



Advancing Equity in Accessibility and Travel Experiences: The Role of Gender and Identity

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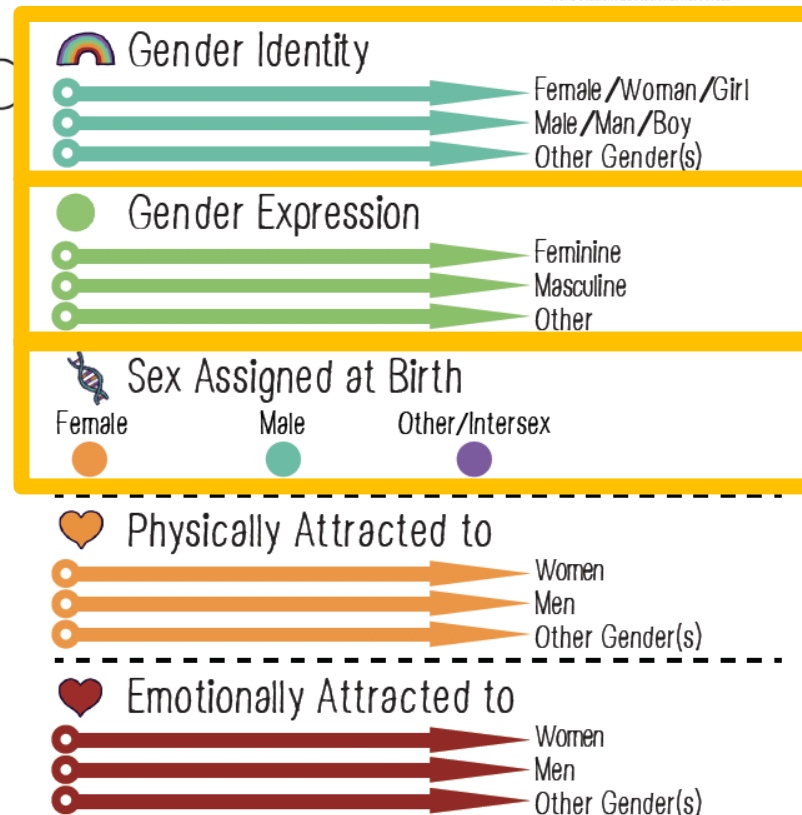
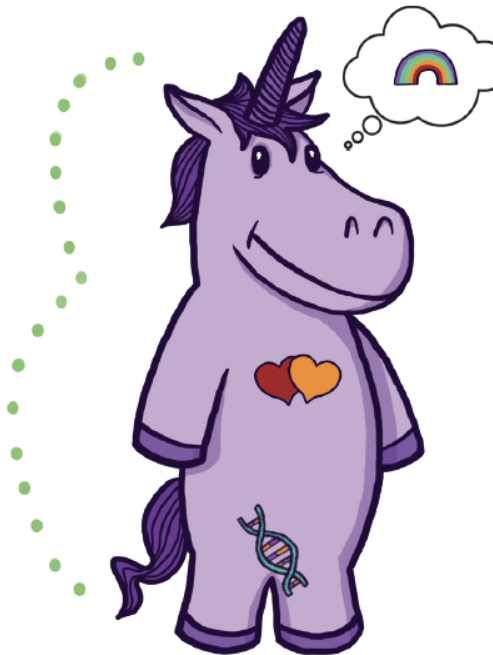
UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

- Overview of Gender Terms
- Project Objectives
- Approach & Outcomes
- Key Findings
 - Gender and Gender Identity
 - Activity-Travel Behaviors
 - Subjective Well-Being Outcomes
- Summary

Overview of Gender Terms

The Gender Unicorn

Graphic by:
TSER
Trans Student Educational Resources



Gender identity: self-identified gender; non-binary

Gender expression: gender-typical activity-travel patterns

Sex assigned at birth: biological status assigned at birth

Gender roles: household responsibility (a society's expectations of how men and women should behave)

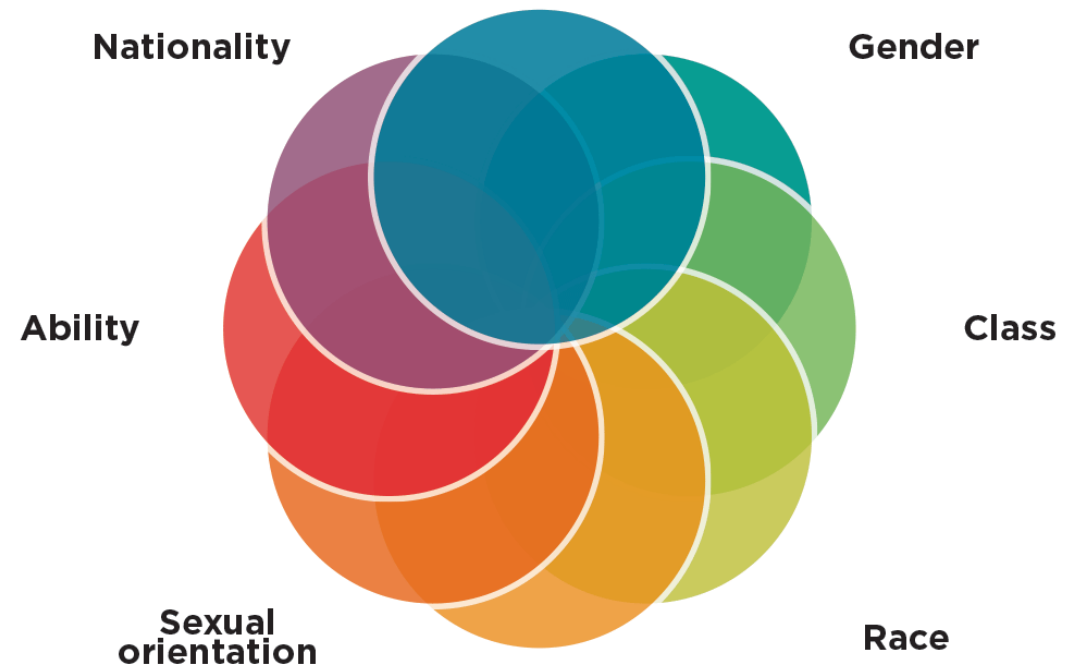
To learn more, go to:
www.transstudent.org/gender

Design by Landyn Pan and Anna Moore

Overview of Gender Terms

Intersectionality

- Intersectionality refers to the interaction between gender, race, class, and other social traits
- The power implications of intersectionality play out in individual lives, institutional arrangements, and society

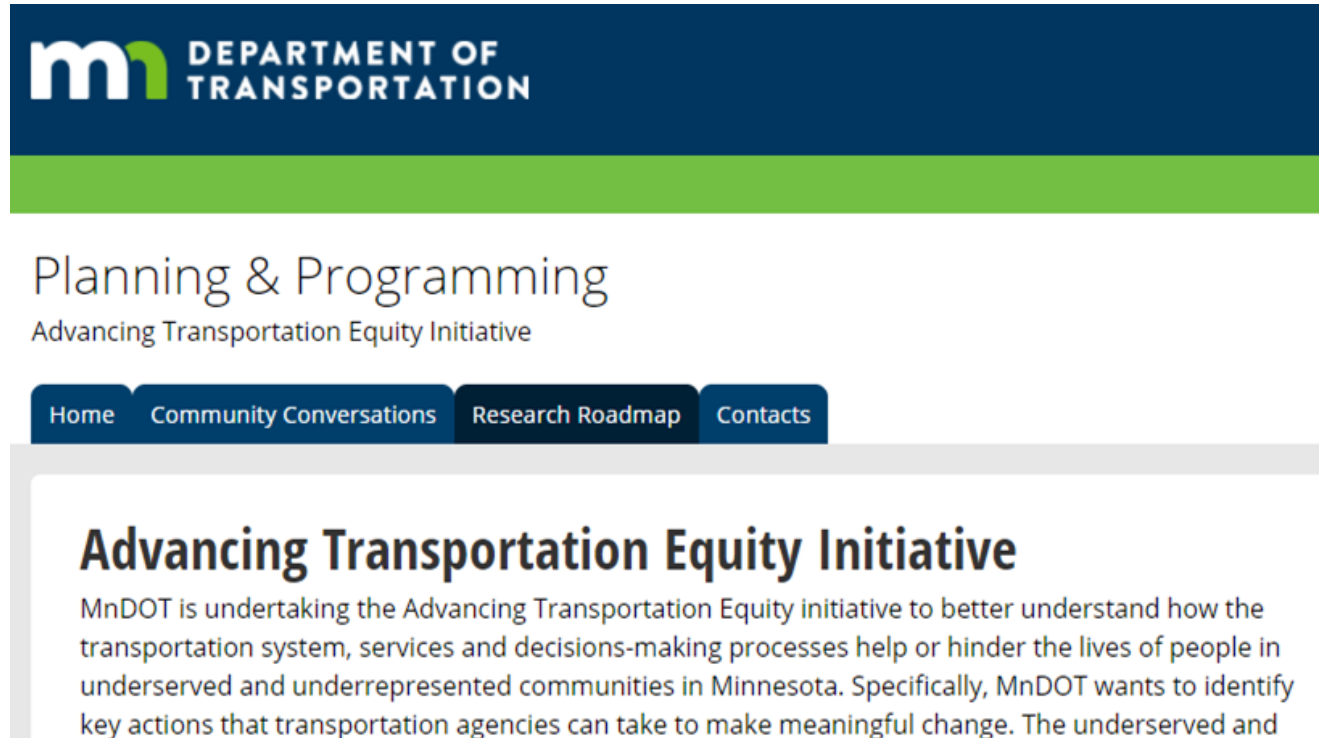


Project Objectives

Project Objectives

Improve social inclusion by including underrepresented genders

- Advancing Transportation Equity Initiative
- Rethinking I-94



The screenshot shows the MnDOT website header with the logo and the text 'DEPARTMENT OF TRANSPORTATION'. Below the header is a green horizontal bar. The main content area is titled 'Planning & Programming' with the subtitle 'Advancing Transportation Equity Initiative'. A navigation menu includes 'Home', 'Community Conversations', 'Research Roadmap', and 'Contacts'. The main heading is 'Advancing Transportation Equity Initiative' followed by a paragraph: 'MnDOT is undertaking the Advancing Transportation Equity initiative to better understand how the transportation system, services and decisions-making processes help or hinder the lives of people in underserved and underrepresented communities in Minnesota. Specifically, MnDOT wants to identify key actions that transportation agencies can take to make meaningful change. The underserved and

Project Objectives

Reduce road user costs

- Gender identity affects individuals' behaviors, interactions and economic & health outcomes
- Transportation needs may be misunderstood by sex assigned at birth rather than gender identity

Minnesota Human Rights Act (MHRA)

Minnesota Legislature

Menu

Office of the Revisor of Statutes

Statutes Laws Rules Court Rules Constitution Revisor's Office Search Law by Keyword

2022 Minnesota Statutes > HUMAN RIGHTS > Chapter 363A > Section 363A.08

363A.07 363A.09

2022 Minnesota Statutes Authenticate PDF

363A.08 UNFAIR DISCRIMINATORY PRACTICES RELATING TO EMPLOYMENT OR UNFAIR EMPLOYMENT PRACTICE.

