

# Modeling Residential Water Demand Under Climate Change in a Transitional Urban System

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## Goals

- Explore how population growth, urban form, water policies, and climate change affect water demand at multiscale levels in the Wasatch Range Metropolitan Area (WRMA)
- Develop a conceptual framework and modeling options representing the complex relationship between urban development and water resource management
- Investigate the requirements for modifying the open source simulation system (UrbanSim) and develop a tightly coupled simulation system of UrbanSim and water-demand modeling

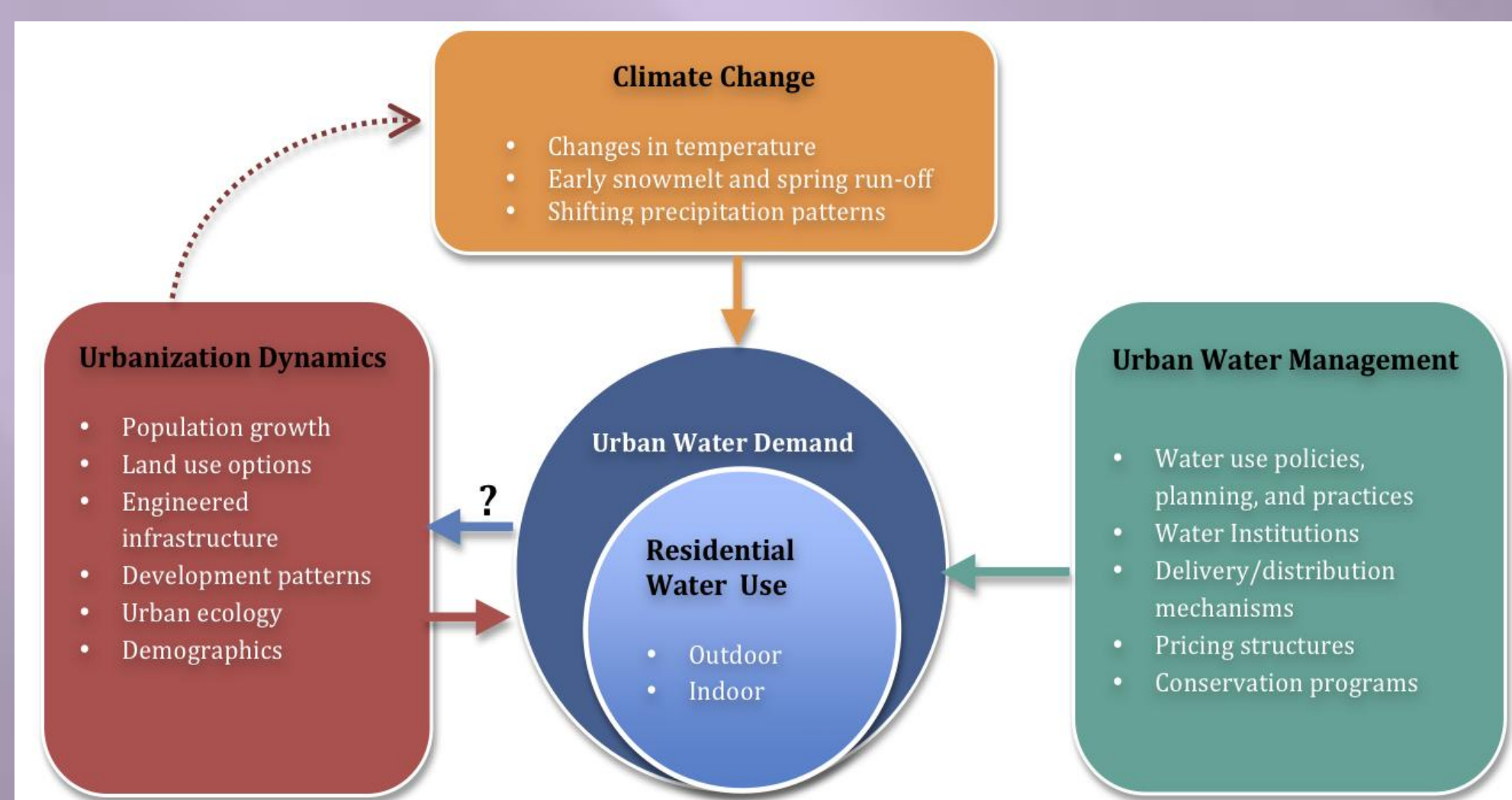


Figure 1. Drivers of urban water demand.

