2
	% Women	50%	0%	25%	0%	33%	100%	44%	50%	50%	60%
STEM	Women	1	1	2	4		9	10	10	7	7
	Men	1	5	6	5	8	7	10	11	8	11
	% Women	50%	17%	25%	44%	0%	56%	50%	48%	47%	39%
STEM & SBS	Women	2	1	3	4	1	10	14	12	9	10
	Men	2	6	9	6	10	7	15	13	10	13
	% Women	50%	14%	25%	40%	9%	59%	48%	48%	47%	43%

Numbers are shown for tenure-track faculty hires for five years before and five years of the ADVANCE Project TRACS grant.

FIGURE 2. 8-Year Change in % Women Tenurable Faculty at MSU



Percent women tenure-track faculty are plotted starting three years before Project TRACS and through the ADVANCE Project TRACS grant years. — Smith, J. L., Handley, I. M., Zale, A. V., Rushing, S. A., & Potvin, M. (2015). *Now Hiring! Empirically Testing a 3-Step Intervention to Increase Faculty Gender Diversity in STEM*. *BioScience*, 65(11), 1084-1087. doi:10.1093/biosci/biv138.

TABLE 2. Change in Tenured/Tenure-Track Women at Montana State University

		ADVANCE Year 1 Fall 2012	ADVANCE Year 5 Fall 2016
COLLEGE OF AGRICULTURE		24	35
Agricultural Economics & Economics	SBS	4	7
Animal & Range Sciences	STEM	4	6
Land Resources & Environmental Sciences	STEM	6	6
Microbiology & Immunology	STEM	4	6
Plant Sciences & Plant Pathology	STEM	6	10
COLLEGE OF ENGINEERING		8	20
Chemical & Biological Engineering	STEM	3	6
Civil Engineering	STEM	3	6
Computer Science	STEM	0	2
Electrical Engineering	STEM	0	2
Mechanical & Industrial Engineering	STEM	2	4
COLLEGE OF LETTERS AND SCIENCES		28	45
Cell Biology & Neuroscience	STEM	3	3
Chemistry & Biochemistry	STEM	3	5
Earth Science	STEM	1	5
Ecology	STEM	3	4
Mathematical Sciences	STEM	4	9
Native American Studies	SBS	1	3
Physics	STEM	3	3
Political Science	SBS	4	4
Psychology	SBS	3	5
Sociology & Anthropology	SBS	3	4
TOTAL STEM		45	77
TOTAL SBS		15	23
TOTAL STEM/SBS		60	100

Breakdown of women tenure-track faculty hires by STEM/SBS department and the total over the life of the ADVANCE Project TRACS grant.



Equity Advocates

Equity Advocates serve the campus community by promoting and enhancing fairness, equality, and inclusiveness for all faculty and staff. Project TRACS led the training of 37 people from 29 departments/units who served as Equity Advocates.

“As an Equity Advocate, I have been able to participate in many training sessions and workshops that have broadened my definition of diversity. Additionally, the [training] gave me tools I can use to encourage others to improve the diversity and inclusion of faculty and staff on campus.”

*– Stephanie Wettstein,
Chemical and Biological Engineering*



Award Winning

ADVANCE Project TRACS was recognized with the 2015 CUPA-HR Inclusion Cultivates Excellence Award. This award, sponsored by The Chronicle of Higher Education, “recognizes and celebrates institutional initiatives and programs that have made a significant impact with respect to inclusive and equitable workplace practices, particularly those that have brought about cultural change throughout the organization.”

Enhancing Research Capacity and Opportunity

The enhancing research capacity and opportunity initiative

was highly successful. Grant expenditures by women in STEM/SBS more than doubled to nearly **\$14 million** over the five years of ADVANCE Project TRACS. Since the start in 2012, the number of projects with women PIs increased by **49%** and the average yearly research expenditure per woman faculty member increased by more than **22%** (see Table 3). These data *exclude* the ADVANCE grant itself, which was awarded to a woman faculty in SBS. The gender gap in total grant expenditures per PI in STEM shrunk by 14%, with the difference between men and women starting at \$67,274 (24%) in 2012 closing to \$27,212 (10%) in 2016.



