

Keeping Our Cool with the Metropolitan Council: Extreme Heat through Storytelling

Mattie Anders, Alice Hewitt, Catie McDonald



UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

Context

This project will accompany the new Extreme Heat Map Tool, providing a qualitative approach to how extreme heat impacts metropolitan residents.

This work will be developed into an interactive resource for city planners to provide them with a human-centered perspective of how extreme heat impacts our communities.



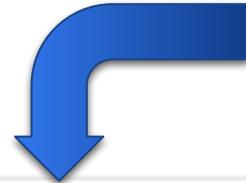
UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

Story Outline

2050 Regional Development Guide

Values and Vision
Draft Content Discussion

Metropolitan Council



Four themes highlight how extreme heat impacts our region

Our Region is Equitable, Inclusive, and Welcoming

Energy and Equity



Our Communities are Healthy, Safe, and Vibrant

Public Health



We Lead on Addressing Climate Change

Natural and Built Environment



We Protect and Restore Natural Systems

Human and Nature Connection



Methodology

Identified experts

Six experts were identified in the metro who practice in different disciplines. We reached out to many more

Designed

Framework for the projects was outlined using MetCouncil's 2050 vision statements for guidance

Interviewed

Experts were interviewed over the course of two months, using a semi-structured interviewing process to collect information

Analyzed

Main themes of the interviews and existing framework were workshopped into appropriate topics of discussion and further researched

Report

Findings will be communicated via an interactive resource, following the same framework with added quantitative supporting data

Key Terms

Urban Heat Island: when cities replace natural land cover with dense concentrations of pavement, buildings, and other surfaces that absorb and retain heat. This effect increases energy costs (e.g., for air conditioning), air pollution levels, and heat-related illness and mortality

Extreme Heat: Minneapolis/St. Paul is defined as days over 95; Regionally decided based on geography, typically the 90th percentile of the historical average heat index

Social Determinants of Health: nonmedical factors that influence health outcomes, such as economic policy, racism, and climate change

Microclimate: the climate of a very small or restricted area, especially when this differs from the climate of the surrounding area.

Solastalgia: the distress one gets by the environmental change that impacts those who directly connect to their home environment

Minnesotans are uniquely vulnerable to extreme heat. It impacts the health and safety of our residents, but this is not felt equally.

This can be changed by how we build our cities, and who we build them for.

Energy and Equity - Expert Interviews

Rachel Wiken, Senior Transportation Planner at Metropolitan Council

- Grounded this research by giving a residential perspective
- Shared stories about participating in Mutual Aid
- Advocates for landlords providing access to cooling the same way we require for heat

"I know how impossible it is to get good sleep when you have hot kids."



Catherine Fair, Executive Director, Energy CENTS Coalition

- Gave important background on federal and local programs for energy and weatherization
- Most federal funding doesn't address root cause of energy burden
- Funding does not reach everyone who needs help