Subdivision 1. **Labor organization.** Except when based on a bona fide occupational qualification, it is an unfair employment practice for a labor organization, because of race, color, creed, religion, national origin, sex, marital status, status with regard to public assistance, familial status, disability, sexual orientation, or age:

- (1) to deny full and equal membership rights to a person seeking membership or to a member;
- (2) to expel a member from membership;
- (3) to discriminate against a person seeking membership or a member with respect to hiring, apprenticeship, tenure, compensation, terms, upgrading, conditions, facilities, or privileges of employment; or
- (4) to fail to classify properly, or refer for employment or otherwise to discriminate against a person or member.

Project Objectives

Safety

Understand the “full picture” of safety, including experienced emotions during travel (such as stressful and tired) to assess perceived or potential safety issues across genders



VISION
Minnesota’s multimodal transportation system maximizes the health of people, the environment and our economy.



MISSION
Plan, build, operate and maintain a safe, accessible, efficient and reliable multimodal transportation system that connects people to destinations and markets throughout the state, regionally and around the world.

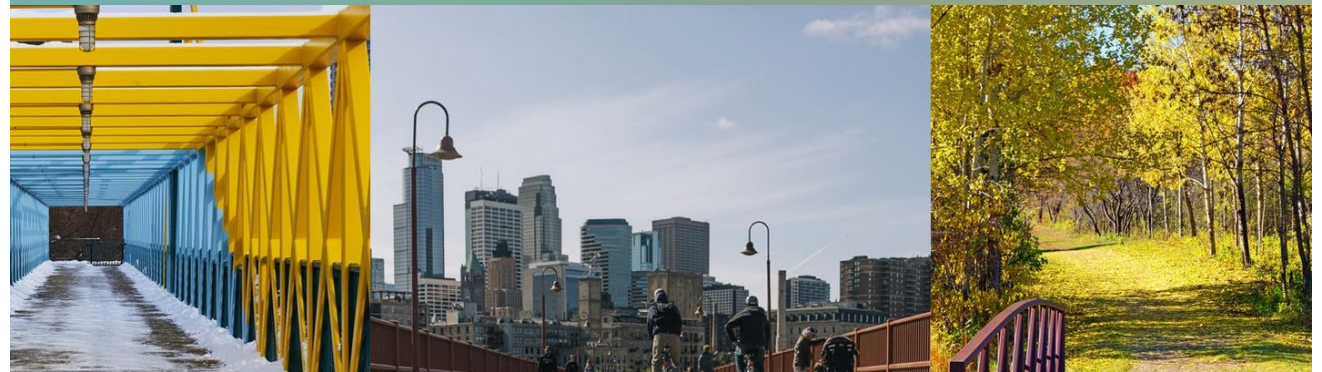


CORE VALUES
Safety
Excellence
Service
Integrity
Accountability
Diversity and Inclusion

Project Objectives

Foster long-term collaborative research on Gender, Equity, and Transportation

The
Gender Equity in Transportation
Collaborative



Approach and Outcomes

Research Question

To what extent, if any, does someone's gender and identity influence their travel behaviors and experiences in Minnesota?

Literature Review

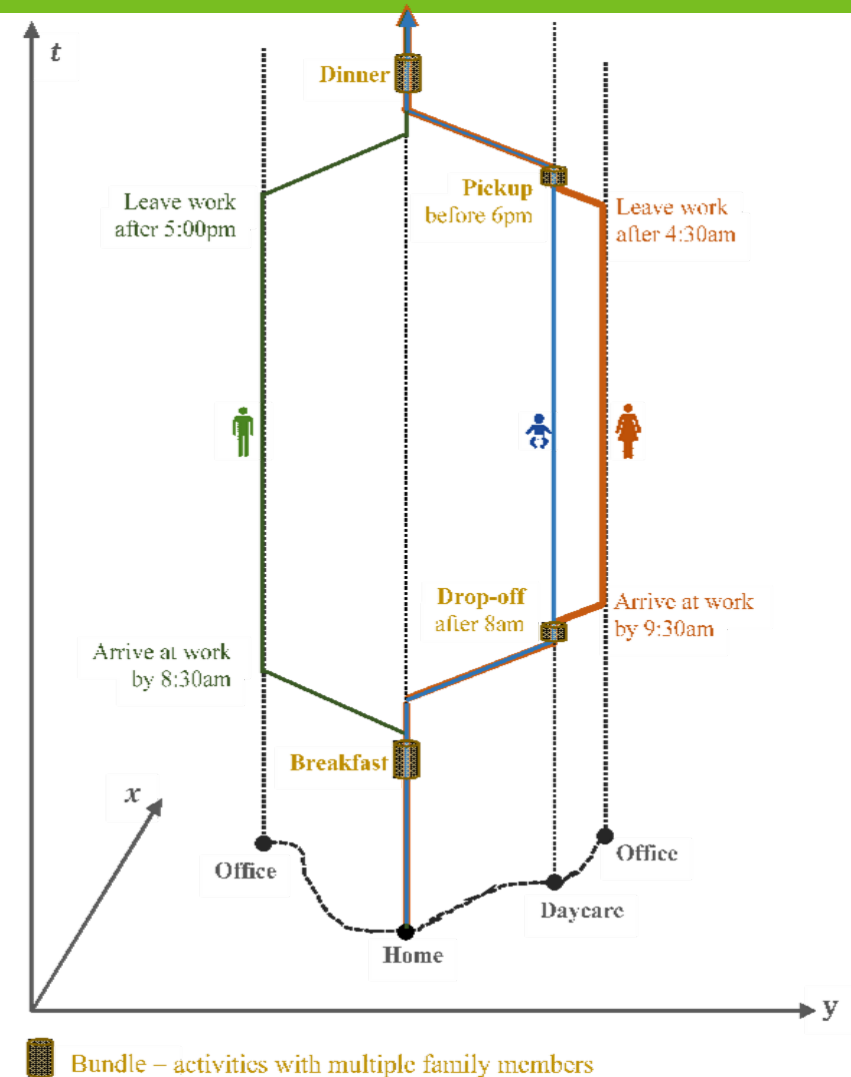
Gender-typical travel behaviors

- time allocation among activities and travels
- travel distances and activity space
- trip purposes, trip chains
- travel modes
- experiences

Approach and Outcomes

Activity-Travel Patterns

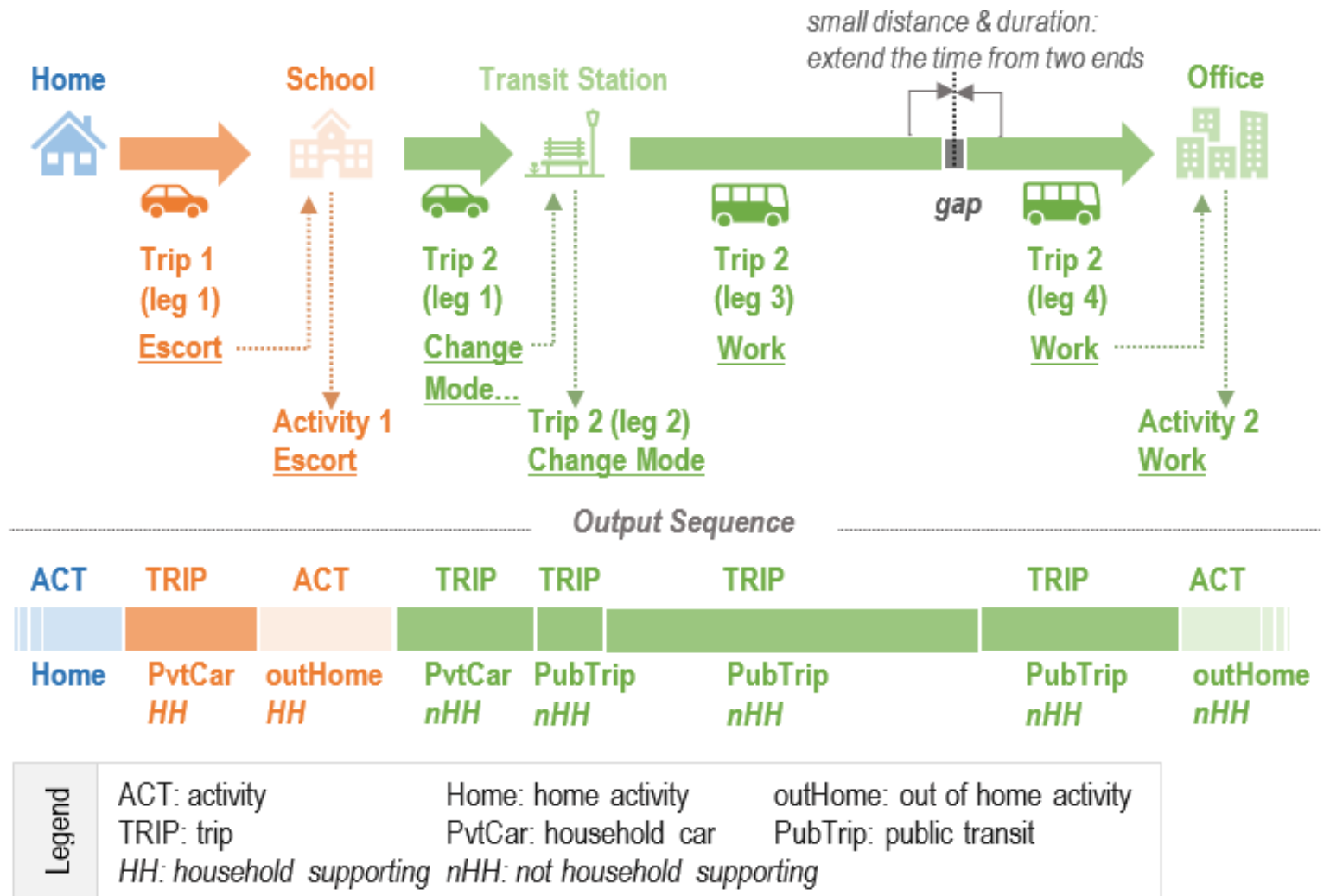
- 2019 Travel Behavior Inventory survey
 - 7,837 households in the greater Twin Cities region
 - Trips and activities in space across time
- Detect distinct patterns from data
 - Daily schedule instead of individual trips
 - Detect distinct behavior patterns: gender-typical?



