

Driven to Discover Research Facility at the Minnesota State Fair 2022 Annual Report

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“It was absolutely beyond our wildest dreams. The entire project at the State Fair was a lot of fun and a huge success.”

– 2018 D2D investigator



1367 COSGROVE
MINNESOTA STATE FAIRGROUNDS

“We were able to collect data from a broad section of the State’s rural population which would have been difficult to do any other way.” -2015 D2D investigator

OUR STORY

Launching in 2014, the Driven to Discover Research Facility at the Minnesota State Fair – better known as D2D – links the substantial research capacity of the University of Minnesota with the largest public gathering in Minnesota. This innovative facility, the first of its kind in the nation, helps build a culture of research participation in Minnesota and accelerate learning on issues critical to the health and wellbeing of our citizens.



Serving as a forum for knowledge and ideas, D2D allows fairgoers to participate in research in an exciting, innovative, and convenient way. Most studies take under 20 minutes. With space for up to 50 researchers per day to recruit participants and collect data over the course of the fair, the D2D Research Facility allows researchers to meet enrollment goals in a matter of hours or days (as opposed to months or years), and provides a broader pool of participants than typically accessible.

Since 2014, the D2D program has reached over 350,000 fairgoers, one-quarter of whom hail from Greater Minnesota. To date, nearly 130,000 individuals have participated in 329 studies.

OUR MISSION

- Showcase UMN research
- Support fast, efficient recruitment with access to diverse participants
- Promote faculty & student engagement
- Provide opportunities for collaboration



OUR IMPACT



Connecting the Community with Research

- **Promote greater citizen participation in research:** D2D is showing that it is possible to “crowd source” research. An estimated 20% of Minnesotans attend the fair in a given year and thousands participate on-site in research at D2D, many of whom have no prior experience with research and few opportunities to become involved with in-person research. Through one-on-one interactions with University student and faculty investigators, citizens gain enthusiasm for scientific inquiry and gain awareness of the importance of research.