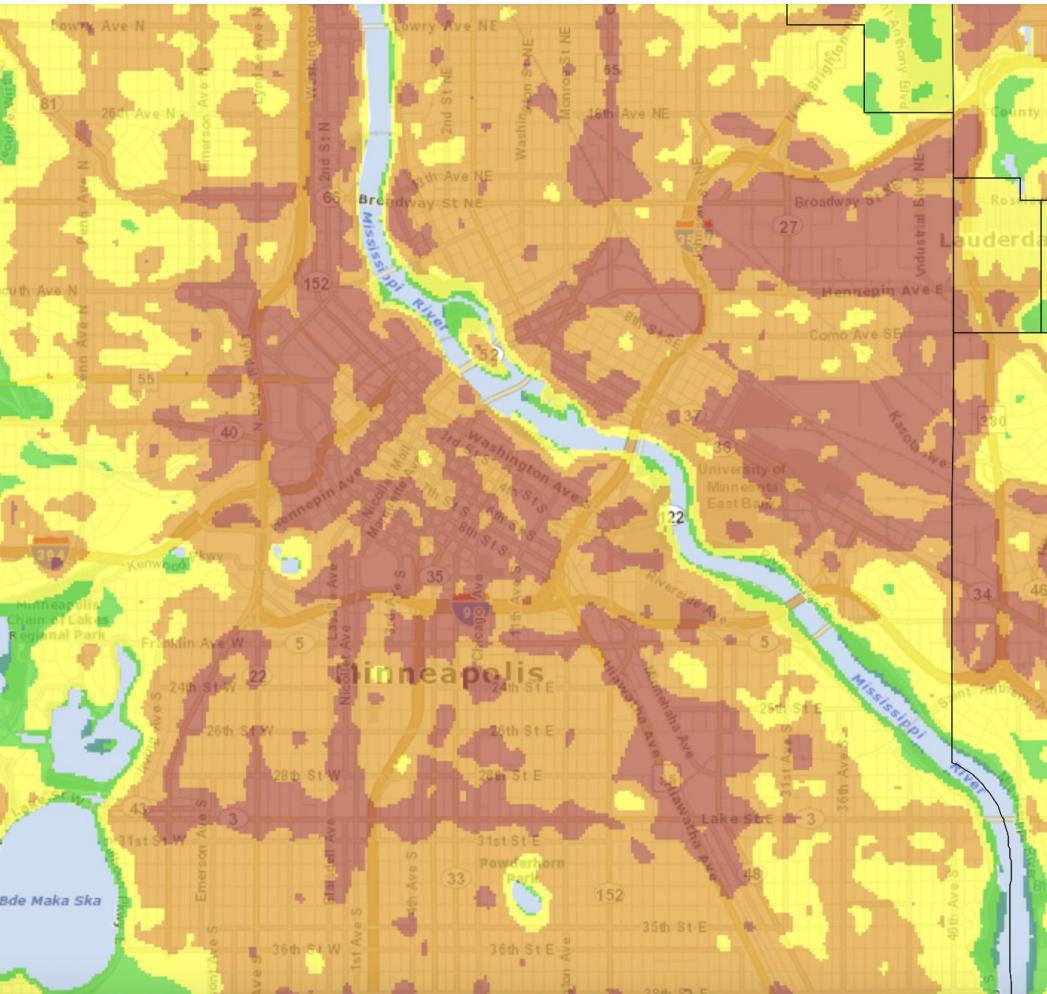
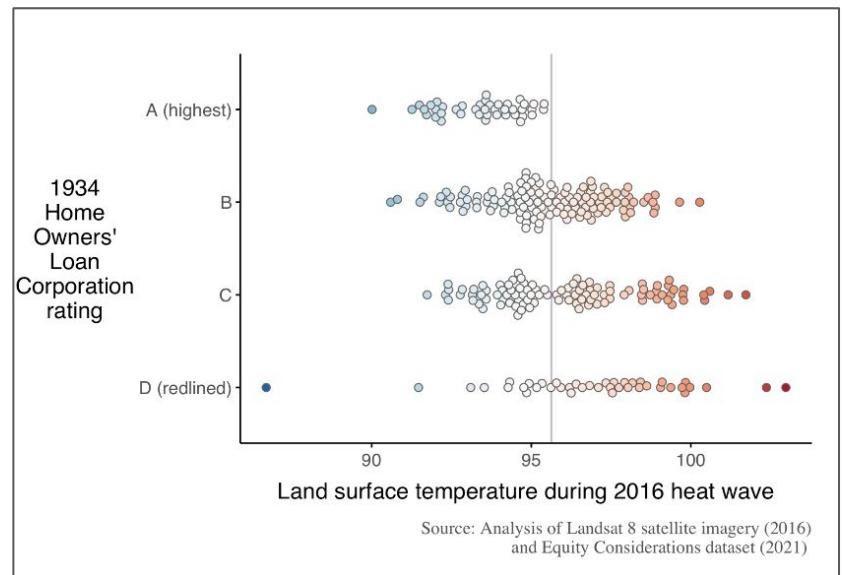
*"Access to **consistent** utility services is a basic need."*



Energy and Equity

Overview

- Heat is deadly
- Unequal effects of heat



Energy and Equity - Mutual Aid and Social Cohesion

- Social Cohesion is life saving during heat waves
- Mutual Aid Filling part of the gap
 - Redistribution of resources

Coroner's report on B.C. heat-dome deaths calls for greater support for populations at risk



619 deaths reported June 25-July 1, 2021, now deemed heat related; most were elderly with compromised health