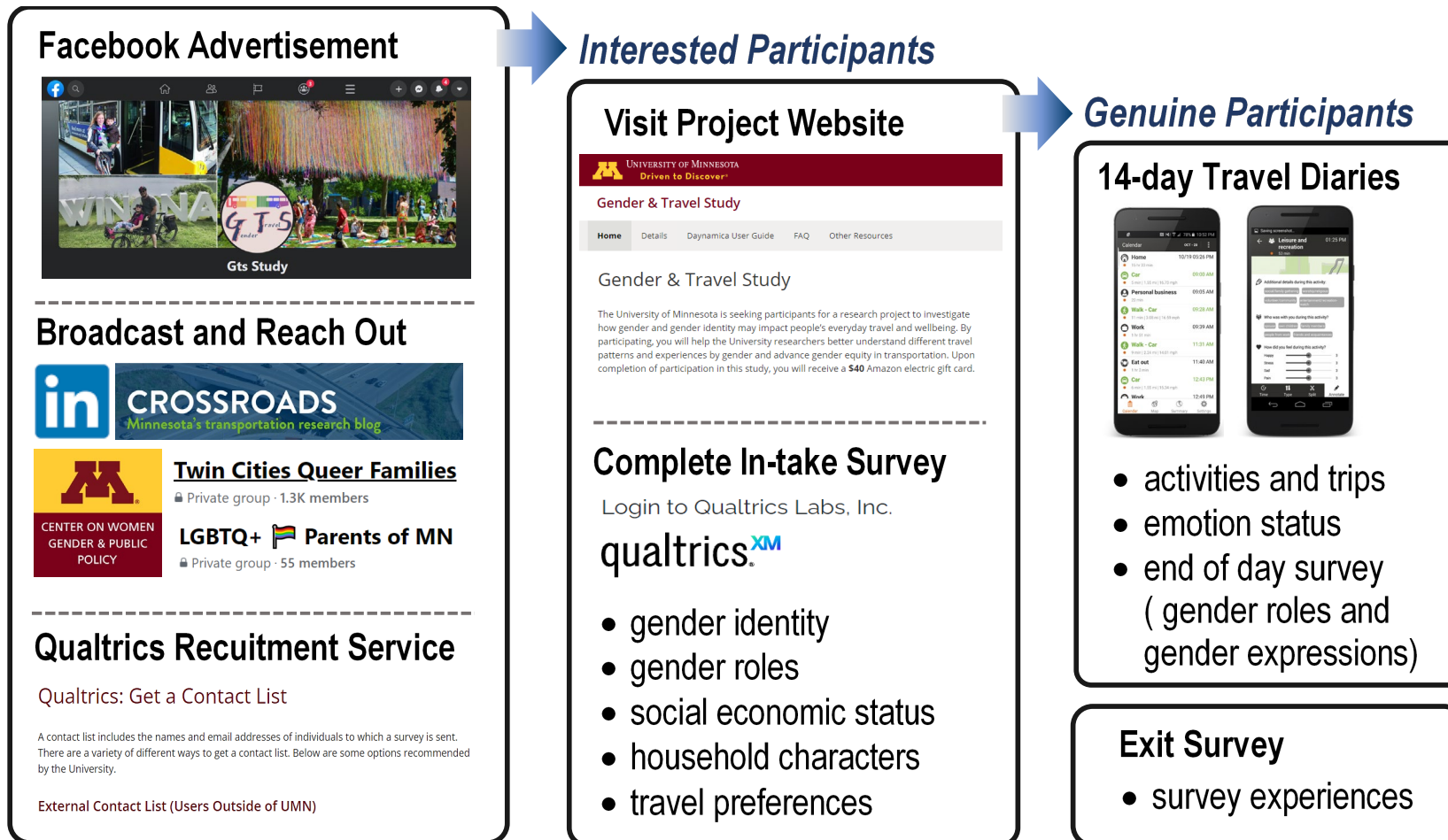
Approach and Outcomes

Household-Supporting Trips and Activities

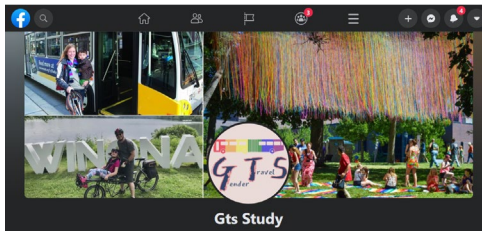
- ✓ TBI – trip purposes (HOME; ESCORT, SHOP, SOME ERRAND/OTHERS)
- ✓ Daynamica – user entered (trip/activity involve household tasks?)



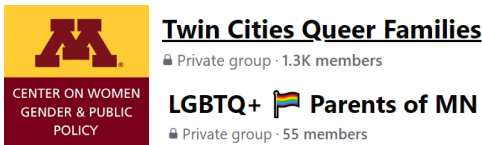
Approach and Outcomes: Travel Diary Surveys



Facebook Advertisement



Broadcast and Reach Out



Qualtrics Recruitment Service

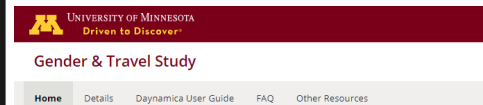
Qualtrics: Get a Contact List

A contact list includes the names and email addresses of individuals to which a survey is sent. There are a variety of different ways to get a contact list. Below are some options recommended by the University.

External Contact List (Users Outside of UMN)

Interested Participants

Visit Project Website



Gender & Travel Study

The University of Minnesota is seeking participants for a research project to investigate how gender and gender identity may impact people's everyday travel and wellbeing. By participating, you will help the University researchers better understand different travel patterns and experiences by gender and advance gender equity in transportation. Upon completion of participation in this study, you will receive a \$40 Amazon electric gift card.

Complete In-take Survey

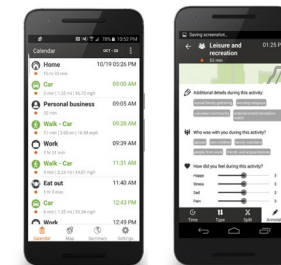
Login to Qualtrics Labs, Inc.



- gender identity
- gender roles
- social economic status
- household characters
- travel preferences

Genuine Participants

14-day Travel Diaries




- activities and trips
- emotion status
- end of day survey (gender roles and gender expressions)

Exit Survey

- survey experiences

Approach and Outcomes: Travel Diary Surveys

12:29

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These questions ask about your gender and gender identity. We are committed to your privacy, and you can always choose "prefer not to answer". Our website includes some useful resources about gender and identity for your

Self-identified Gender

What best describes your current gender identity?

Female

Male

Non-binary/ Non-conforming

Prefer Not to Answer

Prefer Self Describe:

Transgender (Sex)

Do you consider yourself as transgender?

Yes

No

Prefer Not to Answer

Gender Pronouns

What are your gender pronouns? (Please select all that apply)

She/Her/Hers

He/Him/His

They/Them/Theirs

Avoid Pronouns

Prefer Not to Answer

Prefer Self Describe:

12:29

Prefer Not to Answer

Prefer Self Describe:

Documented Gender

What is your gender on your legal documents? (e.g., driver's license, state ID) (Please select all that apply)

Female

Male

Non-binary/X

Prefer Not to Answer

Other:

<< >>

Powered by Qualtrics

12:29

Driven to Discover®

These questions ask about your thoughts on gender roles in terms of household tasks and responsibility. There are no right or wrong answers, so please respond to these questions that best describe your situations and attitudes.

How much household responsibility do you currently share with your spouse/partner?

I do all

0 10 20 30 40 50 60 70 80

Cooking and Serving Meals

No

Cleaning

No

My partner does all

0 10 20 30 40 50 60 70 80 90 100

Cooking and Serving Meals

No

Others do/ Not applicable

Current / Actual

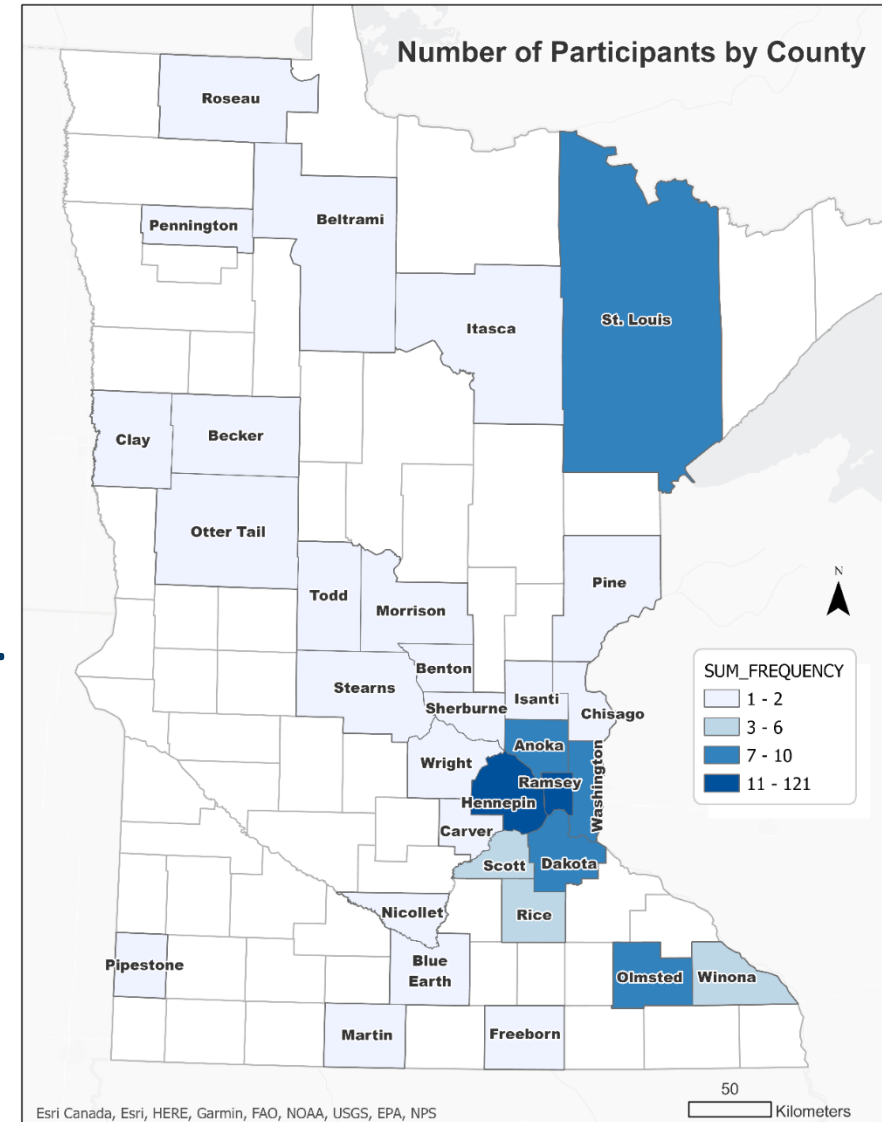
Expected

In your opinion, how much household responsibility do you think you SHOULD share with your spouse/partner?