Accelerating Research Impact

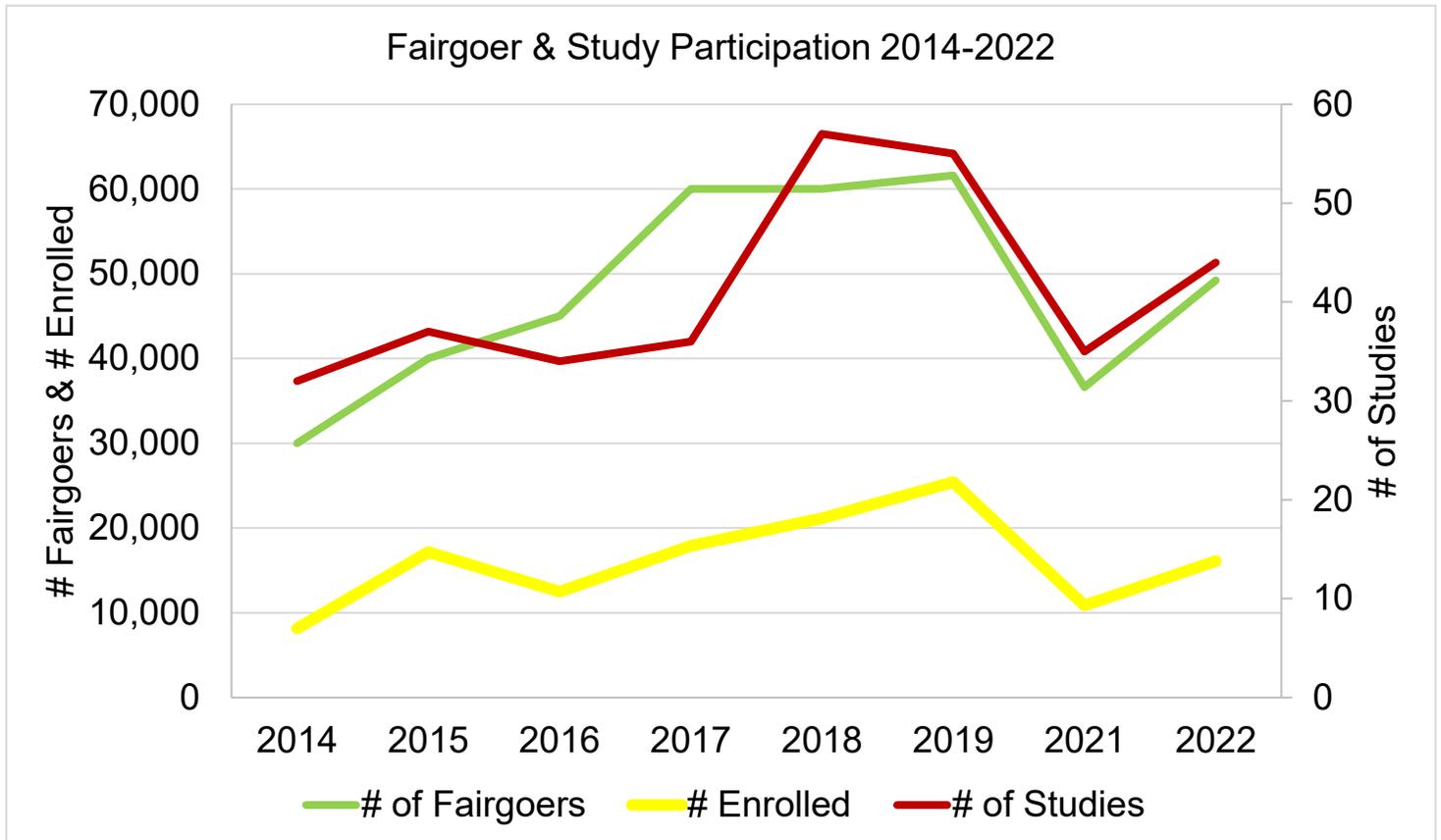
- **Rapid recruitment:** The rapid recruitment of research participants at D2D is far beyond what researchers can normally accomplish through traditional recruitment methods. Researchers using the D2D facility have reported it would have taken from 1-3 years to recruit the same number of participants.
- **Enable innovative studies and longitudinal tracking:** D2D’s State Fair setting provides endless possibilities for researchers to design and execute innovative studies, such as large-scale genomic collections. Many fairgoers return to the fair each year, enabling low-cost longitudinal follow-up not feasible in other venues.
- **Showcase University of Minnesota research:** D2D provides a public face for the University; building visibility for the wide scope of University research and providing Minnesotans the opportunity to interact with U of M researchers on an individual level. The program also provides researchers an easy way to communicate research results directly to the public.



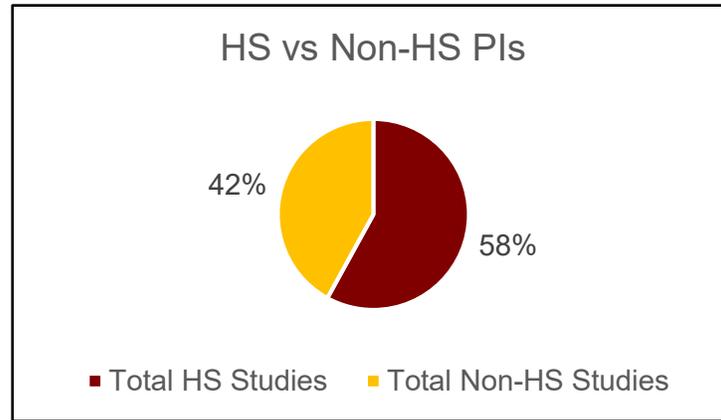
Building Traffic & Enrollment, 2014-2022

TO DATE:

- FAIRGOER FOOT TRAFFIC - 382,400
- FAIRGOERS ENROLLED - 129,318
- 329 STUDIES
- 5 SYSTEM CAMPUSES
- 38 COLLEGE/SCHOOL PARTNERS
- 107 DEPT/DIVISION PARTNERS