Energy and Equity Policies and Programs

- Energy Policy & Inequity
 - LIHEAP and other federal funding only reach 20% of eligible Minnesotans
- CENTS and other organizations help lower people's energy burden
- Cold Weather Rule

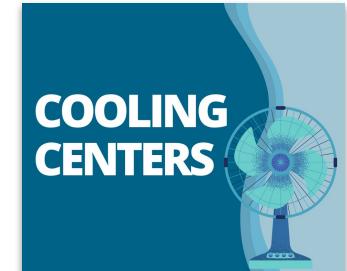


*"You never want somebody freezing in their house...But **extreme heat has caused more fatalities than those due to cold.**"*

- Catherine Fair

Energy and Equity - Policy and Inequity

- Cities are already trying to get prepared for more extreme heat
 - **Bloomington:** Is already planning for the increased energy demands from air conditioning
 - **Falcon Heights:** City goal to provide access to air conditioned spaces
 - **Golden Valley:** Wants to make AC available in public facilities during poor air quality and extreme heat days
- Cooling centers aren't a complete fix



Public Health - Expert Interview

Dr. Laalitha Surapaneni, Assistant Professor of Medicine at UMN Division of Hospital Medicine

- Impacts of climate change on health equity are apparent and growing
- Factors exacerbating health issues caused by extreme heat are not being directly addressed
- Importance of systems-change in health outcomes

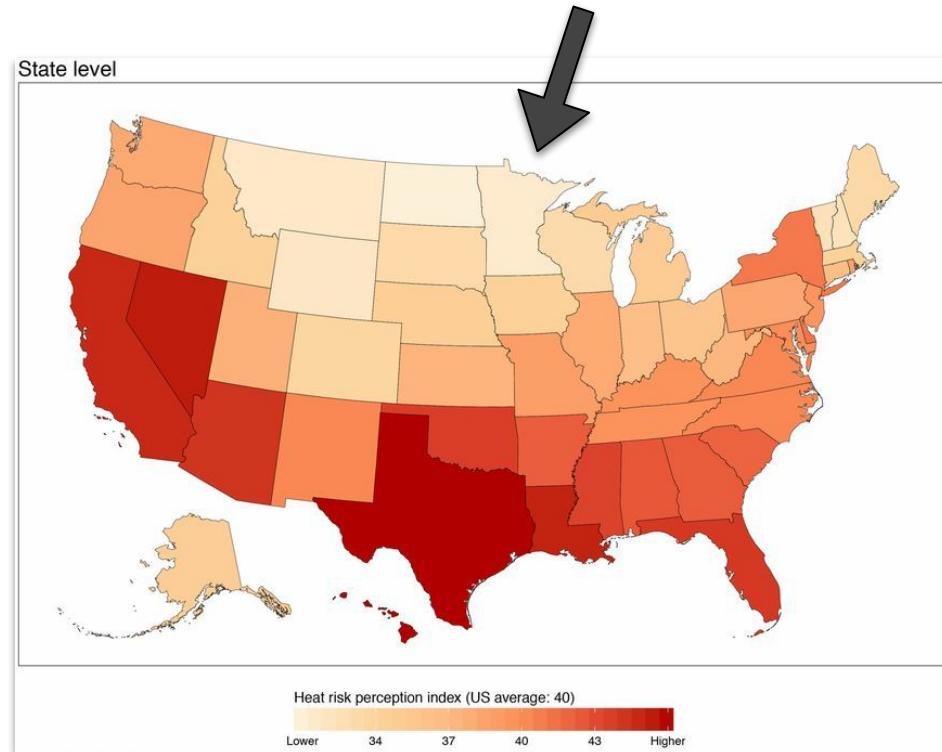
*"The biggest line throughout my practice is that **climate change is a health equity issue**."*



Threat to Public Health

Overview

- Metro Region is uniquely vulnerable to extreme heat
- People's health can be severely impacted by high heat