Approach and Outcomes: Travel Diary Surveys

Participant Recruitment Outcomes 2021

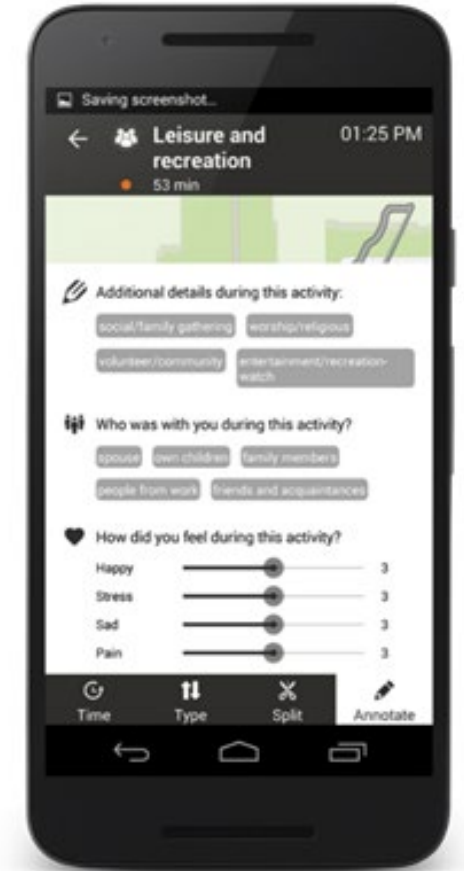
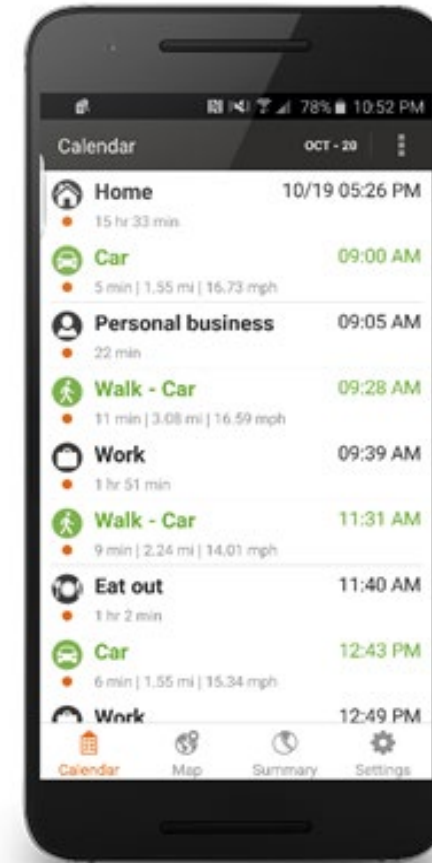
- Total completed travel diary surveys out of the initial intake survey respondents
 - ✓ Women: **165** / 457
 - ✓ Nonbinary: **40** / 97
 - ✓ Men: **73** / 225
- Diverse employment status, family type, age...
- Mostly white; not many Black and Hispanic.
- Mostly urban; not many Suburb and Rural outside Twin Cities Metropolitan Areas.



Approach and Outcomes: Travel Diary Surveys

Gender, identity, behaviors and subjective well-being outcomes

- 14-day travel diary + questions about gender identity and subjective well-being
- Relate travel behavior patterns to:
 - Gender and gender identity
 - Health outcomes
- Spatial disparity?



Approach and Outcomes: Action Plan

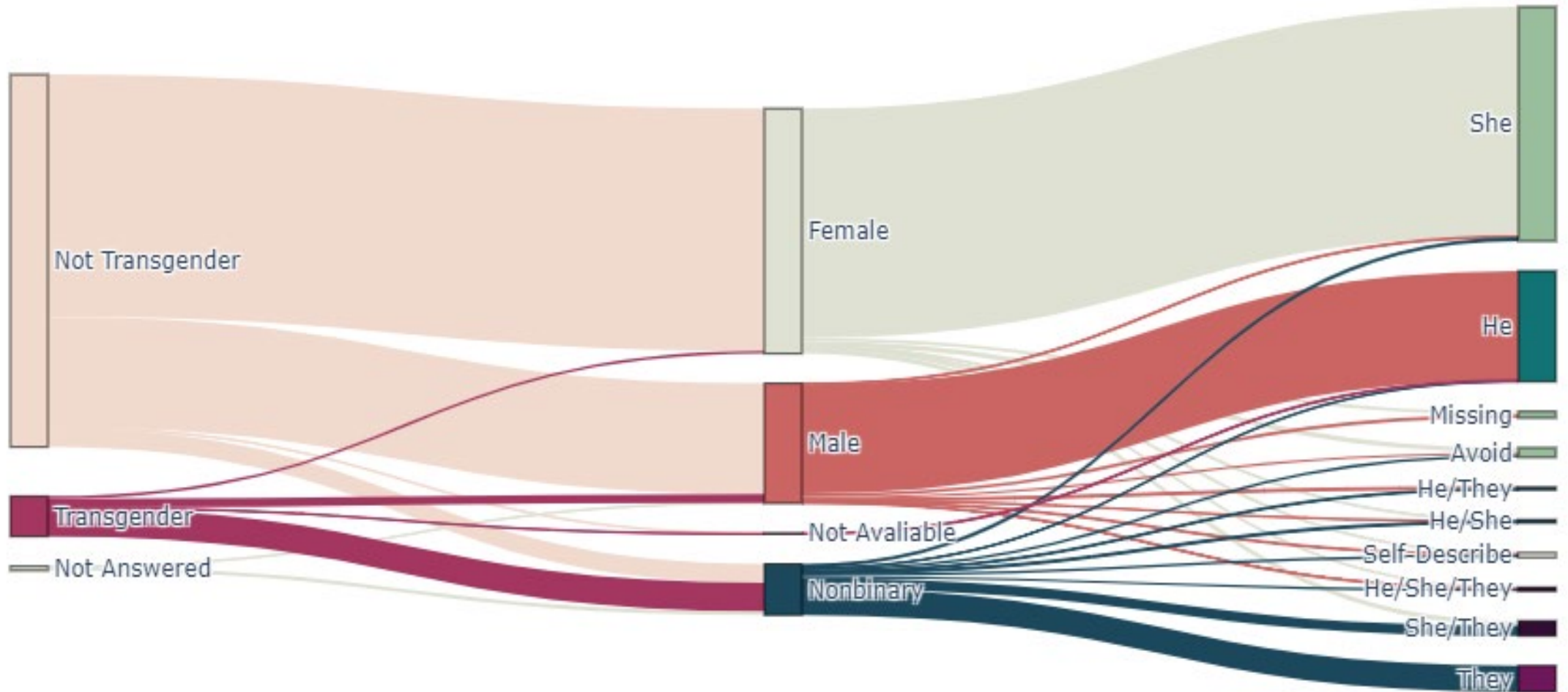
Action Plan

- Gender, Equity in Transportation [\(GET\) Collaborative](#) research team
- Identify other potential agencies and partners to build on this research

Key Findings

- Gender and Gender Identity
- Activity-Travel Behaviors
- Subjective Well-Being Outcomes

Key Findings: Participants' Gender and Gender Identity



(Biological Sex)

Transgender?

(Self-identified Gender)

Women / Men / Nonbinary

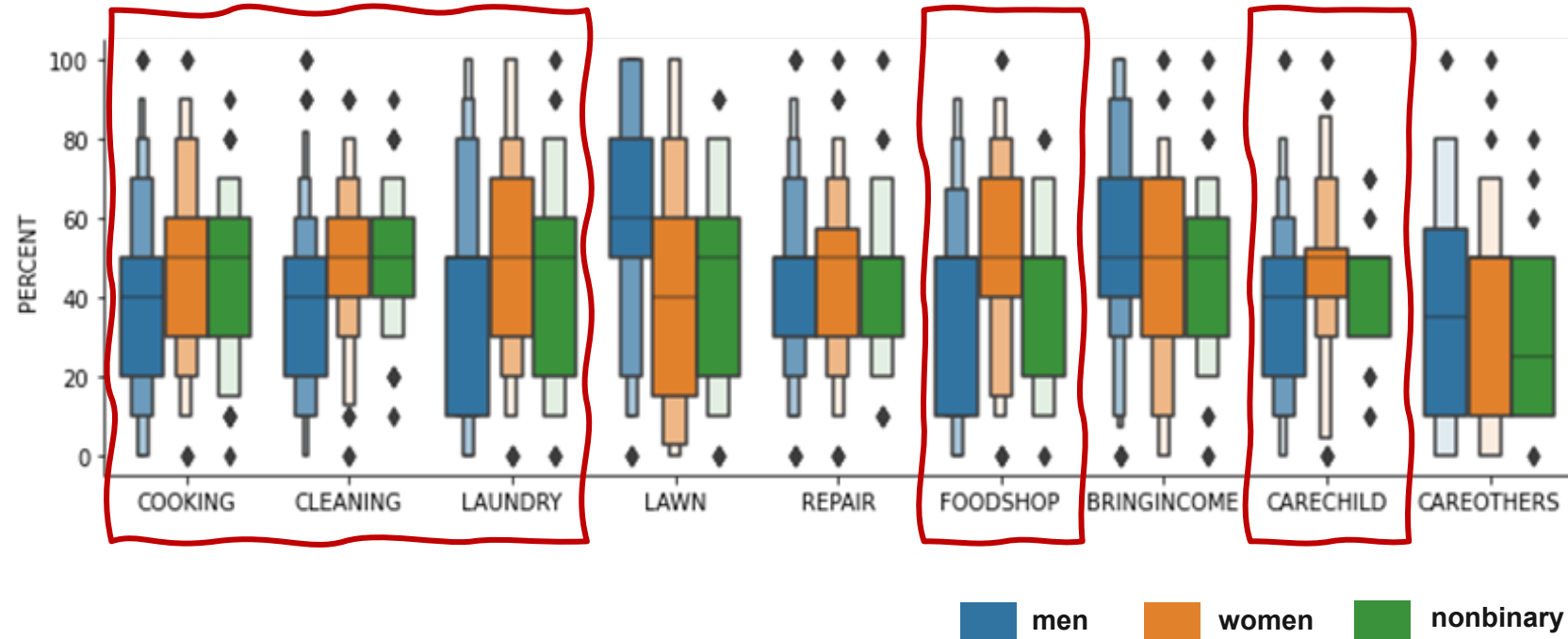
(Gender Pronoun)

She / He / They / Avoid

Key Findings: Gender and Gender Identity

Gender Roles

- ✓ **Women** shared more household tasks than men in cooking, cleaning, laundry, food shopping, and child caring.
- ✓ **Non-binary** partners have more equal shares of household tasks than men and women.