## Research Methodology

- Formulate and apply a conceptual framework to simulate WRMA's future residential water use under climate change and increasing urbanization impacts
- Test feasibility of various options for better integrating water decision-making into urban growth models
- Provide findings on model conceptualization and design requirements and a data inventory checklist

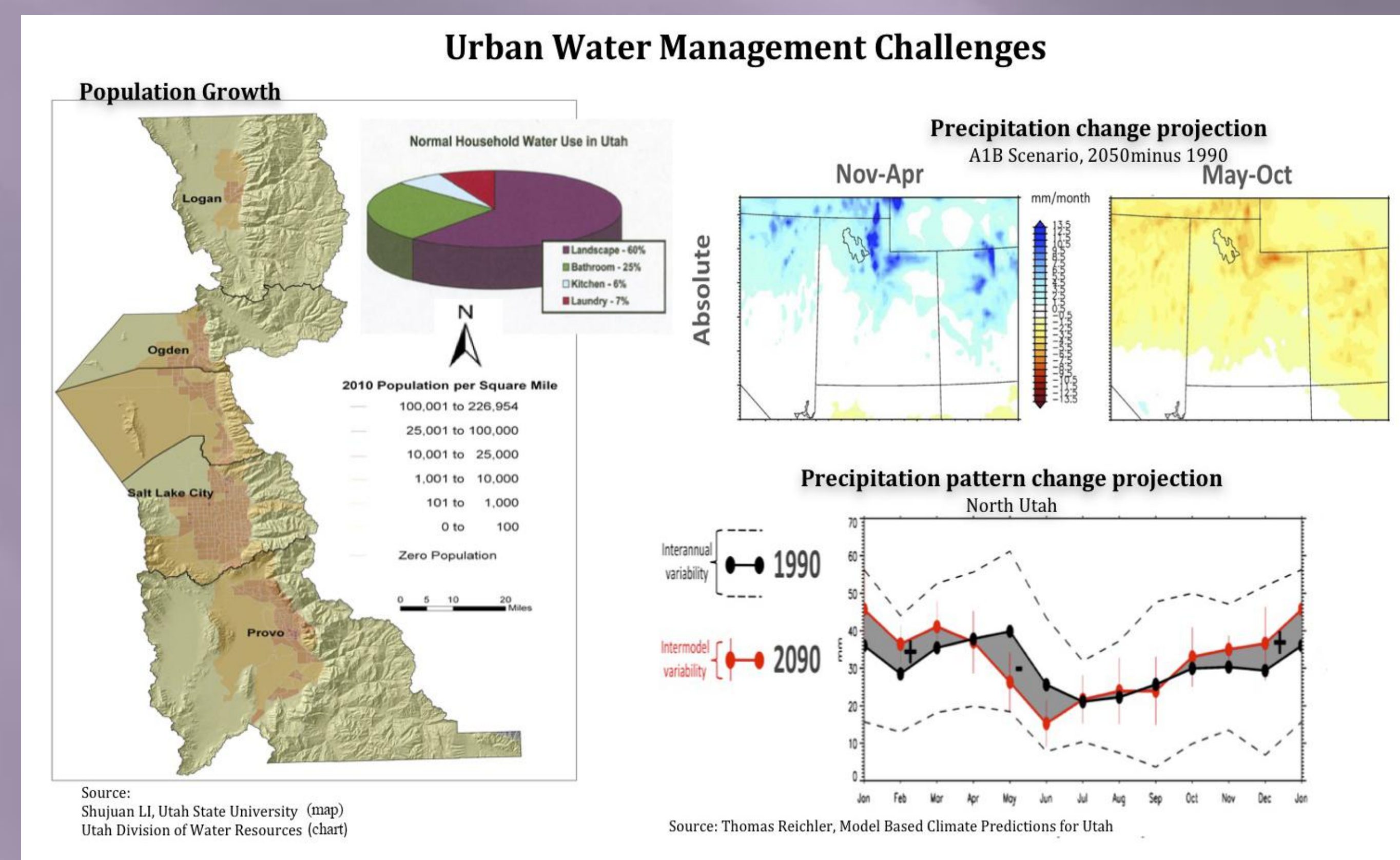


Figure 2. Projected changes in urbanization and climate dynamics.