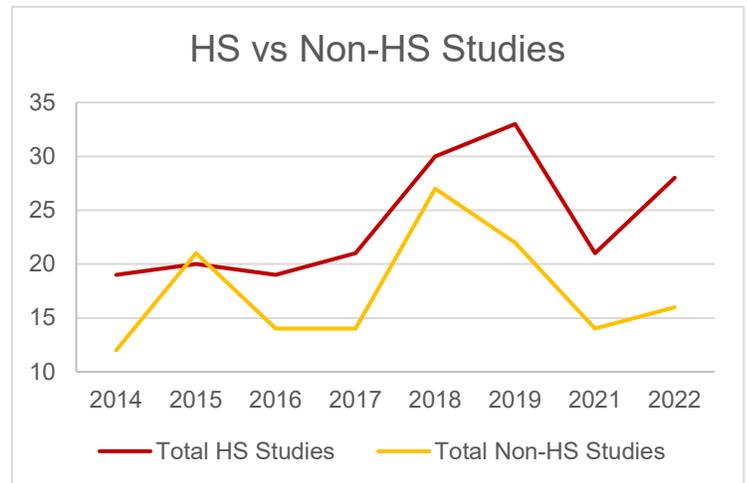


Health Science vs Non-HS Participation 2014-2022



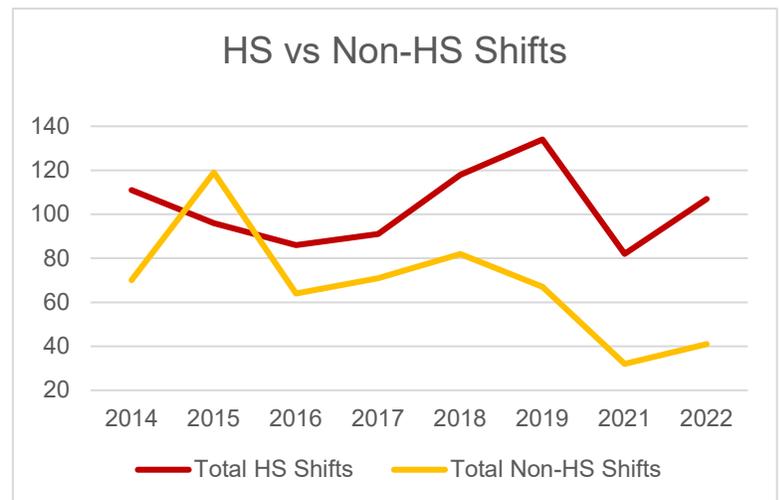
D2D STUDIES

| | HS | Non-HS | Total | %-age HS |
|--------------|------------|------------|------------|------------|
| 2014 | 19 | 12 | 31 | 61% |
| 2015 | 20 | 21 | 41 | 49% |
| 2016 | 19 | 14 | 33 | 58% |
| 2017 | 21 | 14 | 35 | 60% |
| 2018 | 30 | 27 | 57 | 53% |
| 2019 | 33 | 22 | 55 | 60% |
| 2021 | 21 | 14 | 35 | 60% |
| 2022 | 28 | 16 | 44 | 64% |
| Total | 191 | 140 | 331 | 58% |



D2D SHIFTS

| | HS | Non-HS | Total | %-age HS |
|--------------|------------|------------|-------------|------------|
| 2014 | 111 | 70 | 181 | 61% |
| 2015 | 96 | 119 | 215 | 45% |
| 2016 | 86 | 64 | 150 | 57% |
| 2017 | 91 | 71 | 162 | 56% |
| 2018 | 118 | 82 | 200 | 59% |
| 2019 | 134 | 67 | 201 | 67% |
| 2021 | 82 | 32 | 114 | 72% |
| 2022 | 107 | 41 | 148 | 72% |
| Total | 718 | 505 | 1223 | 59% |