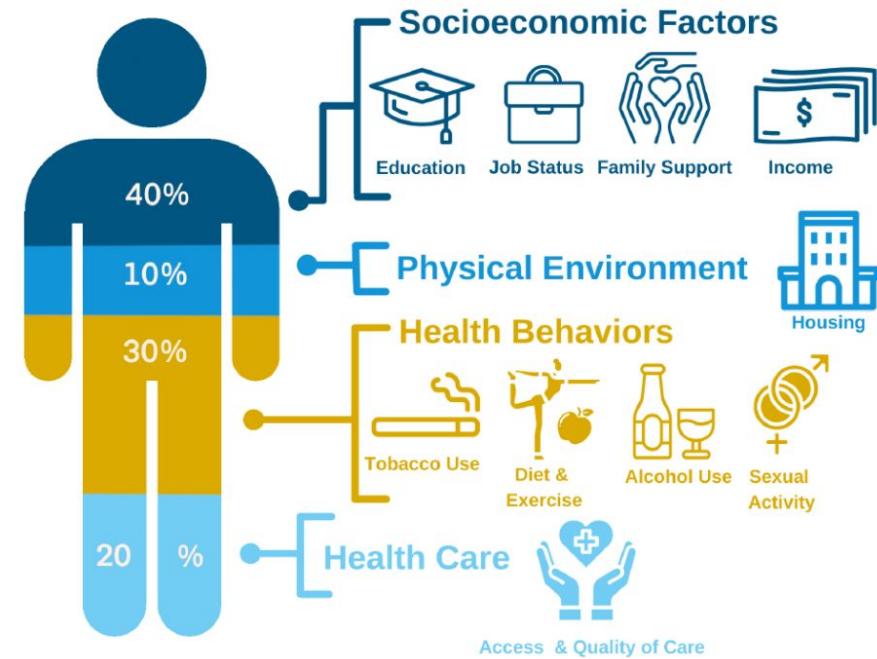
*"Northern Midwesterners have the **least heat awareness** scores of everyone in the country."*
- Laalitha Surapaneni

Social Determinants of Health

- Compounding factors
- Vulnerable populations
- Solutions have been very individualized

*"The two main things that I've seen play out are the **built environment** as well as **economic stability**"*

