

Comparing Labor Progression and Outcomes in Term Gestations: Are Elective Inductions Worth the Risk?

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Clinical Background

- ▶ The frequency of elective inductions has increased from 1990 to 2012.²
- ▶ In the United States, the annual cesarean section rate was about 33% in 2010-2011.⁵
- ▶ At our hospital, the cesarean delivery rate was 29.8% in 2014 (lowest since 2010).

Clinical Background

- ▶ Previous study conducted in 2011 and examined cesarean rate at Methodist for 2009 and 2011
- ▶ A policy was then implemented: **no elective induction of labor before 41 weeks**
- ▶ 40% decrease in number of primiparous c-sections (first cesarean deliveries).
- ▶ Overall, however, there was no decrease in the total number of c-sections.

Clinical Background

- ▶ Cesarean delivery carries higher rates of:
 - ▶ Gastrointestinal complications (ileus, adhesions), endometritis, urinary tract infections, DVT, wound infections/dehiscence and hospital re-admission.⁵

Introduction to current study

- ▶ To examine the effect of a Bishop Score policy on reducing the cesarean rate.
- ▶ Previous protocol: No elective inductions before 41 weeks (no Bishop Score requirement)
- ▶ New protocol:
 - ▶ Multigravidas – Bishop Score ≥ 6
 - ▶ Primigravidas – Bishop Score ≥ 8
 - ▶ *There is a very strong correlation between favorable Bishop Score and spontaneous vaginal delivery⁷*

Methodology

- ▶ Population - All elective inductions from May-Nov (2012) and Jan-Jun (2013)

Letters sent notifying providers of new Bishop score policy

Inclusion: low-risk women admitted for **elective** IOL, vertex, non-anomalous, singleton gestation and GA between 39 0/7 to 40 6/7.

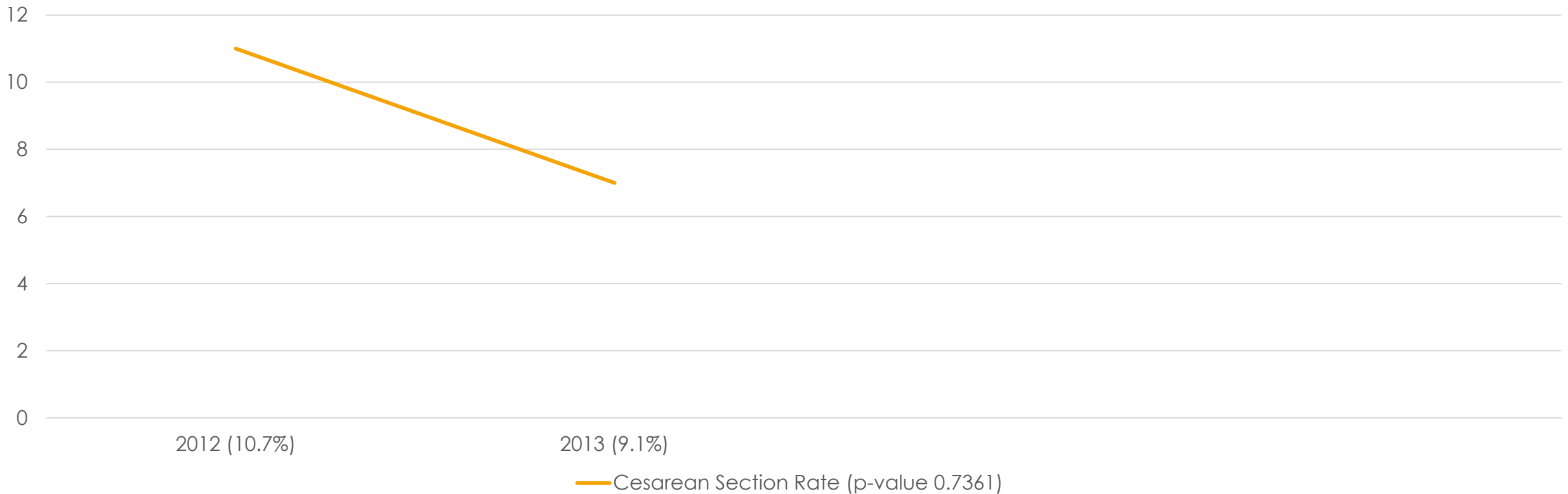
- ▶ 4 independent reviewers performed chart reviews:
 - ▶ Delivery outcome, Length of labor and Length of hospital stay