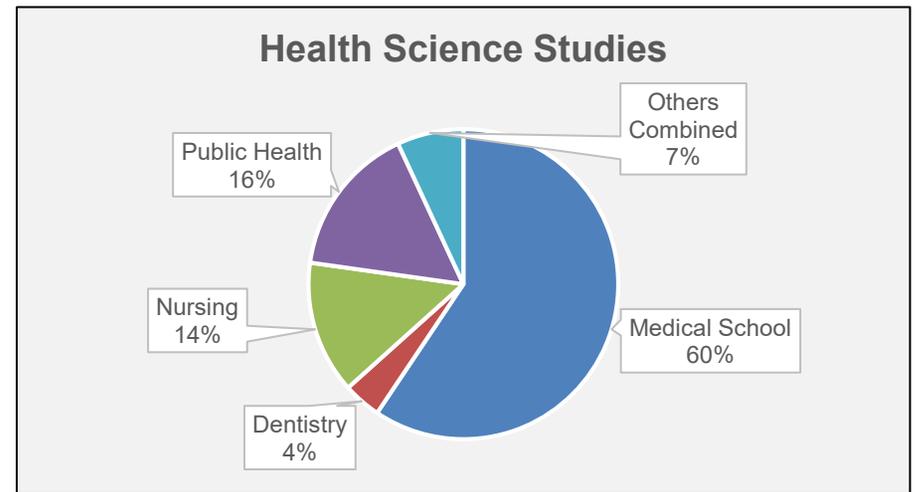
Health Sciences Research at D2D

STUDIES WITH PRINCIPAL INVESTIGATOR INSIDE HEALTH SCIENCES

| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2021 | 2022 |
|---------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | # of Studies |
| College of Pharmacy | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 |
| College of Vet Med | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Medical School | 13 | 16 | 11 | 10 | 15 | 20 | 13 | 17 |
| School of Dentistry | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 2 |
| School of Nursing | 2 | 2 | 0 | 3 | 5 | 4 | 4 | 6 |
| School of Public Health | 3 | 1 | 4 | 4 | 7 | 7 | 2 | 2 |
| Ctr. for Allied Health Programs | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 |
| Ctr. for Spirituality & Healing | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| CTSI | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| Food Protection & Defense Inst. | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Total Health Sciences | 19 | 20 | 19 | 21 | 30 | 33 | 21 | 29 |

WHAT DO THESE NUMBERS TELL US?

- Health Science participation grows every year
- Medical School is heaviest user, 60% of D2D studies



**Driven to Discover Research Facility
at the Minnesota State Fair (D2D)**

UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

Non-Health Sciences Research at D2D

STUDIES WITH PRINCIPAL INVESTIGATOR OUTSIDE HEALTH SCIENCES

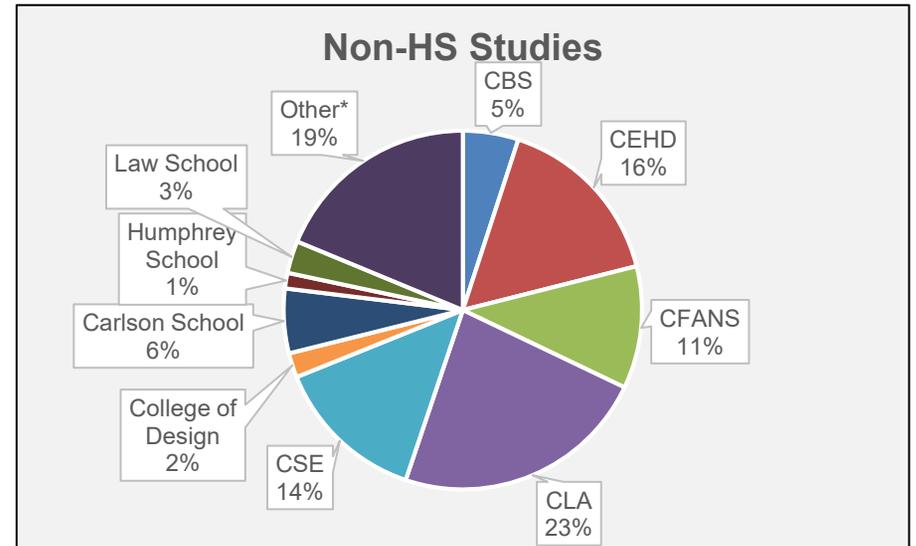
| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2021 | 2022 |
|-------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | # of Studies |
| CBS | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| CEHD | 2 | 4 | 4 | 5 | 3 | 2 | 1 | 1 |
| CFANS | 2 | 4 | 1 | 1 | 2 | 4 | 0 | 1 |
| CLA | 4 | 8 | 4 | 2 | 5 | 4 | 1 | 4 |
| CSE | 0 | 1 | 1 | 2 | 5 | 5 | 2 | 3 |
| College of Design | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Carlson School | 0 | 1 | 2 | 2 | 2 | 0 | 0 | 1 |
| Humphrey School | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |
| Law School | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
| Other* | 2 | 1 | 1 | 0 | 7 | 4 | 8 | 2 |

| | | | | | | | | |
|---------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Total Non-HS | 12 | 21 | 14 | 14 | 27 | 22 | 14 | 14 |
|---------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|

* - Crookston, Duluth, Morris, Rochester, HRPP, Libraries, External

WHAT DO THESE NUMBERS TELL US?