## Impact

- Assessing and modifying the roles that water availability and water quality play in generic urban growth models (such as the widely used UrbanSim), which have been driven more by land use, economic development, and transportation planning than by water availability and by increasing costs of water infrastructure and distribution
- Applying UrbanSim to an arid region and assessing anticipated effects of regional climate change scenarios on urban water management

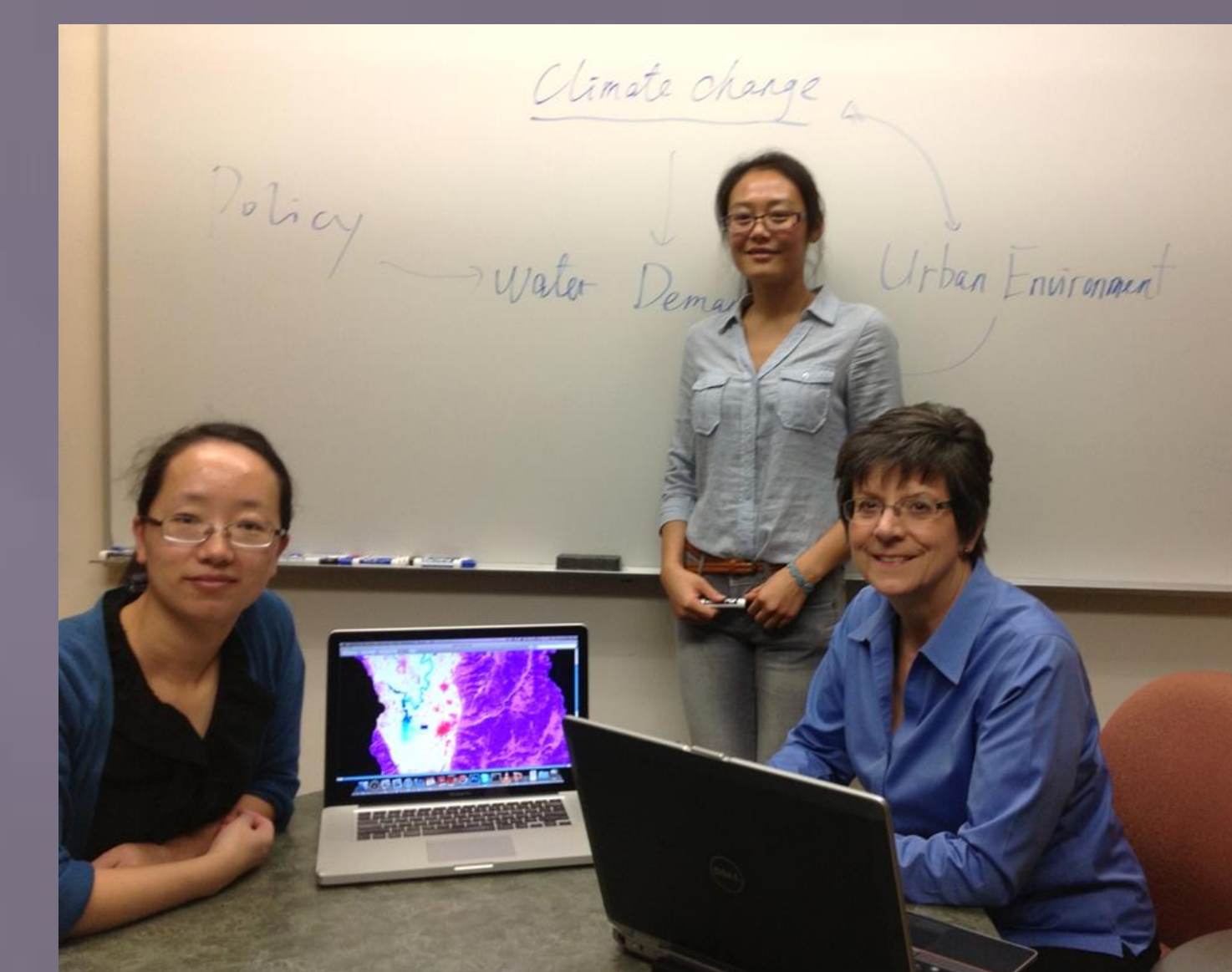


Figure 3. Enjie Li (center) discussing iUTAH project with mentors Drs. Shujuan Li (left) and Joanna Endter-Wada (right).



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