Key Findings: Gender and Gender Identity

Gender Roles - Transit

Pre-Pandemic

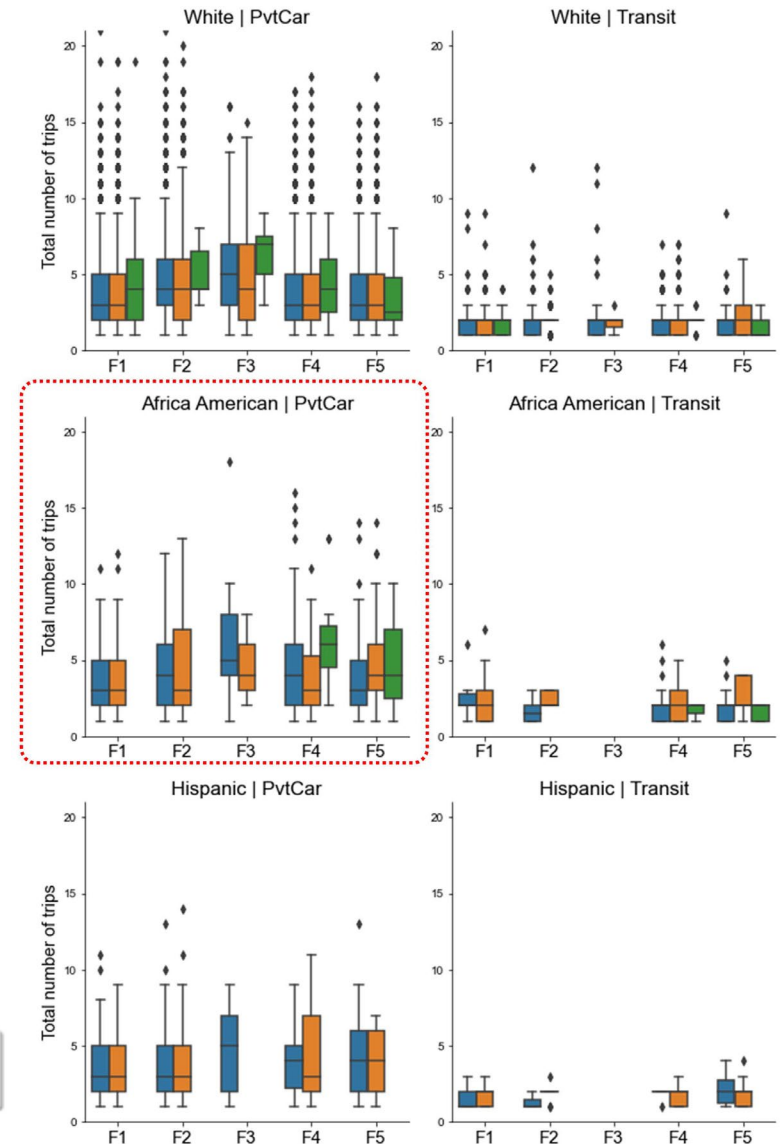
- ✓ **Women** in most intersectional groups had fewer transit trips and relied more on driving than men
 - ✓ Exception: women in the “other” race group who lived only with their partner.
- ✓ **Women** living with kids were more likely drive compared to men across all race groups

During COVID-19

- ✓ **Women** made more trips than men for most travel modes, except transit trips
- ✓ **Black women** made more car and transit trips than women of other races

F1 (with partner only); F2 (with partner and kids); F3 (with kids, but no partner)
 F4 (live alone); F5 (with people other than partner and kid, e.g. roommates)

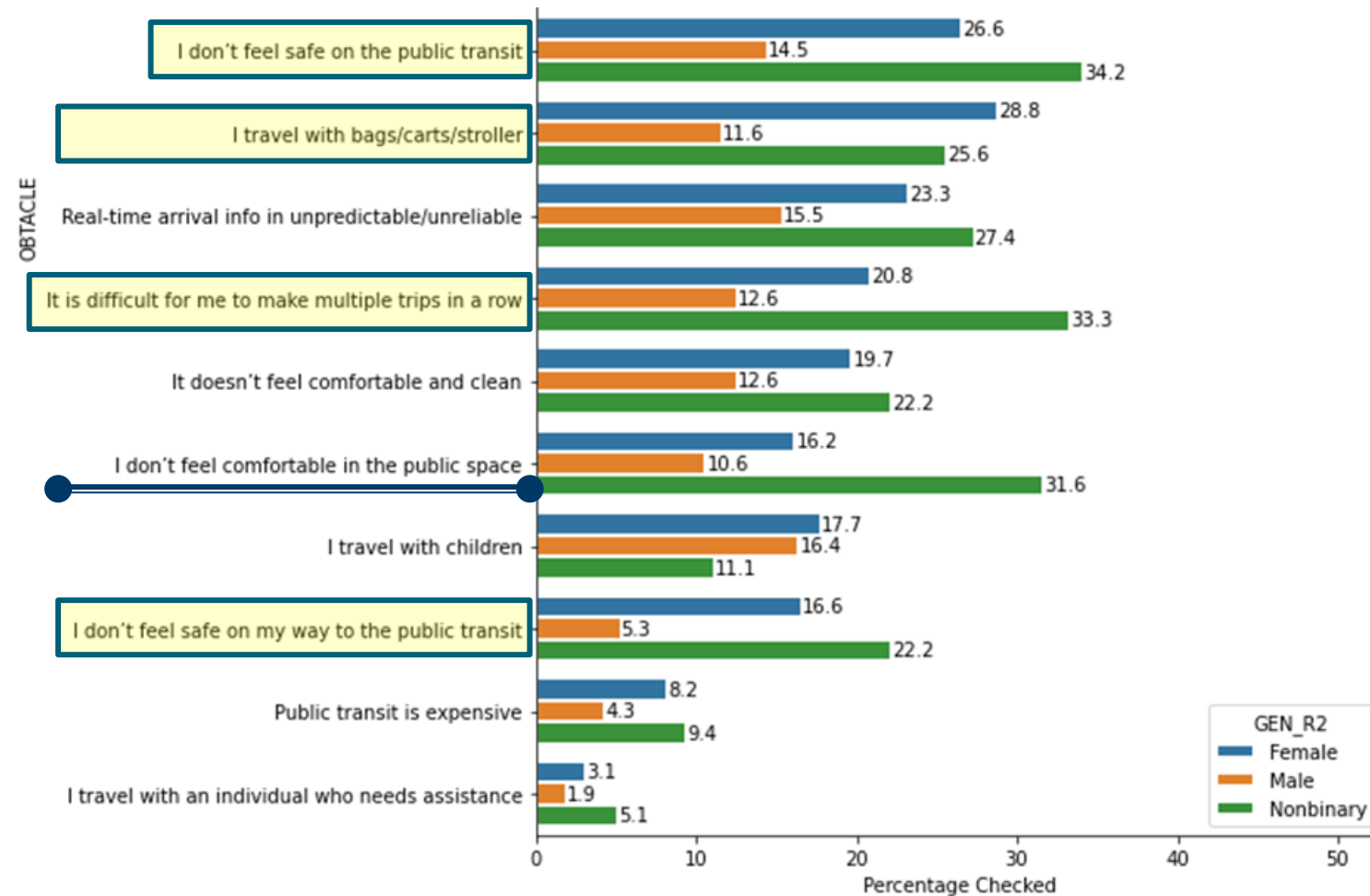
Female
 Male
 Nonbinary



Key Findings: Gender and Gender Identity

Gender Expression – Transit Barriers

- ✓ Non-binary people had similar barriers as women including *safety concerns*, *chained trips*, and *travelling with bags/carts/strollers*.
- ✓ Non-binary people feel more uncomfortable in public spaces than women, which brings *additional challenges* for them to use public transit.