Results

- ▶ C-section rate for **elective** induction of labor decreased from 10.7% to 9.1% during the study period. Although this was not statistically significant (p-value 0.7361), there is clinical significance...
- ▶ For those who were nulliparous and with an unfavorable cervix, there is good data to support that the risk of c-section is higher after elective induction.^{3,4}

Cesarean Section: Elective Inductions

C-Section Rate Before and After Policy



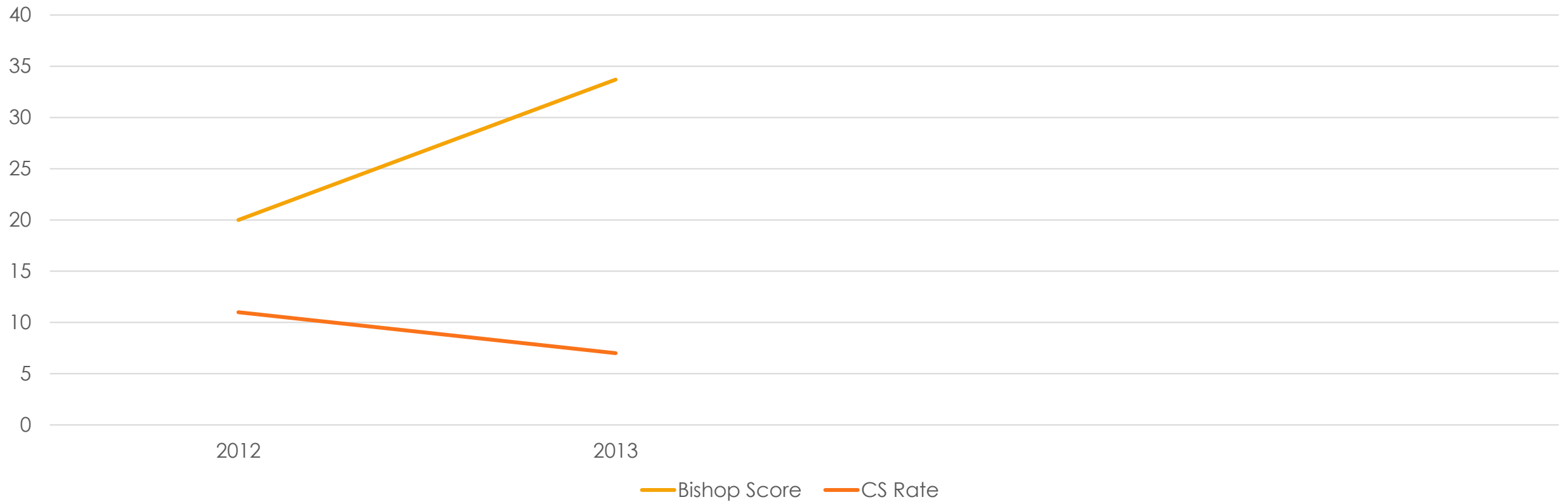
Bishop Scores: Elective Inductions

Before and After Policy



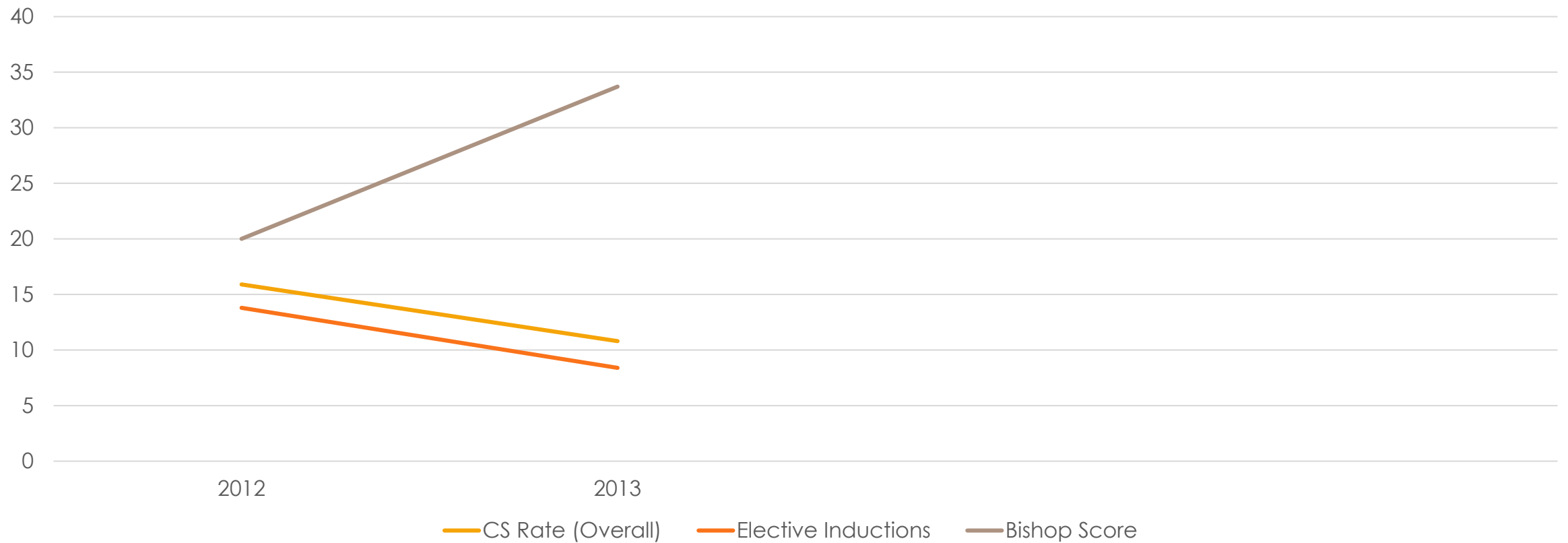
Comparing The Data

Bishop Score vs C-Section Rate



Cesarean Section Rate Overall

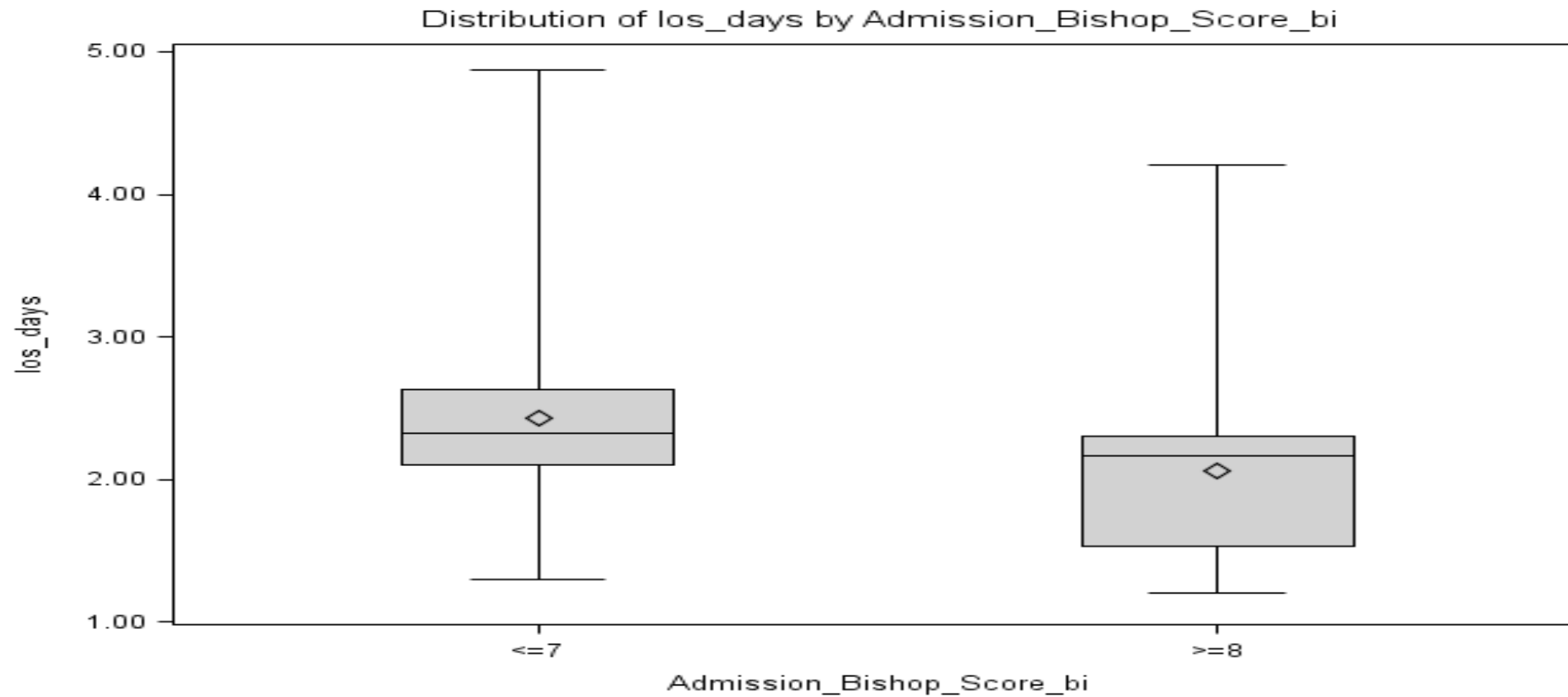
