Climate change at Utah ski resorts: Impacts, perceptions, and adaptation strategies

Emily J. Wilkins
Environment & Society

Tara Saley
Biology

Hadia Akbar
Civil & Envi. Engineering

Rachel Hager
Watershed Sciences
Utah Total Skier Days

$1.43 billion in economic impact statewide!

Source: Ski Utah
Image: Leaver, 2018
• **Climate is changing**  
  (IPCC, 2014)

• **Resorts may struggle or close**  
  (Dawson & Scott, 2013)

• **Literature:**  
  • Adaptation?  
  • Manager perceptions?  
  (Wolfsegger, Gossling, & Scott, 2008)
Research Questions

What are the historic and predicted future climate trends for Utah ski resorts?

How do Utah ski resort managers perceive climate trends, impacts on tourism, and adaptation strategies?
Data Collection

Past weather:

Future projections:

• Semi-structured interviews with Utah resort managers
  • 8 resorts participated
  • Recorded, transcribed, coded
  • Thematic network analysis using NVivo

PRISM CLIMATE GROUP

NA-CORDEX

RCA-4 model
### Results

Regression coefficients: 0.042 – 0.072

1.6 – 2.7 °C increase over 37 years
Regression coefficients:
0.014 (low)
0.071 (high)

5.7 °C warming!
Perceptions of impacts

• Resorts are (somewhat) concerned
• Shorter seasons
• Less *quality* snow
• Will impact advanced skiers more
Adaptation

- 11/14 resorts use snowmaking
- Diversification of offerings
  - All season & winter
- Joining conglomerates
- Less mentioned:
  - Increasing lift capacity
  - Avoiding southern slopes
Proportion of the season with minimum daily temperature at or below -5 °C, by ski resort (1981 – 2017)

Regression coefficients: -0.004 to -0.007

0.4% – 0.7% decrease each season
Conclusions

- Utah resorts warming faster than global trends
  - Likely to continue

- Resorts are adapting!
  - But shouldn’t rely on snowmaking alone

- Future research:
  - Compare adaptation capacity of resorts
  - Water availability for snowmaking
Questions?

emily.wilkins@aggiemail.usu.edu