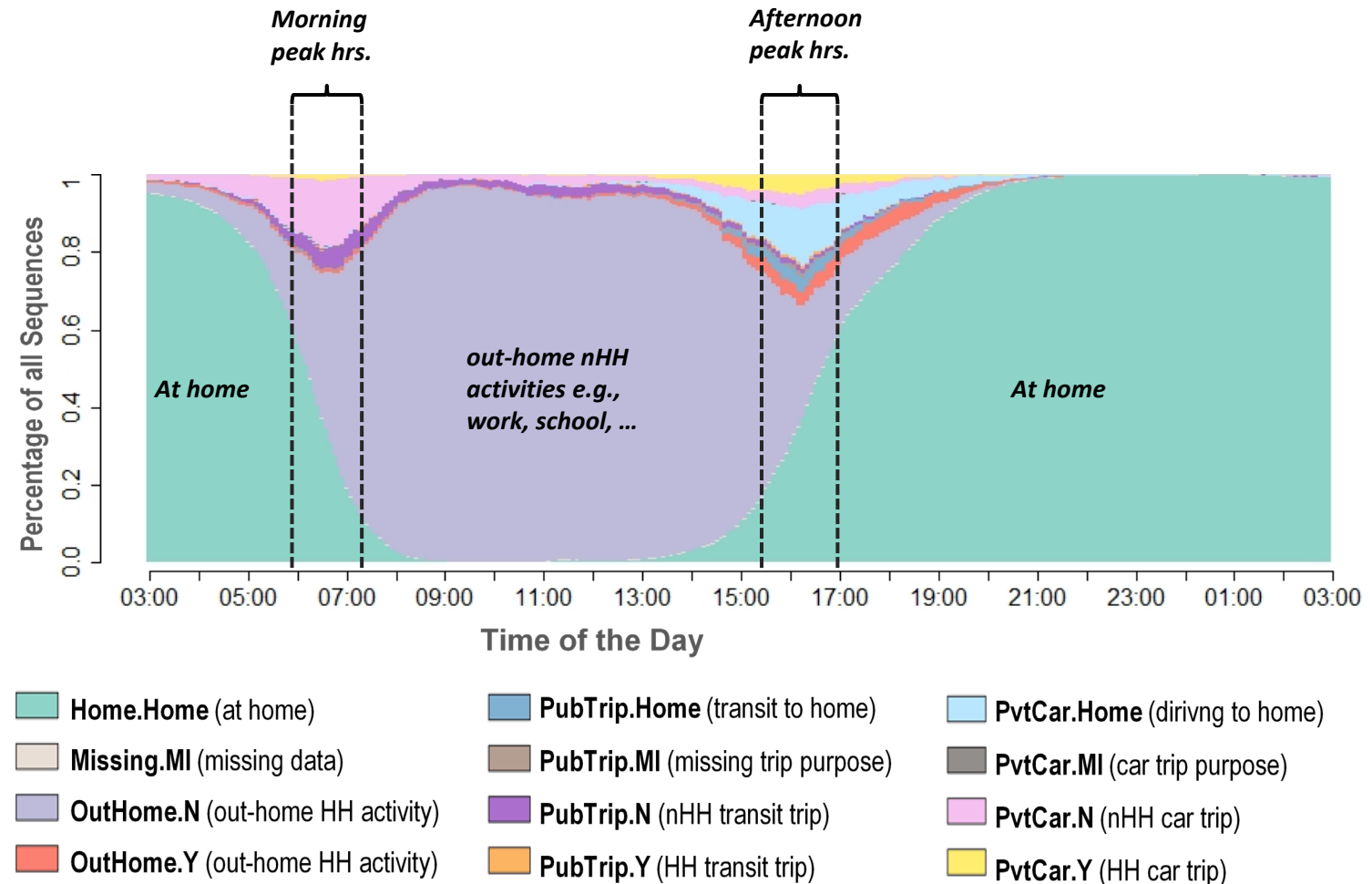
Key Findings: Activity Travel Behaviors

Household-Supporting Trips and Activities

- ✓ TBI – trip purposes (HOME; ESCORT, SHOP, SOME ERRAND/OTHERS)
- ✓ Daynamica – user entered (trip/activity involve household tasks?)

(An example activity-travel pattern)

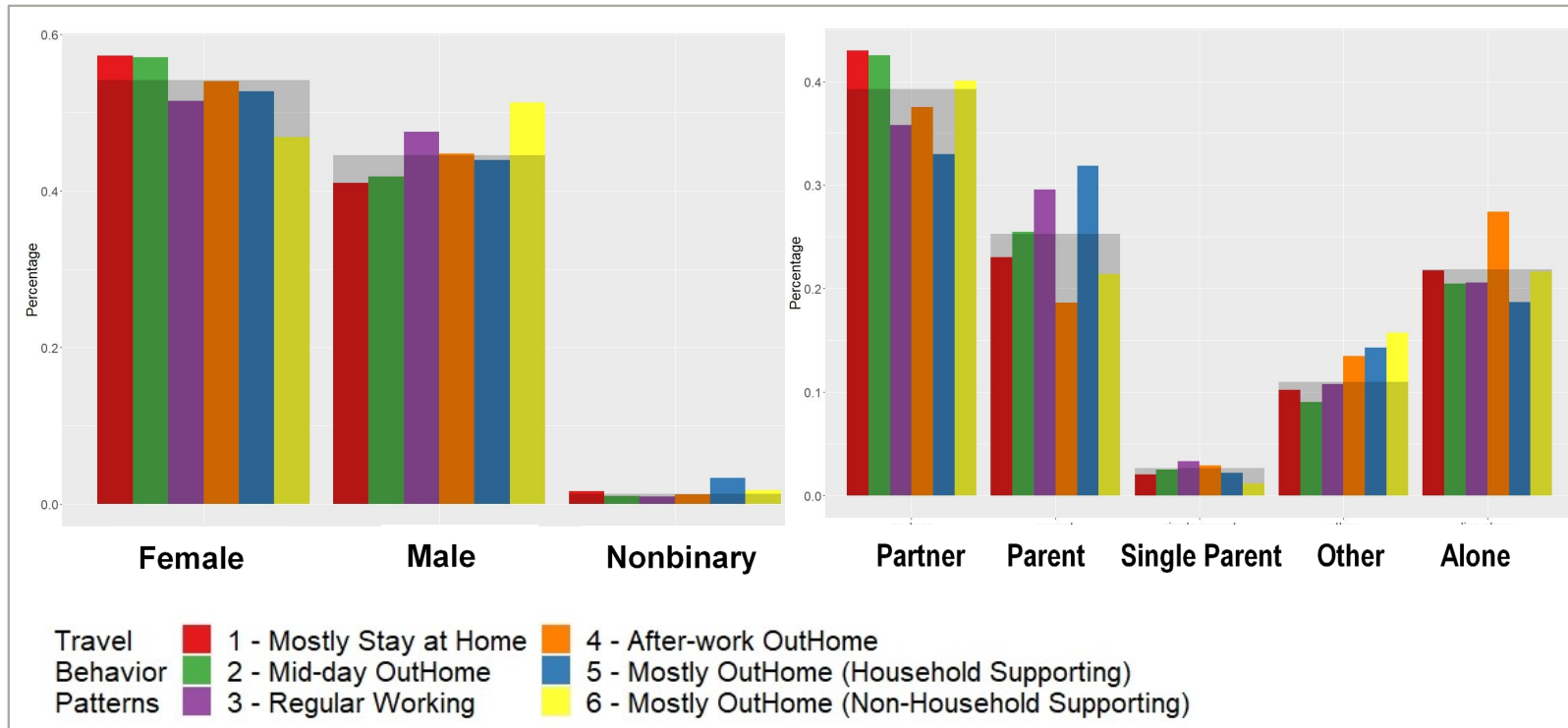
- morning and afternoon peak hours for trips
- mostly driving
- some transit commuting trips in the morning
- car trips for HH and nHH tasks before going home in the afternoon



Key Findings: Activity Travel Behaviors

- Gender and household type compositions for extracted behavior patterns (weekdays)

✓ Pre-COVID (2019)

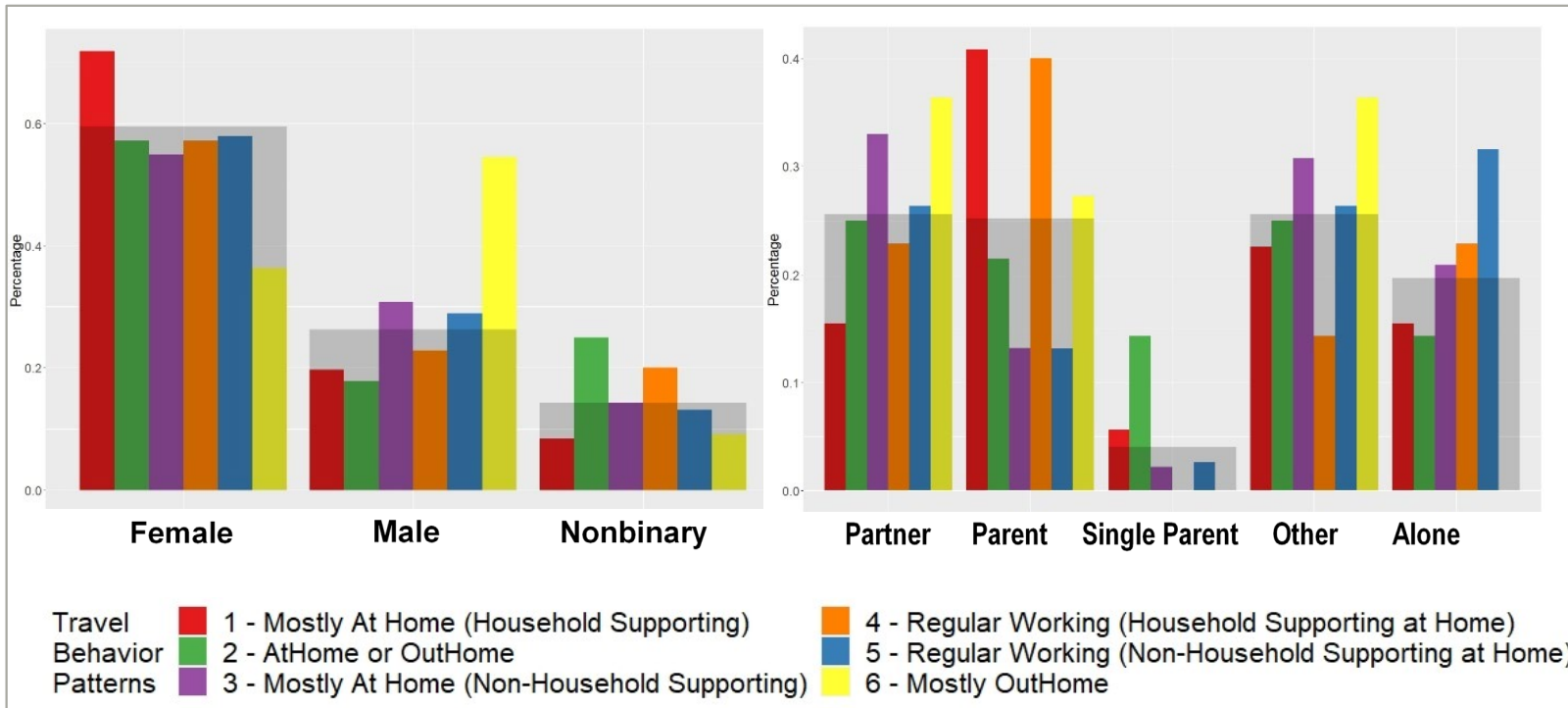


- ✓ Women were less likely to have out-of-home trips and activities during peak traffic hours and regular working/school hours
- ✓ Men were more likely to stay out of the home most of the day for non-household supporting tasks
- ✓ People who were out-of-home for non-household tasks most of the day were the only group who used transit & other modes as much as household vehicles

Key Findings: Activity Travel Behaviors

- Gender and household type compositions for extracted behavior patterns (weekdays)

✓ During COVID-19 (2021)