Overall Data



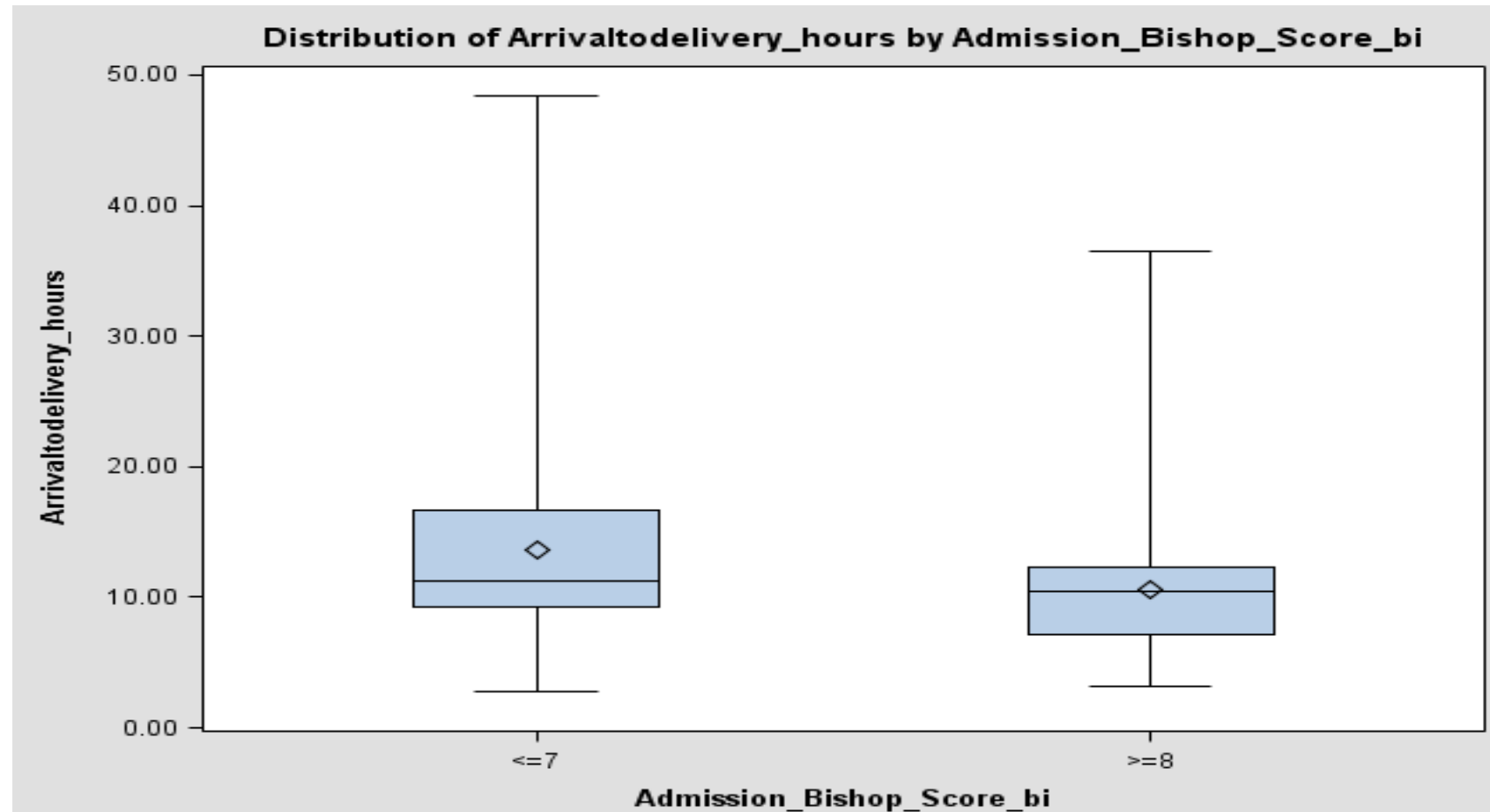
Results overall

- ▶ Overall, the cesarean section rate decreased, but was not statistically significant (15.9% to 10.8%)
 - ▶ Small sample size (N = 165)
 - ▶ Repeat sections play a role in overall reduction
 - ▶ As long as there are primary cesarean deliveries, there will likely be repeat cesarean deliveries.