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The Project TRACS *Grant Writing Bootcamp* and *Grant Submission Training Coordinator* were largely responsible for the improvement. During the five years of Project TRACS, 79 faculty (39 tenure track women in STEM) from 30 different departments and centers (including at least one person from every STEM department on campus) participated in one of five Grant-Writing Bootcamps designed using the tenets of self-determination theory. A one-year pre-post test of the impact of Bootcamp on women faculty in STEM's research capacity

was reported in the peer-reviewed journal *BioScience* (Smith et al., 2017). Over the span of one year (and contrasting results with a comparison sample who were not part of the intervention) showed women participating in Grant-Writing Bootcamp significantly increased the number of external grants submitted, number of proposals led as PI, number of external grants awarded, and amount of external funding dollars awarded (see Figure 3).

Smith, J.L., Stoop, C. D., Young, M., Belou, R., Held, S. (2017). *Grant Writing Bootcamp: An Intervention to Enhance the Research Capacity of Academic Women in STEM*. *BioScience*. 67 (7): 638-645. DOI: <https://doi.org/10.1093/biosci/bix050>



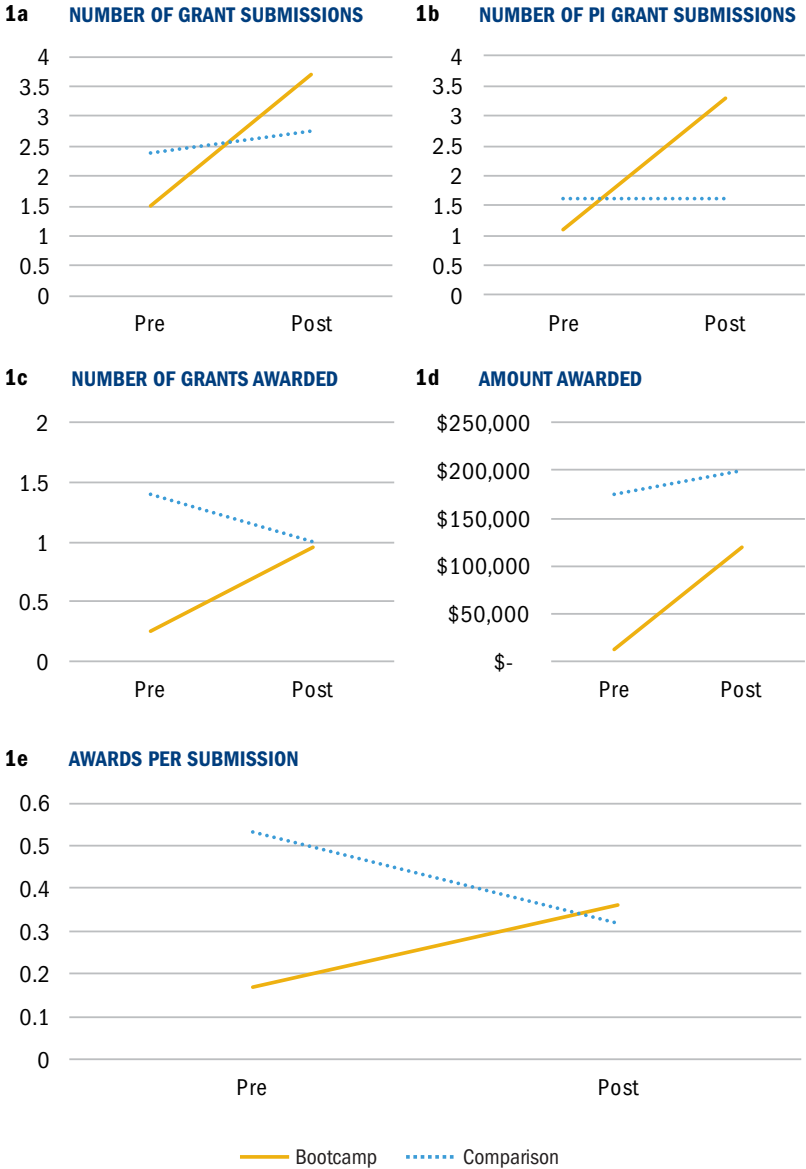
Anne Camper, College of Engineering and a Fulbright Scholar in her lab, Gem Encarnacion Santillana.

