

Background

- Labor and delivery services at Ely Bloomenson Hospital and Cook County North Shore Hospital were discontinued in July 2015.
- These hospitals serve Ely, MN (pop. 3,455) and Grand Marais, MN (pop. 1,340) and surrounding areas.
- The number of rural hospitals offering labor and delivery services has been declining across the United States for multiple decades.

Objective

To explore choices and opinions about obstetric care services among patients living in Grand Marais and Ely areas who gave birth between 1990 and 2016.

Methods

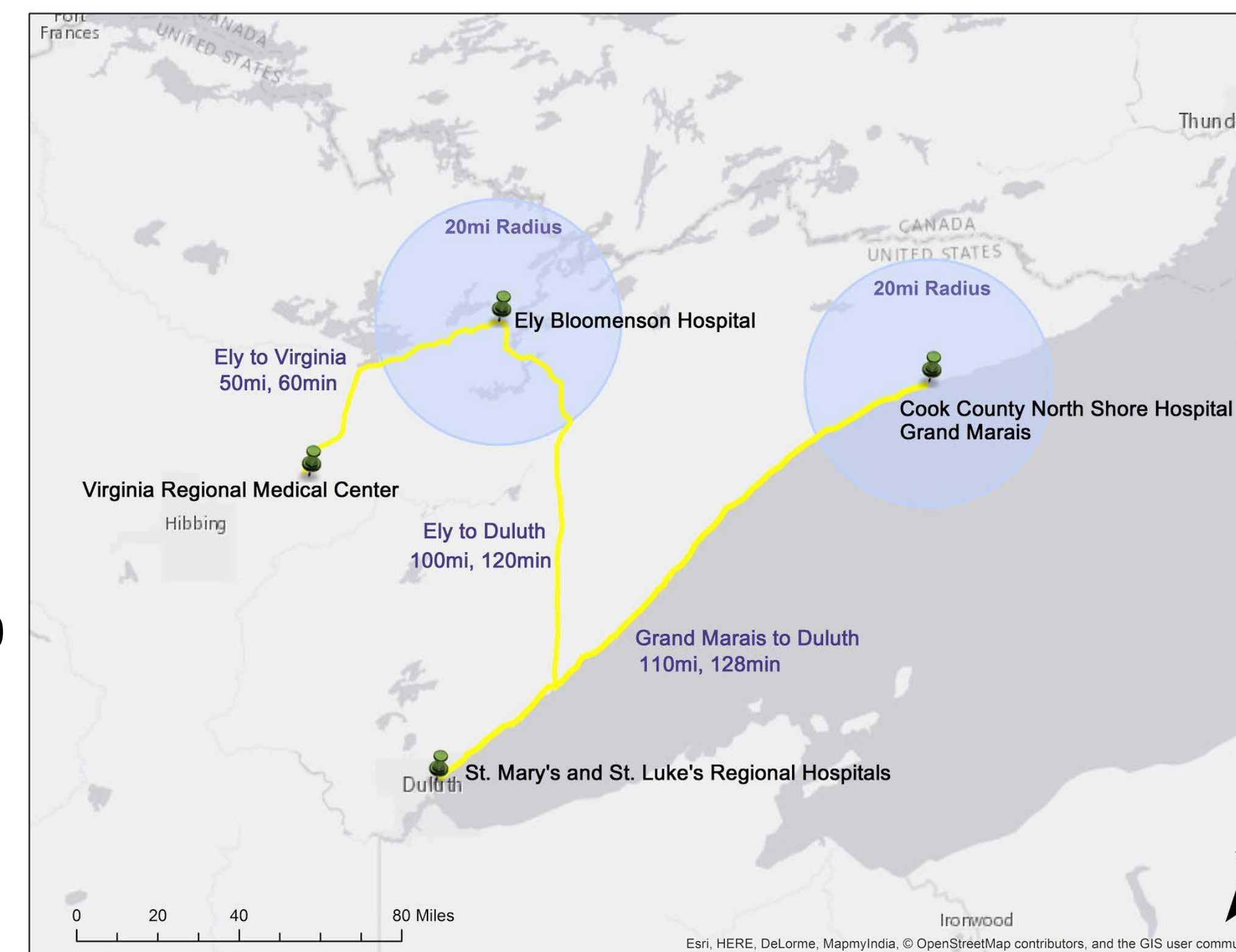
- **Sample:** Participants were women who received primary or prenatal care at Sawtooth Mountain Clinic in Grand Marais between 1990 – 2016 or Essentia Health Ely Clinic between 2006 – 2016, and were recruited by their respective clinic.
 - 681 total recruitment letters (384 for Grand Marais and 297 for Ely) were mailed and 45 letters were returned to sender due to an incorrect address.
- **Survey:** The Rural Obstetric Minnesota Patient (ROMP) survey was created using Qualtrics; IRB Exemption was obtained: Study number 1610E97081. Responses were received between November 30, 2016 and January 31, 2017.
 - Researchers were blinded to identifying patient information.
 - Participants did not receive compensation for completing the survey.
- **Analysis:** Survey responses were summarized using descriptive statistics. GEE models (binary outcome, log link) were used to test for associations between year of delivery and delivery characteristics and opinions. Alpha was set at 0.05, and SAS v.9.4 (SAS Institute Inc., Cary, NC) was used for analyses.