- Laalitha Surapaneni

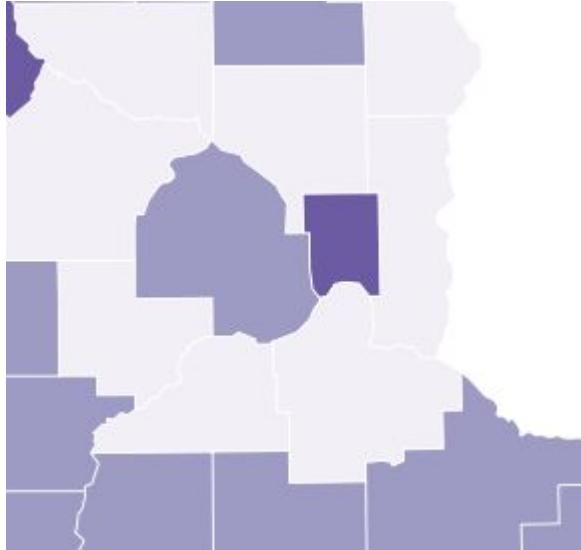


Vulnerable Populations in the Metro Area

Percent below poverty

Percent of population

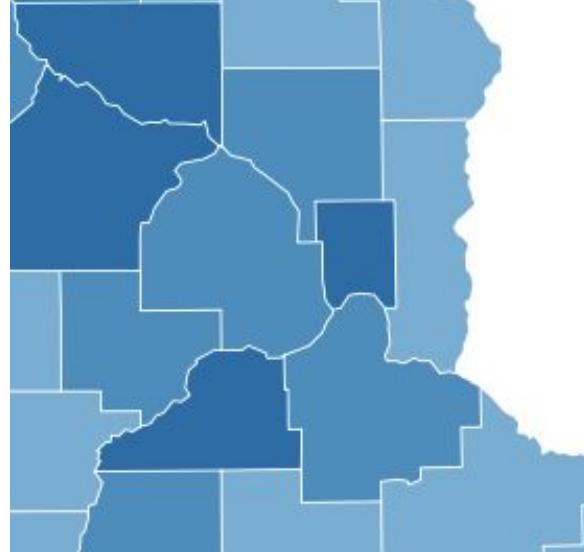
17.9% 24.1% 31.4%



Population Vulnerability: Age

Percent of population

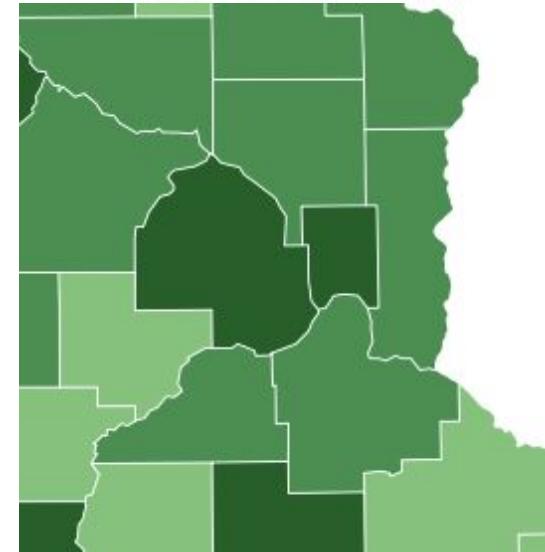
5.2% 6.0% 6.7%



Percent males 15-34 years

Percent of population

10.5% 12.1% 14.7%



Built Infrastructure Impacts Health

- Urban heat islands (UHIs) put those living & working in them at greater risk of heat-related health issues
- Need to implement adaptation methods & nature-based solutions for UHIs and other high risk communities



*"Let's make cities and rural areas as **cool as possible** and improve their **adaptive capacity**."*

-Laalitha Surapaneni

Landscape Architecture - Expert Interview

Mo Convery, Landscape Architect at Confluence

- Urban design and resilience planning, formerly worked in public (respiratory) health
- Long term thinking about how to design big and small outdoor spaces that benefit everyone
- Advocates for more regulation and creative thinking

*"Extreme heat is **never the first problem** anyone is trying to solve."*



Our Natural and Built Environment

Overview

- How we've built our cities is one of the reasons why extreme heat exists within them → there are ways to build ourselves out
- Planning Perspective
 - Microclimates
- Urban Greening/Built Infrastructure Interventions
 - Design
 - Regulation





Natural and Built Environment Perspective

- Systems-thinking
- Angle: Microclimate

"We've created all of this, from the patterning of our buildings, to how we design for people to move around the city, and how much green space is allotted to certain people but not others."

- Mo Convery

Natural and Built Interventions

- Build with—rather than against—nature
- Lacking significant standards to mitigate urban heat
- Things are being done voluntarily through **design**
 - Breaking up parking lots with lacking vegetation requirements
 - Green roof installations
 - City of Philadelphia
- Create urban greening through **regulations**
 - Tree trenches, parking lot/impervious surface standards
 - City of Eden Prairie Parks Dept green roofs
 - Denver's Green Building ordinance
- Voluntary approaches → inequity



Psychological Wellbeing and Urban Farming - Expert Interviews

Kristi White, Assistant Professor of Medicine,
UMN Division of Internal Medicine

- Researches how stress impacts one's psychological wellbeing
- Many of her patients experience worsening health outcomes with growing climate change
- Compounding factors exacerbates people's risk to manage a changing climate
- Advocates for high currency interventions and systemic change

*"We don't want to gaslight people into thinking that they need to be well adjusted to a **toxic system**."*



Gloria Iacono, Food Sovereignty Manager at Four Sisters Urban Farm

- Builds urban biodiversity and supports people in their food sovereignty journey
- Visibility of urban garden creates shared interest and cohesion within her community
- Urban greening tends to be in conflict with limited space in urban areas (low priority)
- Her work gives agency to the community while nurturing a microclimate

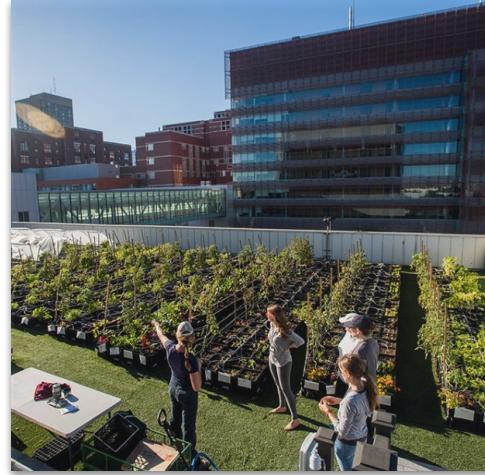
*"Urban gardens are a way to **reframe** and **reimagine** our urban spaces to not be so human-centered."*