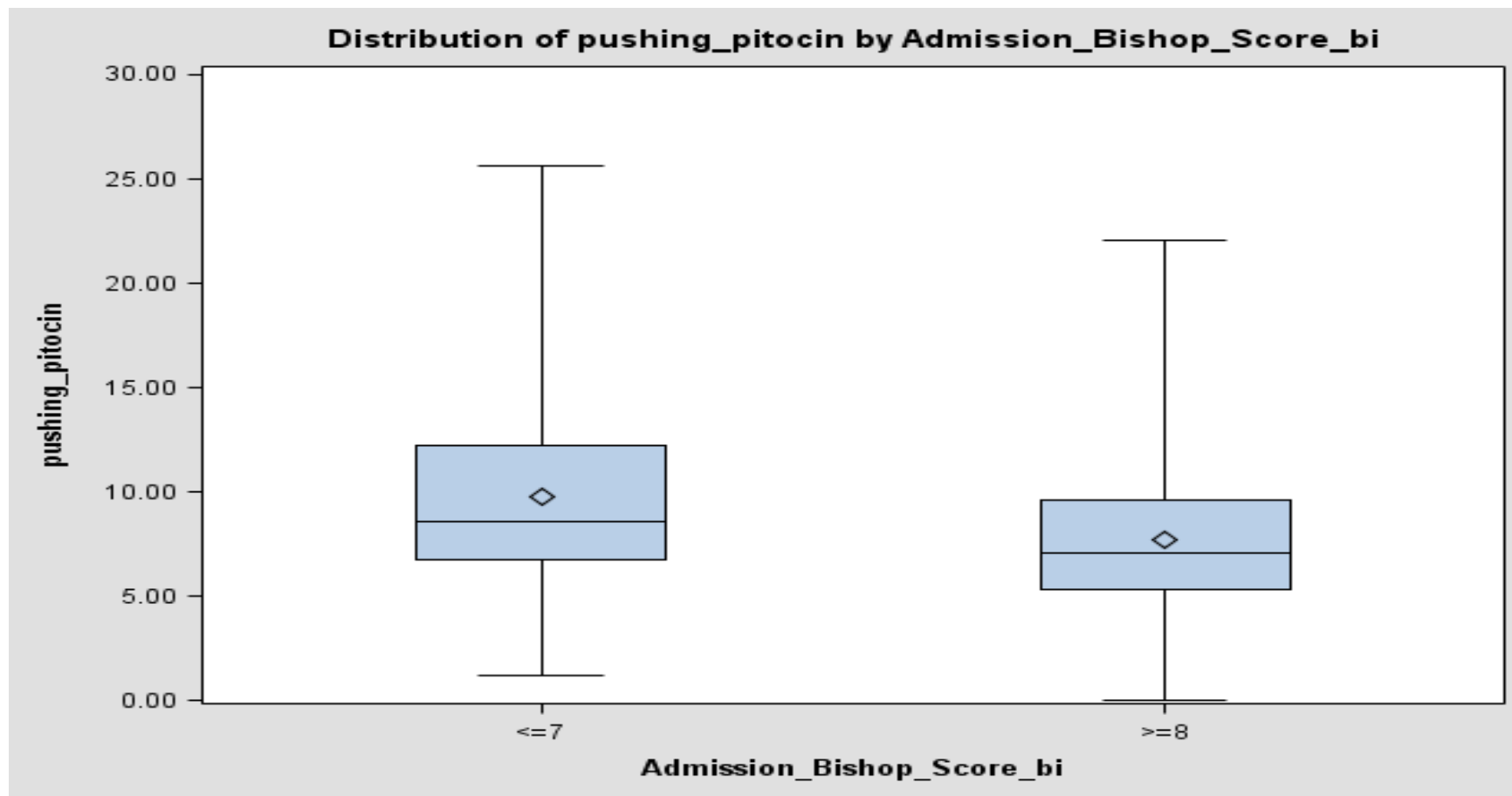
Length of Stay



Admission/Arrival to Delivery



Pitocin to Pushing



Cost Savings

▶ Elective Induction

▶ Bishop Score < 7: N = 119

▶ Bishop Score > 8: N = 46

▶ Average savings per case:

▶ \$1124.00

▶ 8.86 hours

▶ For our study (N=119):

▶ **\$113,756!**

▶ Total hours saved: **1054 hours → 44 days!**

Discussion

- ▶ Why did the overall cesarean rate not decrease in statistically significant manner?
 - ▶ **Repeat cesarean deliveries play a role.**
 - ▶ Medical inductions cannot be controlled (more obesity, diabetes, etc)
- ▶ Why did rate of elective inductions increase?
 - ▶ Although an induction was not at 41 weeks, Bishop Score may have made it possible for induction.

Discussion

- ▶ How might we decrease the overall rate of cesarean deliveries?
 - ▶ **Decrease the *FIRST* cesarean section!**
 - ▶ Bishop Score is instrumental to this → very well documented that in nulliparous women with an unfavorable Bishop Score, higher rates of cesarean delivery.¹⁻³

Discussion

- ▶ **Eliminating a first cesarean delivery** can reduce risk, perinatal morbidity and complications in subsequent pregnancies.¹
- ▶ One important risk factor for having primary c-section is elective induction in nulliparous women with a low Bishop Score.^{1,2,3}

Conclusion

- ▶ Although this study is limited by small sample size, the correlation between Bishop Score and the rate of cesarean delivery is strong and clinically relevant.
- ▶ Especially true for nulliparous women with a low Bishop Score.¹
 - ▶ In fact, Bishop scores < 5 are associated with at least double the risk of c-section delivery.³

For the Future

- ▶ What things can we do?