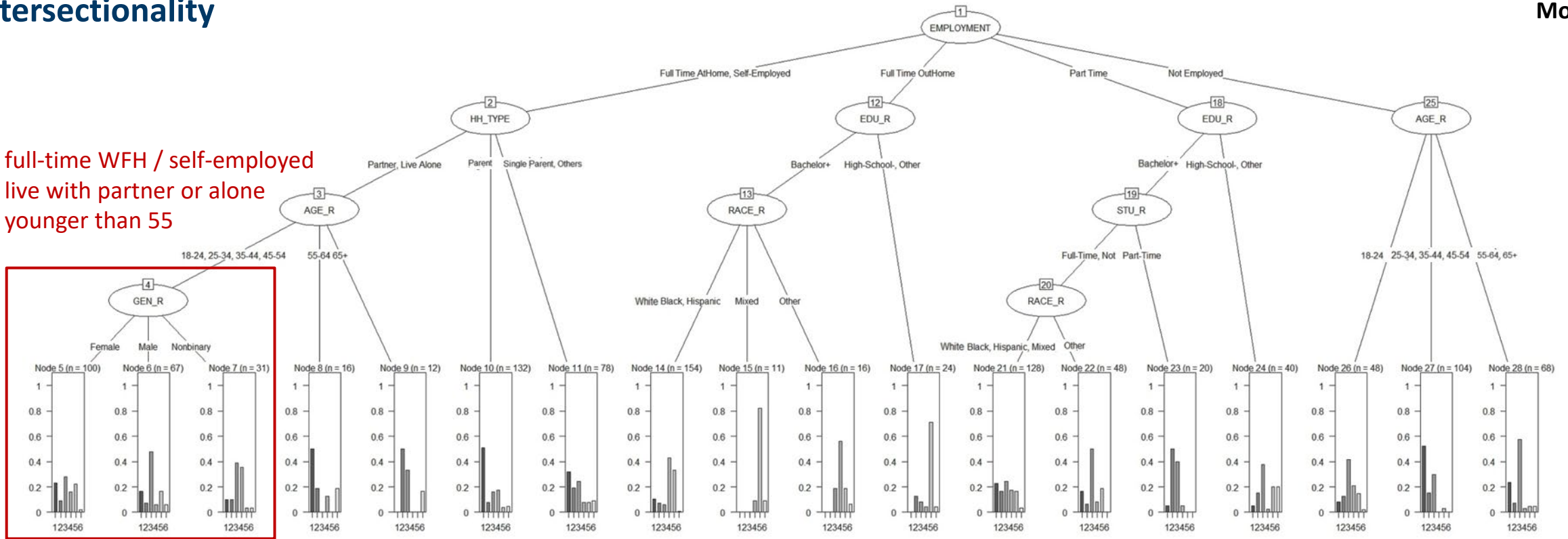
- ✓ Women were most likely to stay at home most of the time and conducting household tasks while they were at home
- ✓ Men were more likely to not share household tasks while they were at home or mostly stayed out of the home
- ✓ Nonbinary people were more likely have decent amounts of out-of-home trips and activities, and shared household tasks both at home and out-of-home

Key Findings: Activity Travel Behaviors

Mon-Thu

Intersectionality

full-time WFH / self-employed
live with partner or alone
younger than 55



Men – work at home mostly but not share HH tasks

Nonbinary – work at home but not share HH tasks
work out-of-home and share HH tasks

Women more evenly distributed in share of HH tasks

Travel Behavior Patterns

- 1 - Mostly At Home (mostly with Household Tasks)
- 2 - Mostly At Home (with some Household Tasks)
- 3 - Mostly At Home (mostly without Household Tasks)
- 4 - Regular Working (mostly with Household Tasks at Home)
- 5 - Regular Working (mostly without Household Tasks at Home)
- 6 - Mostly OutHome

Key Findings: Activity Travel Behaviors

TBI and Daynamica data collected behaviors before and during the COVID-19 pandemic, respectively.

Both TBI and Daynamica data indicated that:

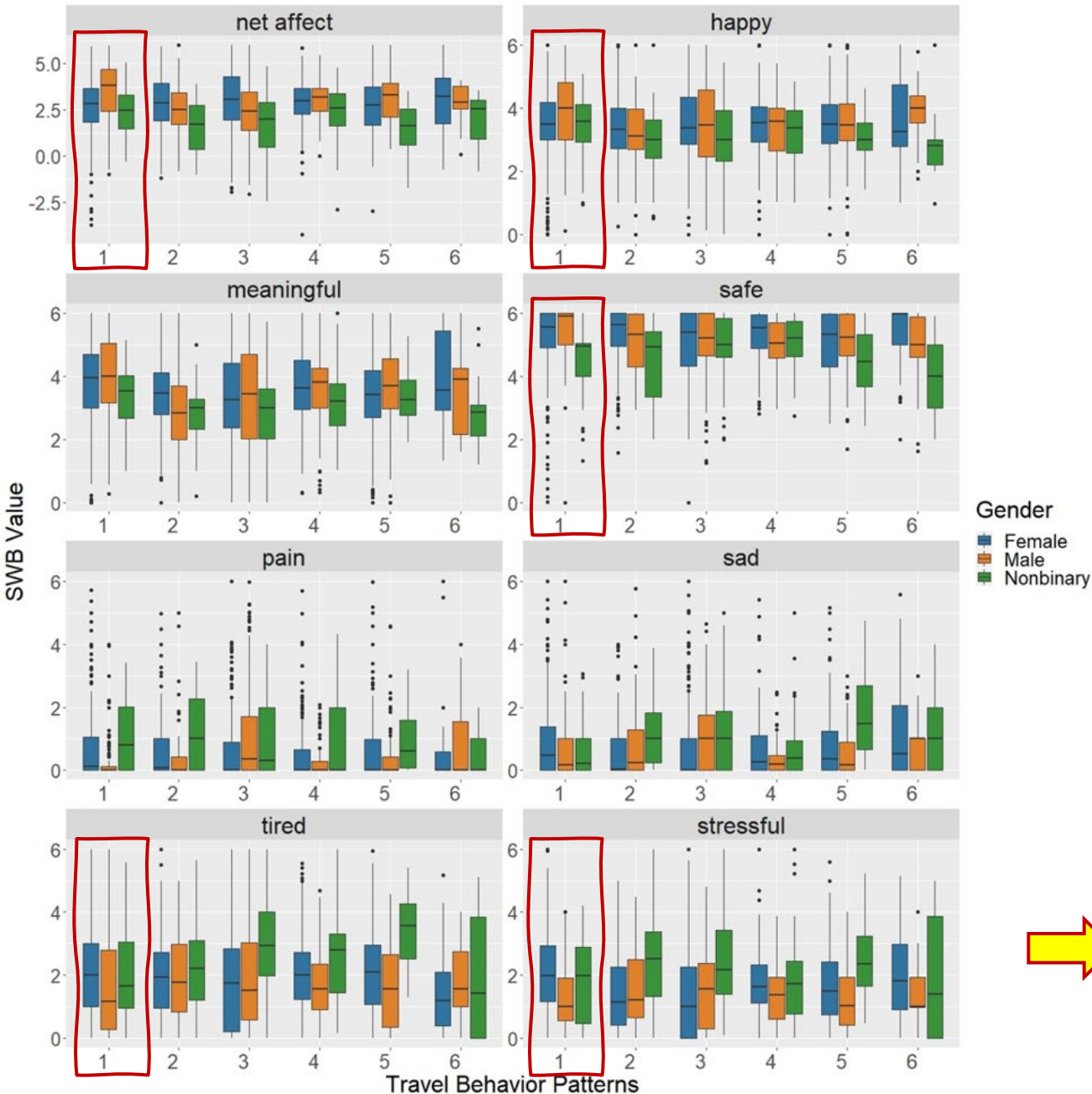
- Women shared more household tasks and relied more on household vehicles than men in general
- Black women were more likely to use public transit compared to women of other races
- Living with kids increased the total number of trips for all genders and increased car dependency
- Women living with kids were less likely to have out of home activities and trips than men in the late afternoon during the weekdays, except for Hispanic and Black women
- Employment status was a key determinant for total out of home durations, number of trips, and other aspects of daily schedules for all genders

Key Findings: Activity Travel Behaviors

Comparisons of TBI and Daynamica data analysis results indicated that:

- It is crucial to account for working from home (WFH) while examining the impacts of employment status on behavior patterns, especially for full-time employees.
- The questions regarding the shares of household tasks at home and during the trips in Daynamica data can distinguish people who shared household tasks from those who did not share and advance our understanding about the impacts of household responsibilities on behavior patterns.
 - ✓ For people who stayed at home most of the time during the pandemic, women performed more household tasks than men even they were employed and working from home. Such gender gap remained similar across all other employment groups and had a great impacts on the out-of-home activities and trips timings and frequencies.
- During the pandemic, women made more trips than men and non-binary people; they relied more on household vehicles for travel and reduced their use of public transit (including Black women who used transit more than women of other races).

Key Findings: Well-Being



Gender
 Female
 Male
 Nonbinary

- **Subjective Well-being (SWB) Measures**

- ✓ Happy, Meaningful, Safe (pos)
- ✓ Pain, Sad, Tired, Stressful (neg)
- ✓ Net effect (avg. pos – avg. neg)

Women and nonbinary people who stayed at home and were responsible for most of the household tasks had much worse overall SWB outcomes than men

- Feel less happy
- Feel less safe while staying mostly at home
- Feel more tired and stressful

Travel Behavior Patterns
 1 - Mostly At Home (mostly with Household Tasks)
 2 - Mostly At Home (with some Household Tasks)
 3 - Mostly At Home (mostly without Household Tasks)
 4 - Regular Working (mostly with Household Tasks at Home)
 5 - Regular Working (mostly without Household Tasks at Home)
 6 - Mostly OutHome

Key Findings: Subjective Well-Being Outcomes

- Non-binary people had less positive and more negative experiences.
- Living with kids and sharing household tasks at home brought more positive emotions for men than for women during the weekdays.
- Hispanic people in all behavior groups had better emotional experiences on both weekdays and weekends than white people. Black people and people of mixed races had emotional outcomes that varied across behavior groups and/or days of the week.
- Although employment status played a key role in determining participants' behavior patterns, it did not directly have a significant impact on the SWB outcomes alone.
- Age had mixed impacts on the SWB outcomes.
- Student status and education attainment did not have consistently significant impacts on SWB.