Human-Nature Connection

Overview

- Western Culture
- Inequity in Nature Access & Sacrifice Zones
- High currency interventions
- Nature Increases Wellness

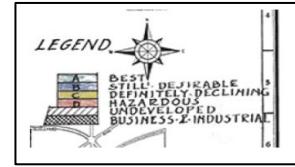
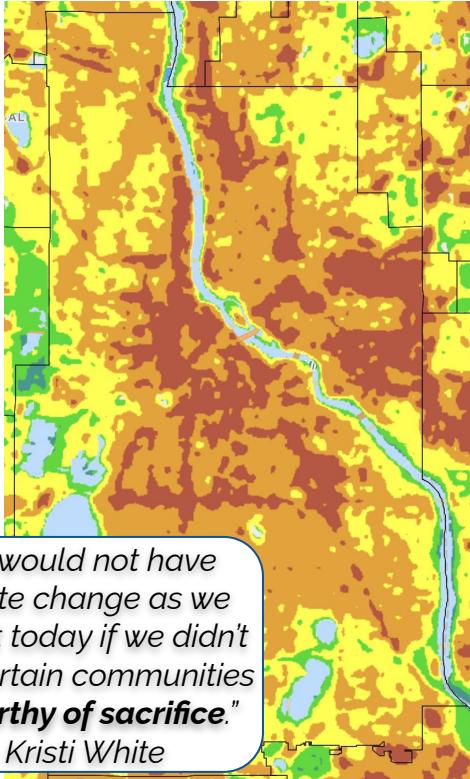


Boston Medical Center's rooftop farm

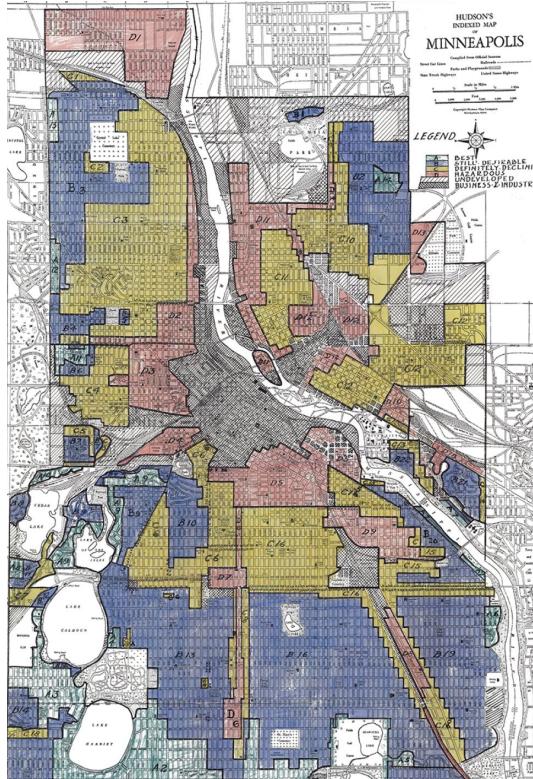
*"My dream is to one day see hospitals across the globe using built infrastructure **symbiotically** with the natural environment, **creating several benefits** for both humans and the planet with one thing."*

- Kristi White

Sacrifice Zones



Minneapolis Redlining Map 1930s



"Marginalized folks have always had to be really adaptive - they are resilient."

-Gloria Iacono



(Re)Building Access to Nature

- Addressing Inequities
- Community Building & Connection

*"I work to facilitate **connections between people** in the community **and nature.**"*
-Gloria Iacono



Mental, Physical, & Social Wellness

- Mental & physical benefits from being/working in nature
- Social cohesion and engagement



*"What inspires me about the culture of [community gardens] is how inherently **collaborative** it is.*

*Sharing a **common goal**, such as caring for the plants, makes people want to **help one another**."*

- Gloria Iacono

Conclusion

- Extreme heat is an increasing threat our region is facing
- Extreme heat highlights inequity in our systems, institutions, and policies
- Failing to act on extreme heat threatens the success of MetCouncil's 2050 vision statements



UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

Value of this research

- Effective change comes from telling stories
illustrative of trends in data
- Heat intersects many important problems that
we already face
- Collaboration and curiosity is essential
- No one thought they were an expert - but
we're all experts in our experiences



UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

Questions?