- D2D's reach is broad across Schools & Colleges outside the HS
- CLA is our heaviest user, with 23% of D2D studies



2016 - 2022 Shift Revenue

| Year | Health Sciences | | | Non-Health Sciences | | | Total Shifts | Total Revenue |
|-------|--------------------------------|------------|-----------|---------------------|------------|----------|--------------|---------------|
| | # of Shifts | Shift Cost | Revenue | # of Shifts | Shift Cost | Revenue | | |
| 2016 | 86 | \$806 | \$61,532 | 66 | \$806 | \$48,748 | 152 | \$110,280 |
| 2017 | 91 | \$806 | \$61,114 | 71 | \$806 | \$46,106 | 162 | \$107,220 |
| 2018 | 120 | \$806 | \$76,148 | 82 | \$806 | \$63,312 | 202 | \$139,460 |
| 2019* | 138 | \$867 | \$105,885 | 69 | \$806 | \$59,823 | 207 | \$165,708 |
| 2020 | Fair cancelled due to COVID-19 | | | | | | 0 | \$0 |
| 2021 | 82 | \$867 | \$66,090 | 30 | \$867 | \$29,552 | 112 | \$95,642 |
| 2022 | 107 | \$867 | \$92,769 | 41 | \$867 | \$35,547 | 148 | \$128,316 |

* Fees increased

D2D Shift Fees

D2D is an Internal Service Organization, meaning each year the budget is re-evaluated and fees determined to meet annual spending, without turning a profit.

WHAT DO THESE NUMBERS TELL US?

- Pre-COVID, D2D had shown revenue growth every year. We anticipate it may take several years to build back post-COVID given the ongoing public health challenges.
- Fees remain a barrier to participation, most specifically for new faculty and student PIs. We saw a drop in non-Health Sciences revenue with increased fees.
- Vast majority of research is performed on-site, thus Recruitment-Only rate eliminated in 2022.

2022 Recap

- Visitors = 49,200
- Subjects enrolled = 16,188
- Studies = 44
- PI Satisfaction = 100% Very Satisfied or Satisfied

On average:

- Subjects per shift, per study = 118 (range 24 - 281)
 - Adult studies = 134 (24 - 281)
 - Child studies = 41 (27 - 68)
- Shifts per study = 3 (range: 1-8, mode: 2)
- Cost per enrollee: \$12.93 (\$2.37 - \$48.17)

D2D Calendar

- Fall: RFA release, billing, feedback, reporting, promotions, fundraising
 - Winter: Application review & selection
 - Spring: Kick Off Meeting, shift scheduling, staffing, IRB submissions
 - Summer: Open houses, resource procurement, building set up, Fair!
-

August 24 - Sept. 4, 2023

See you at the Fair!



D2D is one of the gems of the University. Not only does it support the U's research endeavor, it provides an opportunity for the people of Minnesota to reach out and touch the University in a unique way. The people-to-people aspect of the building serves to humanize the University's research as well as the institution itself.