Results

Sample:

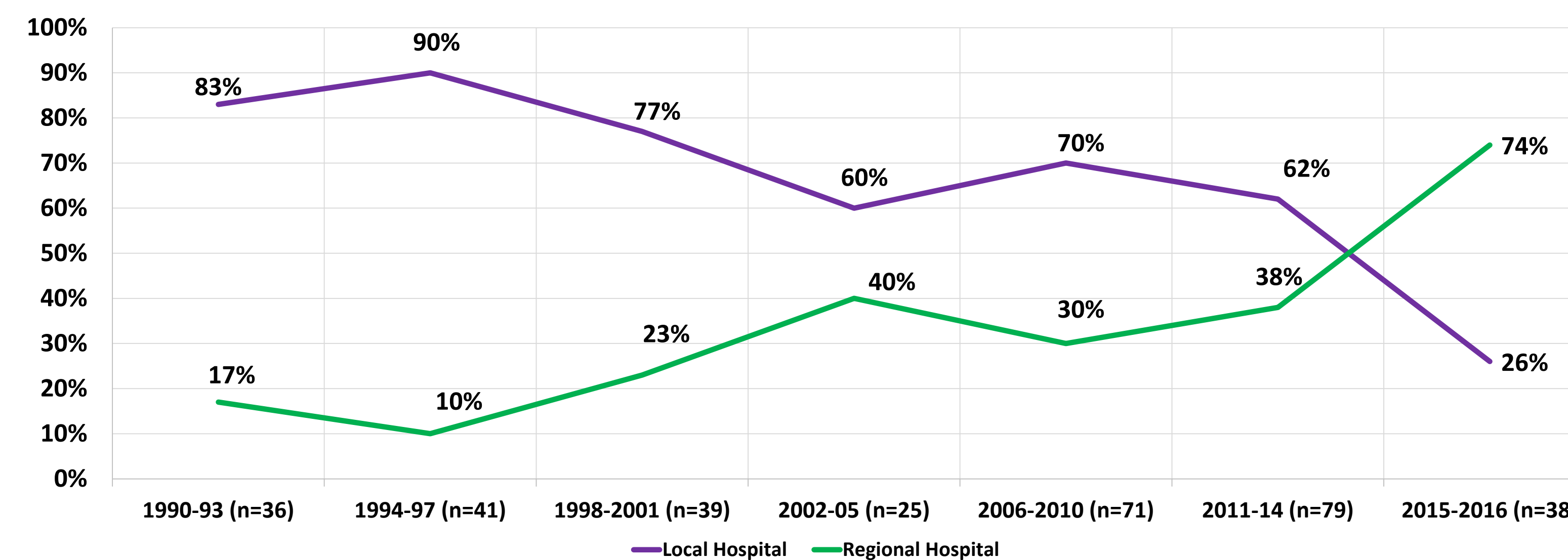
- N=201 participants
- N=355 deliveries
- Response rate: 31.6%
- 73% reported at least 2 deliveries
- 93% White
- 64% College graduates
- 65% Income above \$50,000
- 65% were between 21 and 30 years old at time of first delivery

Figure 1. Distance* to Local vs. Regional Hospitals



* 71% of respondents (143/201) lived within 20 minutes of Ely Bloomenson or Cook County North Shore Hospital at the time of their delivery