 - ▶ Consider hard stop for bishop score
 - ▶ Follow evidence based guidelines on management of labor.²
 - ▶ Follow evidence based guidelines on indications for C-sections.²
 - ▶ Some indications for cesarean may be modifiable

Resources

1. Catherine Y. Spong, MD, et al. Preventing the First Cesarean Delivery: Summary of a Joint Eunice Kennedy Shriver National Institute of Child Health and Human Development, Society for Maternal-Fetal Medicine, and American College of Obstetricians and Gynecologists Workshop. *Obstetrics & Gynecology*. 2012 November ; 120(5): 1181–1193.
2. Deborah B. Ehrenthal, MD, Xiaozhang Jiang, MD, MS et al. *Obstetrics & Gynecology*(NA). 2010; 116(1):35 Labor Induction and the Risk of a Cesarean Delivery Among Nulliparous Women at Term.
3. Francis P. J. M. Vroenenraets, MD, Frans J. M. E. Roumen, MD, PhD, et al. Bishop Score and Risk of Cesarean Delivery After Induction of Labor in Nulliparous Women. *Obstetrics and Gynecology*. 2005 Apr;105(4):690-7
4. Anjel Vahratian, PhD, MPH, Jun Zhang, PhD, MD, James F. Troendle, PhD, Anthony C. Sciscione, DO and Matthew K. Hoffman, MD, MPH. Labor Progression and Risk of Cesarean Delivery in Electively Induced Nulliparas. *Obstetrics and Gynecology*(NY). 2005;116(1):35–42
5. Murphy, Neil J, MD, Quinlan, Jeffrey D, MD. Cesarean Delivery: Counseling Issues and Complication Management. *American Family Physician*. 2015; 91(3):178-184
6. *Obstet Gynecol.* ACOG Proactive Bulletin: Induction of Labor. 2009;114(2):386
7. Fisch, John M, MD, English, Dennis, MD, et al. Labor Induction Process Improvement: A Patient Quality-of-Care Initiative. *Obstetrics & Gynecology*: 2005; 105(4):690-97.