– 2019 D2D participant

D2D Research Publications, 2016-Present

PEER-REVIEWED PUBLICATIONS

1. Allen, J., Zhang, L., Johnson, A., Jacobson, P., McCarty, C., Pittenger, A., & Bishop, J. (2022). Development and validation of the Minnesota Assessment of Pharmacogenomic Literacy. *Journal of Personalized Medicine* 12(1398). doi.org/10.3390/jpm12091398
2. Austin, R., Mathiason, M., Lindquist, R., McMahon, S., Pieczkiewicz, D., & Monsen, K. (2021). Understanding women's cardiovascular health using MyStrengths+MyHealth: a patient-generated data visualization study of strengths, challenges, and needs differences. *Journal of Nursing Scholarship*, 0(0), 1-9. doi:10.1111/jnu.12674
3. Bakker, C., Koffel, J., & Theis-Mahon, N. (2017). Measuring the health literacy of the Upper Midwest. *Journal of the Medical Library Association: JMLA*, 105(1), 34–43. <http://doi.org/10.5195/jmla.2017.105>
4. Basta, N., Becker, A., Li, Q., & Nederhoff, D. (2019). Parental awareness of Meningococcal B vaccines and willingness to vaccinate their teens. *Vaccine*, 37(4), 670-676. doi: 10.1016/j.vaccine.2018.11.078
5. Baumgarten, L., Labine, L., Dixon, C., Palma, I., Weight, C. (2016). Ability of the general public to accurately estimate survival rates for genitourinary cancer using unrestricted internet searches and online nomograms. *The Journal of Urology*, 195(4), e500. <https://doi.org/10.1016/j.juro.2016.02.1686>
6. Beehler, S., Ahern, J., Balmer, B., Kuhlman, J. (2016). Military families' perceptions of neighborhood characteristics affecting reintegration: Development of an aggregate measure. *Military Behavioral Health*, 5(1), 43-50. <https://doi.org/10.1080/21635781.2016.1243493>
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11. Byiers, B., Merbler, A., Barney, C., Frenn, K., Panoskaltis-Mortari, A., Ehrhardt, M., Feyma, T... & Symons, F. (2020). Evidence of altered salivary cytokine concentrations in Rett syndrome and associations with clinical severity. *Brain, Behavior, & Immunity – Health*, 1, <https://doi.org/10.1016/j.bbih.2019.100008>
12. Calabrese, A., Cheong, A., Cheung, S., He, Y., Kwon, M. Mansfield, J., Subramanian, A., Yu, D. & Legge, G. (2016). Baseline MNREAD measures of normally sighted subjects from childhood to old age. *Investigative Ophthalmology & Visual Science*, 57, 3836-3843. <http://iovs.arvojournals.org/article.aspx?articleid=2537421>
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14. Calvert, C., Toomey, T., & Jones-Webb, R. (2021). Are people aware of the link between alcohol and different types of Cancer? *BMC Public Health*, 21(1), 734. doi: 10.1186/s12889-021-10780-2
15. Campagna, J., Baumgarten, L., Labine, L., Palma, I., Albersheim, J., Sathianathen, N., & Weight, C. (2019). Prostate cancer survival estimates by the general public using unrestricted internet searches and online nomograms. *European Urology Focus*, S2405-4569(19)20012-4. doi: 10.1016/j.euf.2019.01.012
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MANUSCRIPTS IN REVIEW

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2. Park, H. In Review at RI: Small: High Fidelity Social Signal Reconstruction in Daily Living Space NSF Robust Intelligence (IIS) Core Program.

STUDENT DISSERTATIONS, THESES & POSTERS

1. Carlson, C. (2020). Toxins Produced by *Staphylococcus aureus*. Concordia University, St. Paul Research & Scholarship Symposium, Spring 2020.
2. Castillo Jimenez, A. (2020). Identification of *Staphylococcus aureus* in State Fair Samples. Concordia University, St. Paul Research & Scholarship Symposium, Spring 2020.
3. Desai, P. (2020). What Women Want. Doctoral Thesis in Health Policy & Management. Mary Butler, Academic Advisor.
4. Dusoruth, V. (2019). Consumer Behavior and Environmental Policy: Applications to Issues in Food Waste and Organics Recycling. Doctoral Thesis. Retrieved from the University of Minnesota Digital Conservancy, <http://hdl.handle.net/11299/206671>.
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14. Martin, S. (2020). Production of Superantigens in *Staphylococcus aureus* from Healthy Individuals. Concordia University, St. Paul Research & Scholarship Symposium, Spring 2020.
15. Mejia, K. (2017). A Nine-Item Questionnaire for Measuring the Social Disfordance of Mediated Social Touch Technologies. Master of Science in Mechanical Engineering. Svetlana Yarosh, Advisor. Retrieved from the University of Minnesota Libraries Digital Conservancy, <https://conservancy.umn.edu/handle/11299/190590>
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19. Palm, B. (2017) Metalinguistic Skills in Children with ADHD. Master's Thesis. Lizbeth Finestack, Advisor.
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22. Ruprecht, M. (2016). The Determination of an Effective Smile. Department of Psychology and School of Statistics. Nathaniel Helwig, Advisor.

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