Figure 2. Planned Delivery Location by Year of Birth Local* vs. Regional†



* Local Hospital = Ely Bloomenson Hospital & Cook County North Shore Hospital

† Regional Hospital = Virginia Regional Regional Medical Center, St. Mary's Hospital- Duluth or St. Luke's Hospital- Duluth

Figure 3. Reasons for Choosing Delivery Location by Year of Birth

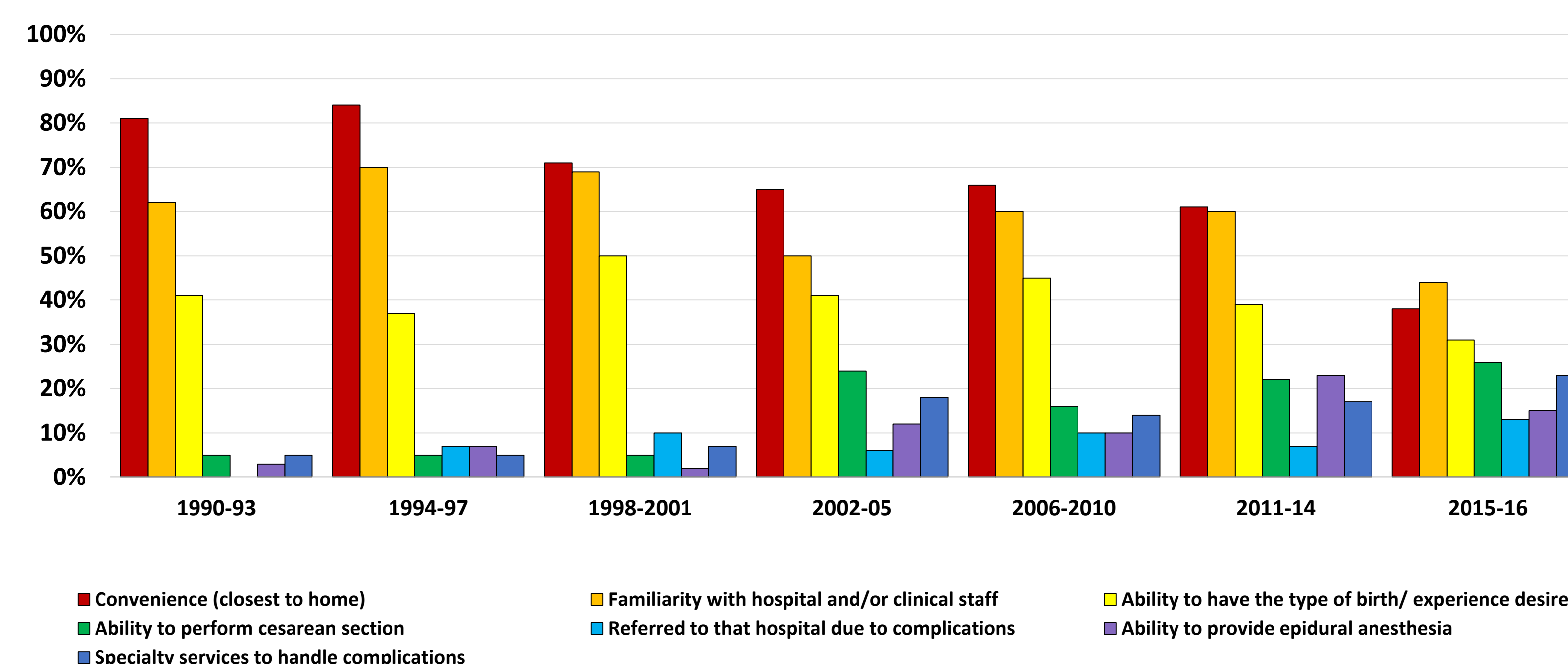


Figure 4. Overall Experiences with Pregnancy and Birth

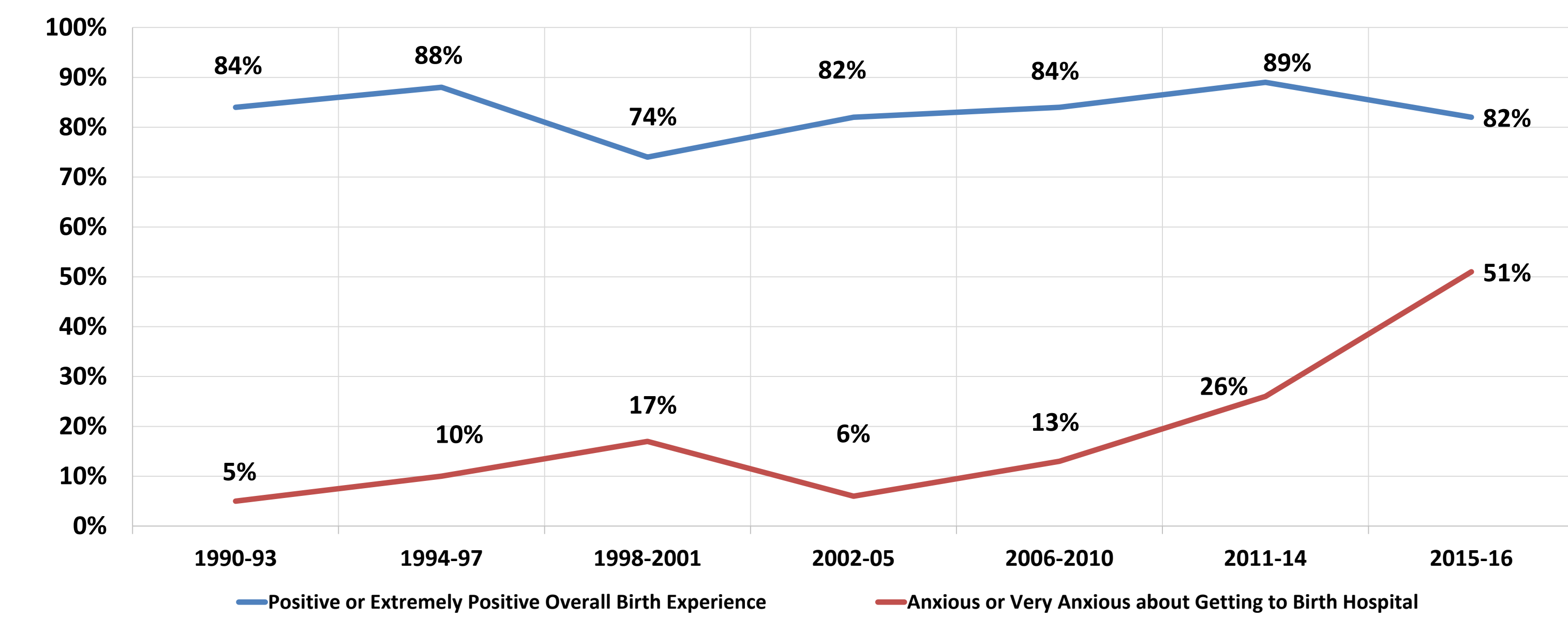
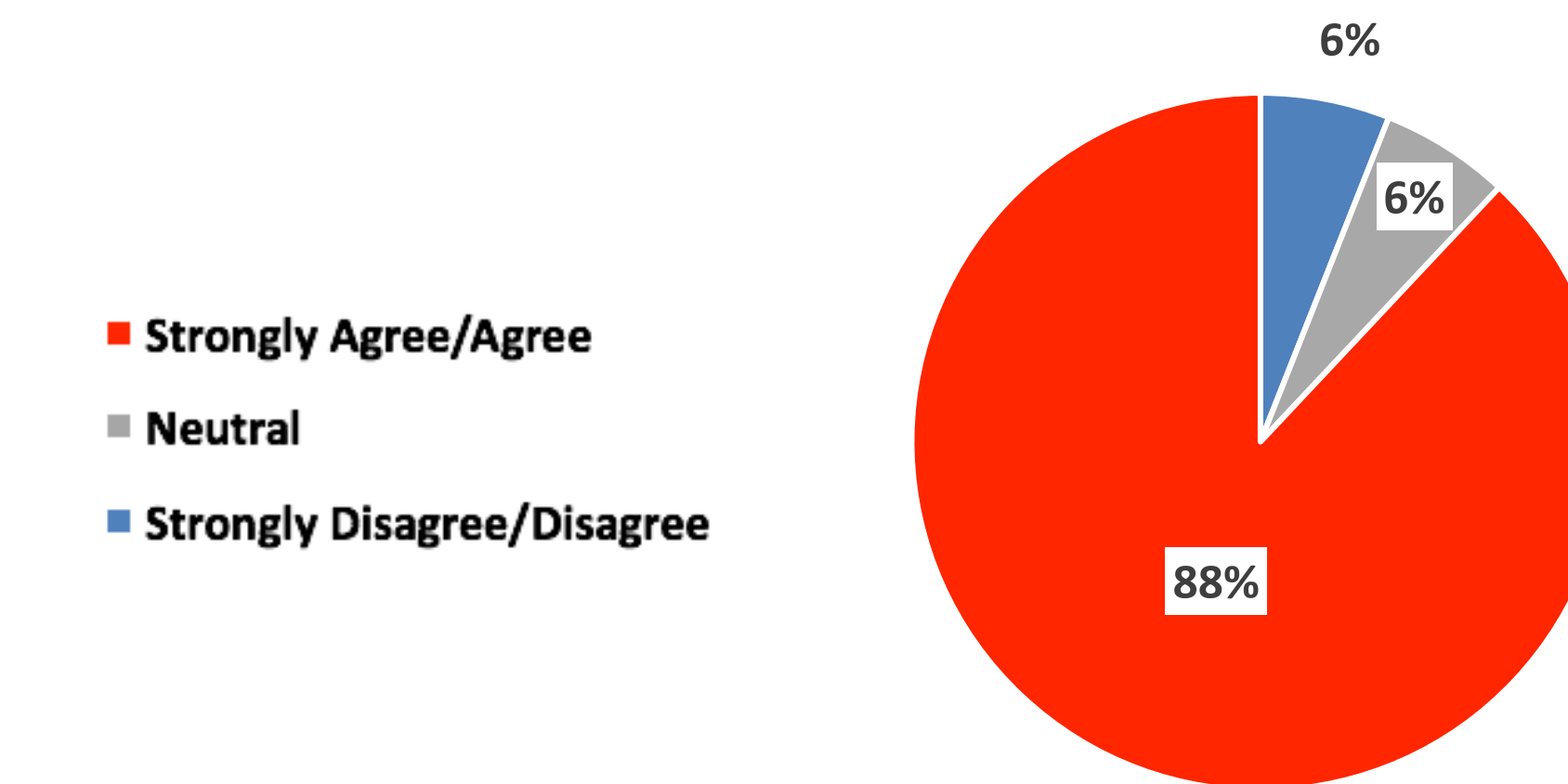