TABLE 3. Change in Grant Expenditures for Tenured/Tenure-Track Women at Montana State University

		Calendar Year		
		2012	2016	DIFFERENCE
STEM & SBS	Number of TT Women Faculty	60	100	40
	Number of TT Women Pls	33	65	32
	Total Expenditures	\$6,814,450.71	\$13,855,449.65	\$7,040,998.94
	Expenditures/ TT Women Faculty	\$113,574.18	\$138,554.50	\$24,980.32
	Expenditures/ TT Women Pls	\$206,498.51	\$213,160.76	\$6,662.26
STEM	Number of TT Women Faculty	45	77	32
	Number of TT Women Pls	32	55	23
	Total Expenditures	\$6,848,481.97	\$12,617,179.35	\$5,768,697.38
	Expenditures/ TT Women Faculty	\$151,271.53	\$163,859.47	\$12,587.94
	Expenditures/ TT Women Pls	\$214,4015.06	\$229,403.26	\$15,388.20
SBS	Number of TT Women Faculty	15	23	8
	Number of TT Women Pls	1	10	9
	Total Expenditures	\$7,231.76	\$1,238,270.30	\$1,231,038.54
	Expenditures/ TT Women Faculty	\$482.12	\$53,837.84	\$53,355.72
	Expenditures/ TT Women Pls	\$7,231.76	\$123,827.03	\$116,595.27

Breakdown of women tenure-track faculty hires by STEM/SBS department and the total over the life of the ADVANCE Project TRACS grant.

FIGURE 3. Results from analysis of the Bootcamp participants one year pre - and one-year post-Bootcamp as contrasted to a comparison sample of similar faculty during the same time period.



Smith, J.L., Stoop, C. D., Young, M., Belou, R., Held, S. (2017). Grant Writing Bootcamp: An Intervention to Enhance the Research Capacity of Academic Women in STEM. *BioScience*. 67 (7): 638-645. DOI: <https://doi.org/10.1093/biosci/bix050>

Enhancing Work-life Integration

The enhancing work-life integration initiative: During the five years of ADVANCE Project TRACS, infrastructure increased to support the lives of faculty during difficult life transitions: **3 policies were created or modified:** The Stop the Tenure Clock Opt Out policy, the Faculty Modified Duties Policy (with centralized funding in the Provost's office), and the Sick Leave Donation Pool Policy (maintained and managed by HR); **4 new family care-rooms** were created including one in the high profile space in the student union building (see Figure 4); and **5 job descriptions** were broadened: 2 new job candidate family advocates, 1 Student Family Support Program Manager, 1 faculty dual-career community liaison, and 1 work-life HR specialist. A total of **386** job candidates were supported by a Family Advocate; and approximately **130** people received one-on-one assistance from a Family Advocate. The HR supported “Dual Career Community Liaison” met with 96 private sector partners to assist with job opportunities. ADVANCE Project TRACS worked on more than **70** academic partner accommodation cases resulting in **33 tenure-track faculty who accepted positions in 21 different departments** (63% women) over five years. Their partners were accommodated in either a tenure-track (53%) or non-tenure-track academic position (47%).



FIGURE 4. An example of Family Care-rooms (pictured, Reid Hall 316).



Above: Sarah Janzen, Joseph Janzen and family, Agricultural Economics

Social Science Research

The Social Science Research Team: During the five years of ADVANCE Project TRACS, the Social Science Research Team generated new knowledge about diversity-science and published **6 manuscripts in peer-reviewed journals** including papers in *Science*, *PNAS*, and *BioScience*, with other projects ongoing. In addition, this team has had **3** invited popular press contributions, **21** peer-reviewed conference presentations and

The Social Science Research Team published 6 manuscripts in peer-reviewed journals including papers in Science, PNAS, and BioScience.

symposiums, **45 invited national and regional presentations**, **10** written products, and **3** additional digital media products including a film documenting the social science process of Project TRACS which has been viewed more than 465 times (*see Figure 5*).

Our research was featured in media outlets including the *Chronicle of Higher Education*, *Inside Higher Education*, *Science News*, *Science Daily*, *U.S. News*

and *World Report*, *Fast Company*, *Amy Poehler Smart Girls*, and many others.

The team designed and conducted **4** annual campus climate surveys and led the implementation of the national COACHE survey. They also led the collection of **5 years** of qualitative diversity self-study data from every unit on campus, and disseminated knowledge to stakeholders during **4** annual data charrettes.



FIGURE 5. Screenshot from MSU ADVANCE Project TRACS Documentary showing President Waded Cruzado as she talks about the impact of the project on MSU.



from https://youtu.be/T_Rvfxpn8Hk.

