

First-Birth Term Cesareans (Aka Nulliparous Term Singleton Vertex [NTSV] Cesarean Births)

What are first-birth term cesareans?

This indicator assesses the number of nulliparous women with a term, singleton baby in a vertex position delivered by cesarean section.^{1,2} First-birth term cesareans—also known as nulliparous term singleton vertex (NTSV) cesareans—are aligned with the American College of Obstetricians and Gynecologists (ACOG)³ and the Department of Health and Human Services (DHHS)⁴ objectives to reduce cesarean births among low-risk women (ie, full-term, singleton, and vertex presentation).

Why is it important to measure first-birth term cesareans?

There is controversy about vaginal birth after cesareans, resulting in large shifts to cesareans after a first-birth term cesarean.² While this controversy is fully elucidated, quality improvement efforts should focus on reducing primary NTSV cesareans.^{1,3,5} Hence, a more wide-spread use of NTSV cesareans in hospital-level obstetric quality improvement activities has been validated¹ and is endorsed by the ACOG,³ and the DHHS,⁴ and The Joint Commission.⁵

How are first-birth term cesareans measured?

The validation studies of NTSV cesareans showed that more than half of its variation is due to a combination of induction and early admission in labor, suggesting that its control is largely inside the health care system and strongly influenced by elective obstetric practices.^{1,6,7} The NTSV cesarean rate removes confounding by nonvertex births and multiple gestations, which more likely have better outcomes with cesareans.^{8,9} Since advanced maternal age is independently associated to increased rates of cesareans,¹⁰ the NTSV indicator was adjusted for maternal age to account for the increased risk of cesareans.

$$\text{NTSV} = \frac{\text{Nulliparous, term singleton vertex cesarean births}}{\text{All live nulliparous term singleton vertex deliveries}}$$

What are the limitations with using birth certificate data linked to maternal and infants hospital data to measure first-birth term cesareans?

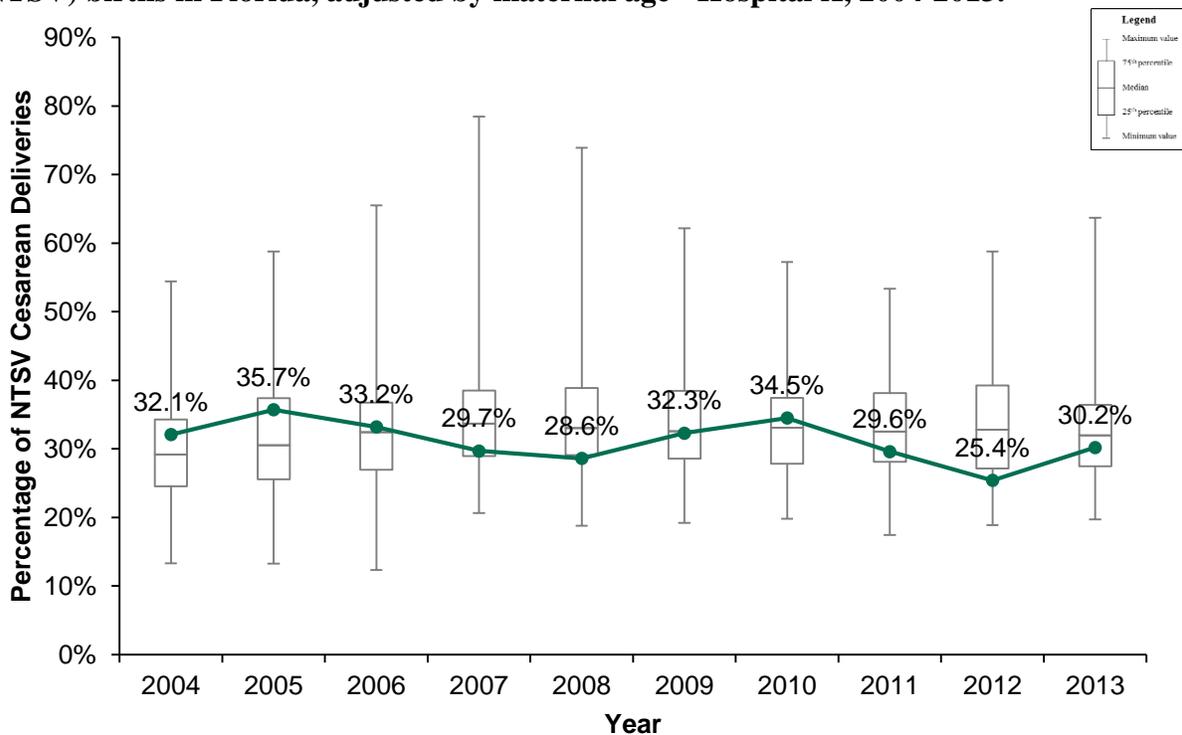
On one hand, the main limitation of NTSV cesarean rate is that it only includes a portion of women delivering babies—preterm, postterm, nonvertex, and multiparous deliveries are excluded from this indicator.¹¹ Hence, NTSV cesareans should be analyzed in the context of a more comprehensive data set. On the other hand, birth certificate data linked to maternal and infant inpatient data are more accurate than using birth certificate or inpatient record data individually.¹²⁻¹⁵ Still, there may be slight variation in the quality of data reporting by hospital. While these estimates may be slightly higher, unlinked birth certificate data as well as data linked to inpatient record data are useful in monitoring the time trends of NTSV cesareans and comparing percentages across hospitals. The results for this indicator were estimated using the linked file.