Figure 5. Patient response to question: "I have concerns about the lack of local labor and delivery services and the need to travel elsewhere for delivery"



Delivery Location: There was a statistically significant trend toward decreasing utilization of local hospitals and increasing utilization of regional hospitals preceding the discontinuation of local labor and delivery services in Ely and Grand Marais (local $\beta=-0.41$, $p<0.0001$). Local hospital utilization, however, was still 1.6X higher than regional in the few years prior to discontinuation of obstetrical services (62% vs. 38%). (Figure 2)

Reasons for Choosing Delivery Location: Reasons shifted over the years prior to discontinuation of obstetrical services. Local factors such as convenience and familiarity remained highest throughout; but significantly decreased over time ($\beta=-0.30$, $p<0.0001$; $\beta=-0.14$, $p=0.03$ respectively). Regional factors became more common: the ability to provide epidural anesthesia ($\beta=0.28$, $p=0.009$), manage complications ($\beta=0.30$, $p=0.0008$), and perform cesarean sections ($\beta=0.31$, $p=0.002$). (Figure 3)

Overall birth experience: Overall experience has remained consistently positive since 1990 ($\beta=0.04$, $p=0.60$), despite the fact that level of anxiety about traveling for delivery has risen ten-fold from 1990-2016 ($\beta=0.43$, $p<0.0001$). (Figure 4)

Concerns: There is a very high level of concern about the lack of local labor and delivery services and the need to travel elsewhere for delivery (88%, 175/197). (Figure 5)

Conclusions

- Choices and opinions about obstetric care have significantly changed from 1990 to 2016 in rural Minnesota.
- Understanding these changes could help to create programs to address community concerns, advocate for policy changes that could address obstetrical care services in rural communities, as well as communicate findings to other rural areas of the country undergoing similar changes.