Key Findings: Complexity of Gender Identity

✓ Transgender men, women, and nonbinary people

- Average number of trips per day

	Mon.	Tue.	Wed.	Thur.	Fri.	Sat.	Sun.
Female (164)	4.45	4.48	4.26	4.28	4.78	5.02	4.54
Transgender Female (5)	4.00	2.00	5.50	7.00	4.67	2.67	2.00
Male (66)	4.67	4.56	4.56	4.49	4.50	4.85	4.51
Transgender Male (5)	4.43	5.33	5.87	4.86	5.80	5.76	3.58
Nonbinary (13)	4.11	4.23	4.13	4.72	5.22	5.62	5.14
Transgender Nonbinary (24)	3.92	4.19	4.53	4.26	4.51	5.82	5.04

- **Transgender women** had much fewer trips during weekends than cisgender women (and other genders)
- No obvious differences between other groups

- Overall emotional well-being per day

	Mon.	Tue.	Wed.	Thur.	Fri.	Sat.	Sun.
Female (164)	2.83	2.80	2.81	2.85	2.94	3.06	3.02
Transgender Female (5)	0.23	0.31	0.62	0.75	0.66	0.22	0.33
Male (66)	2.98	2.99	2.98	2.94	2.97	3.07	3.02
Transgender Male (5)	2.26	2.49	2.12	2.09	2.46	2.31	2.38
Nonbinary (13)	2.29	2.26	2.35	2.58	3.01	2.69	2.52
Transgender Nonbinary (24)	1.60	2.03	1.82	1.72	1.71	2.00	1.69

- **Transgender women, transgender men and nonbinary people** had much lower net effect values across all days of the week, especially **transgender women**.

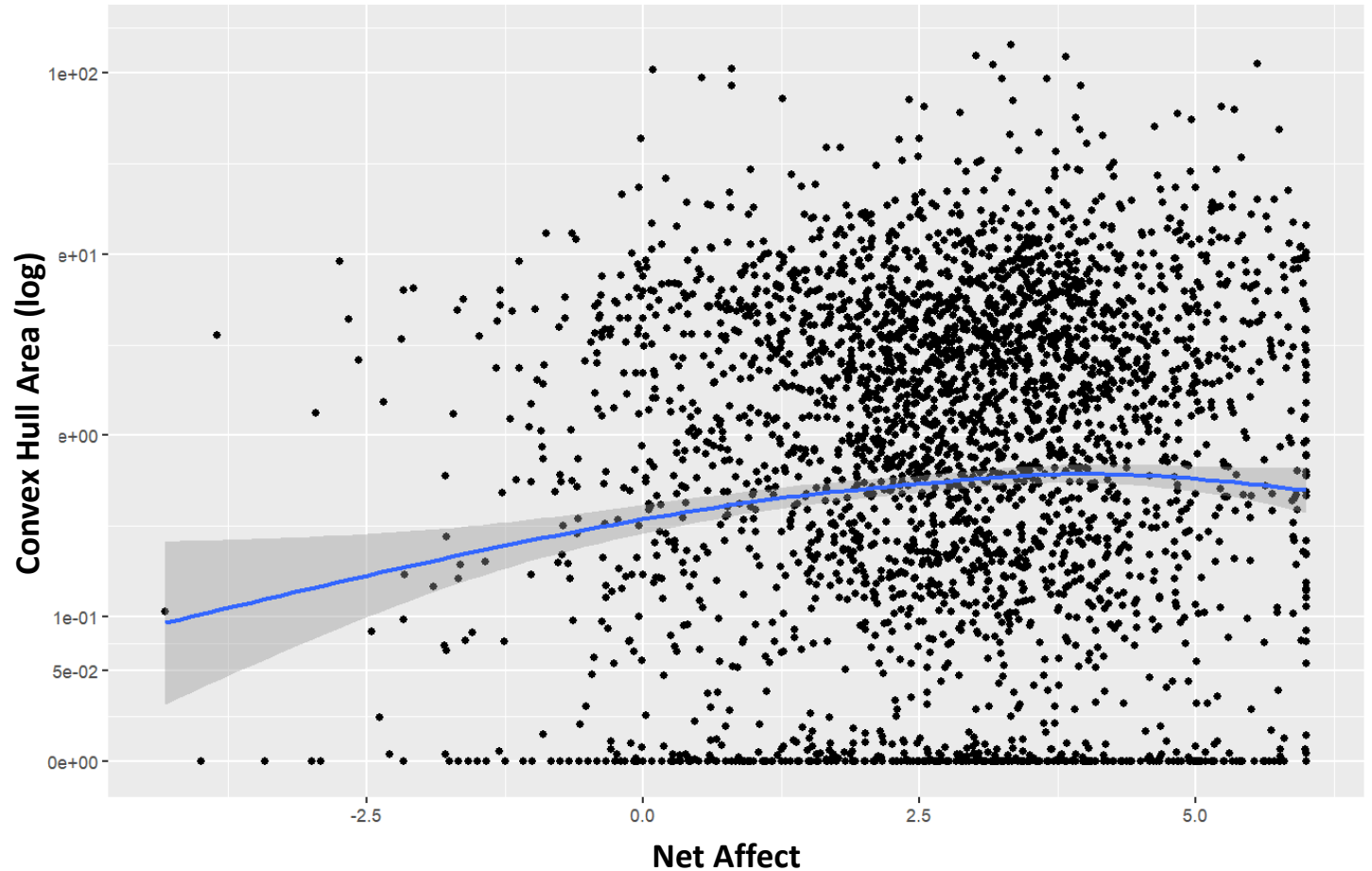
- **Compact City?**

- ✓ **Activity Space & Subjective Well-being**

(Y-axis) **Convex hull** that delineates the activity space within a day

(X-axis) **Net affect** that summarizes the overall emotion outcomes within a day

No obvious correlations between daily activity space and emotion outcomes



Summary

1. Inclusion of underrepresented genders

- ✓ It is crucial to consider gender identity and address the special needs and experiences of nonbinary people.

2. Understand more about needs for women and all genders

- ✓ Women shared more household tasks than men, even when they had jobs, which significantly limited their travel times and travel options and increased their car-dependency.
- ✓ However, Black women still depend on public transit more than women of other races, which is likely due to their limited access to cars. Therefore, it is crucial to address the intersectionality while promoting gender equity.
- ✓ Women and nonbinary people feel more difficult to have chained trips and travel with carts/strollers/bags while using public transit, which indicates their needs for additional accommodations for transit trips.

3. Assess perceived or potential safety issues across genders:

- ✓ Women and nonbinary people are more tired and stressful, which may indicate higher potential risks.
- ✓ Women and nonbinary people feel less safe on their way to transit and during the use of transit

To what extent, if any, does someone's gender and identity influence their travel behaviors and experiences in Minnesota?

- Understand travel behaviors and health outcomes by gender and identity for efficient and equitable transportation policies
- Identify potential disparities in transportation accessibility and health outcomes
- Foster collaborative research on Gender, Equity and Transportation (G.E.T) in the long run

What are actions public transit agencies could take?

- Recognize the specific needs of non-binary people
 - Non-binary people have the worst subjective well-being outcomes and are more sensitive to safety during their use of transit services, even though their gender identity does not significantly impact their travel patterns in general.
 - More specific qualitative surveys could confirm and uncover the reasons for low subjective well-being and experiences feeling unsafe on the way to and during transit use
- Recognize the importance of community engagement
 - Participant recruitment suggested that continued engagement with hard-to-reach social groups is essential to better understand and meet transportation needs

MnDOT will use the study results to advance inclusivity and equity in transportation policy and planning

- Adopt gender-inclusive language in project design and communication
 - Reconsider terms like chairman, ladies & gentleman, manpower, maternity leave, he or she
 - Instead, use terms like chair, everybody or folks, workforce, parental leave, they

MnDOT will use the study results to advance inclusivity and equity in transportation policy and planning

- Engage with community to better understand travelers' needs, experiences and the intersectional nature of gender
 - For example, monitor engagement in real time to collect feedback that is representative of the population

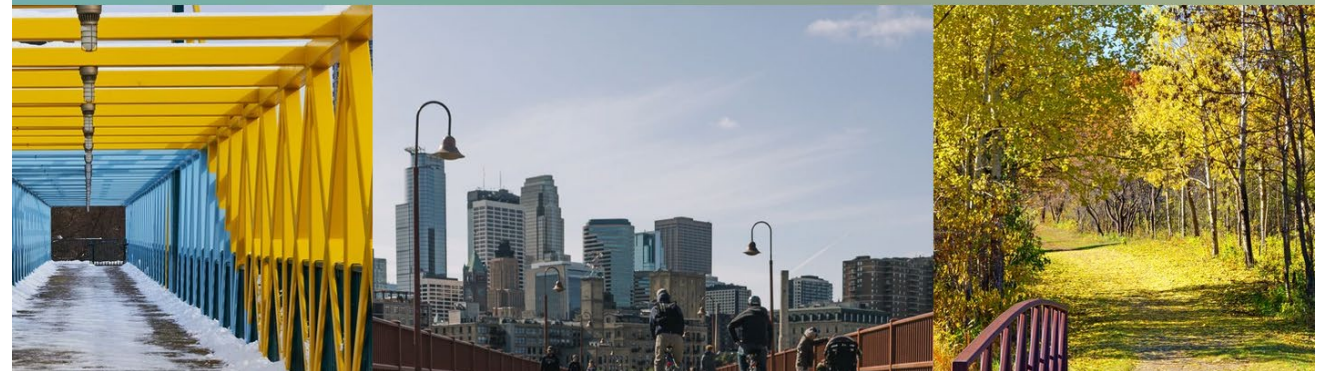
MnDOT will use the study results to advance inclusivity and equity in transportation policy and planning

- Undertake research that builds on the findings of this study
 - For example, in-depth qualitative studies to understand the reasons for low subjective well-being among non-binary people

GET Collaborative

- Continue and build upon this research
- [Gender Equity in Transportation Collaborative](#)

The Gender Equity in Transportation Collaborative



Research Team and Agency Leads

- **Ying Song** – Principal Investigator, Faculty at University of Minnesota Geography Department
- **Yingling Fan** – Co-Principal Investigator, Faculty at Humphrey School of Public Affairs
- **Ania McDonnell** – Subcontract, Humphrey School of Public Affairs Alumni
- **Philip Schaffner** – Champion, Statewide Planning Manager, MnDOT
- **Hally Turner** – Technical Lead, Policy Planning Director, MnDOT
- **Jonathan Ehrlich** – Champion, Metropolitan Transportation Services

Thank you!

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Policy Planning Unit

MnDOT Office of Transportation System Management