ADVANCE Project TRACS Peer Reviewed Publications

- Smith, J. L., Handley, I. M., Rushing, S. A., Belou, R., Shanahan, E.A., Skewes, M. C., Kambich, L., Honea, J., Intemann, K. (in press). Added Benefits: How Supporting Women Faculty in STEM Improves Everyone's Job Satisfaction. *Journal of Diversity in Higher Education*.
- Skewes, M. C., Shanahan, E. A., Smith, J. L., Honea, J., Belou, R., Rushing, S., Intemann, K., & Handley, I. M. (in press). Absent Autonomy: Relational Competence and Gendered Paths to Faculty Self-Determination in the Promotion and Tenure Process. *Journal of Diversity in Higher Education*.
- Smith, J.L., Stoop, C. D., Young, M., Belou, R., Held, S. (2017). Grant Writing Bootcamp: An Intervention to Enhance the Research Capacity of Academic Women in STEM. *BioScience*. 67 (7): 638-645. DOI: <https://doi.org/10.1093/biosci/bix050>
- Mitchneck, E., Smith, J. L. & Latimer, M. (2016). A Recipe for Change: Creating a More Inclusive Academy. *Science*, 352(6282), 148-149 (6282), 148-149. doi: 10.1126/science.aad8493
- Handley, I. M., Brown, E. R., Moss-Racusin, C. A., Smith, J. L. (2015). Quality of Evidence Revealing Subtle Gender Biases in Science is in the Eye of the Beholder. *Proceedings of the National Academy of Sciences*, 112(43), 13201-13206. doi: 10.1073/pnas.1510649112
- Smith, J. L., Handley, I. M., Zale, A. V., Rushing, S. A., & Potvin, M. (2015). Now Hiring! Empirically Testing a 3-Step Intervention to Increase Faculty Gender Diversity in STEM. *BioScience*, 65(11), 1084-1087. doi:10.1093/biosci/biv138.



Women in Science Distinguished Professor Sarah Codd, Mechanical and Industrial Engineering (2016) and Joan Broderick, Chemistry and Biochemistry (2014).

Women in Science Distinguished Professor: Life, Natural, Engineering, and Social Sciences

As part of ADVANCE, Montana State University has established the *Women in Science Distinguished Professor* award to support and recognize our outstanding women faculty in these fields. **This award honors outstanding faculty women in the sciences who have excelled in their research accomplishments, teaching and mentorship, and contributions to the state of Montana and/or Montana State University.**

Working with Deans and the MSU Alumni Foundation, the ADVANCE team has raised over \$125,000, nearly meeting our goal of \$150,000 to endow this award in the long-term. The faculty member chosen for the WIS Distinguished Professor receives an annual award of \$4,000 for 2 years. The awardee is required to give one public lecture on the value and contribution of diversity to their scholarship and experiences and serves as a voice and role model for others on campus via participation in one or two panel discussions and workshops each year for two years.

Thank you!

Special thank you for the support to: Tom McCoy, Vice President for Research, Creativity, and Technology Transfer, and Co-PI (2012-2013), Renee Reijo Pera, Vice President of Research and Economic Development, Terry Leist, Vice President of Administration and Finance, Cathy Hasenpflug, Chief Human Resources Officer, and Robert Mokwa, Executive Vice President for Academic Affairs and Provost (2016 – present).

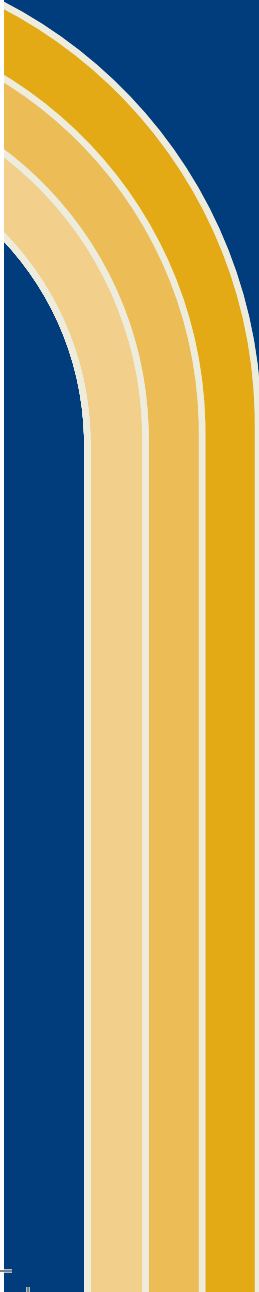
Photos throughout this brochure are women faculty at MSU who were supported by ADVANCE Project TRACS, or were part of the Project TRACS team, or both!

On the Cover:

Top - Connie Chang, Jim Wilking, and family, Chemical and Biological Engineering

Middle - Michelle Flenniken, Plant Sciences and Plant Pathology

Bottom - Elizabeth Shanahan, Political Science, at the 2015 Data Charrette where data from the climate surveys and social sciences research was presented to the MSU community.



Updated August 2017 | advance@montana.edu | montana.edu/nsfadvance