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How can we improve quality based on this indicator?

The rate of NTSV cesareans has been suggested as a benchmark measure for all US hospitals and practitioners.⁵ When this measure was initially recommended in 2000, a value of 15.5% was suggested, but a more modest value of 23.9% has been adopted by the DHHS among the Healthy People 2020 objectives.⁴ Higher NTSV cesarean rates are associated with induction and early labor admission.¹ In consequence, “it is possible that decreasing elective induction of labor and reducing the number of women admitted in latent labor may decrease NTSV cesarean rates.”¹ In turn, reducing primary cesareans “will reduce the number of women having repeat cesarean sections [and] reduce the morbidity of all future births and avoid all the controversies with trial of labor after cesarean/elective repeat cesareans.”⁵

Figure 1. Percentage of cesarean deliveries among all nulliparous, term singleton vertex (NTSV) births in Florida, adjusted by maternal age - Hospital X, 2004-2013.



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Figure 2. Percentage of inductions among all nulliparous, term singleton vertex (NTSV) births in Florida - Hospital X, 2004-2013.

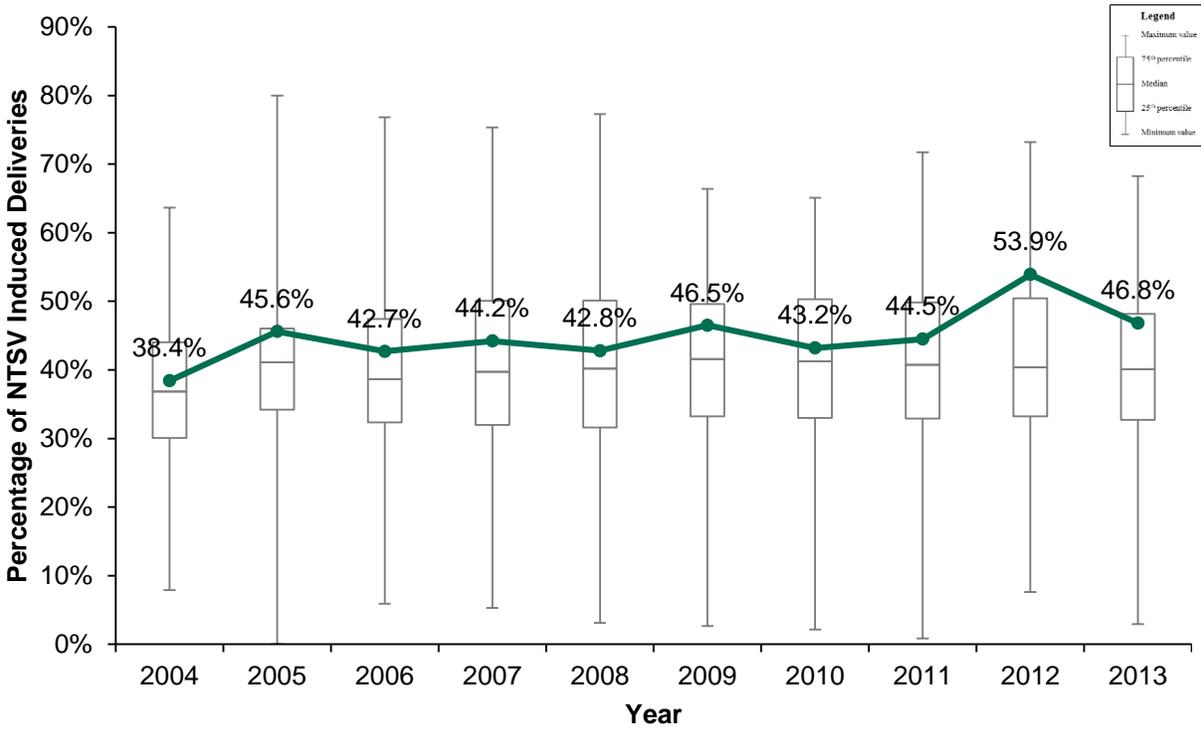
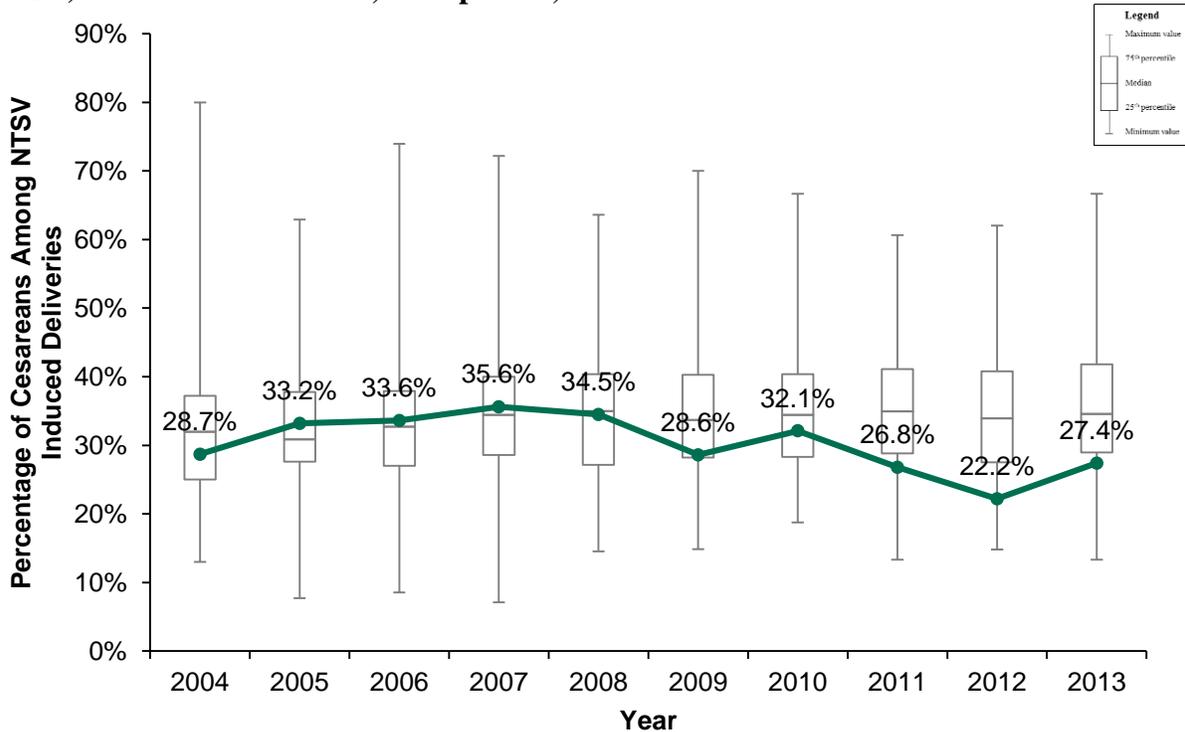
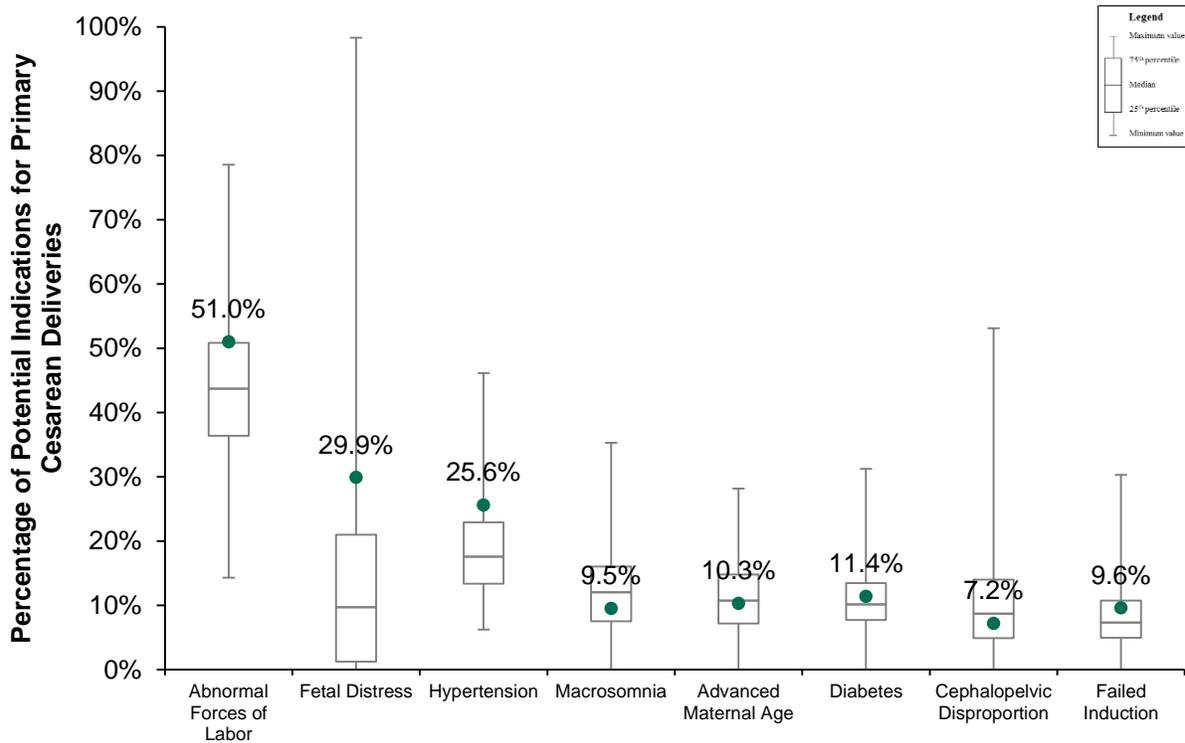


Figure 3. Percentage of cesarean deliveries among all nulliparous, term singleton vertex (NTSV) inductions in Florida, - Hospital X, 2004-2013.



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Figure 4. Percentage of indications for primary cesarean deliveries among all nulliparous, term singleton vertex (NTSV) births in Florida - Hospital X, 2013.



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