

Distribution analyses

The following figures present the results of the first step of the exploratory data analysis, focusing on the distinction between sepsis and non-sepsis cases. Distribution analyses were performed based on the target attribute. The figures below illustrate how the other attributes behave in relation to the cases with or without sepsis, enabling the identification of relevant patterns within the dataset.

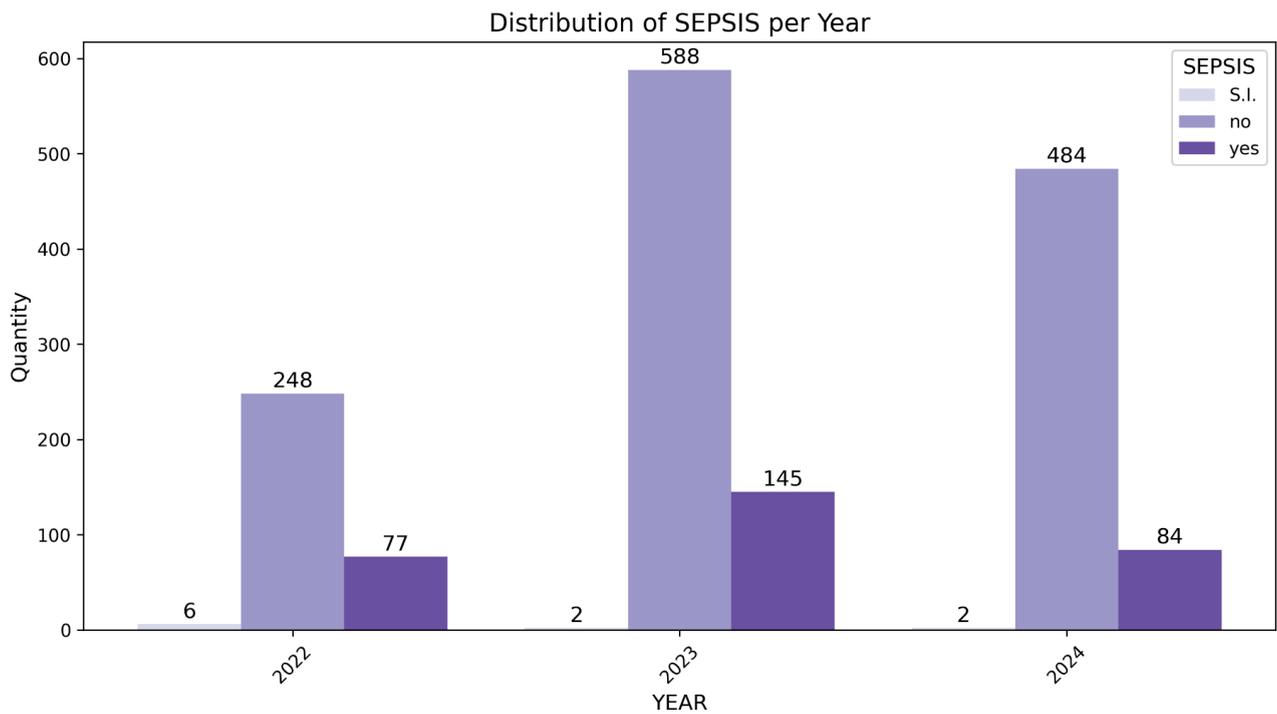


Figure 1. Analysis of the distribution of the quantity of cases of neonatal sepsis per year.



Figure 2. Distribution of delivery type by sepsis outcome.

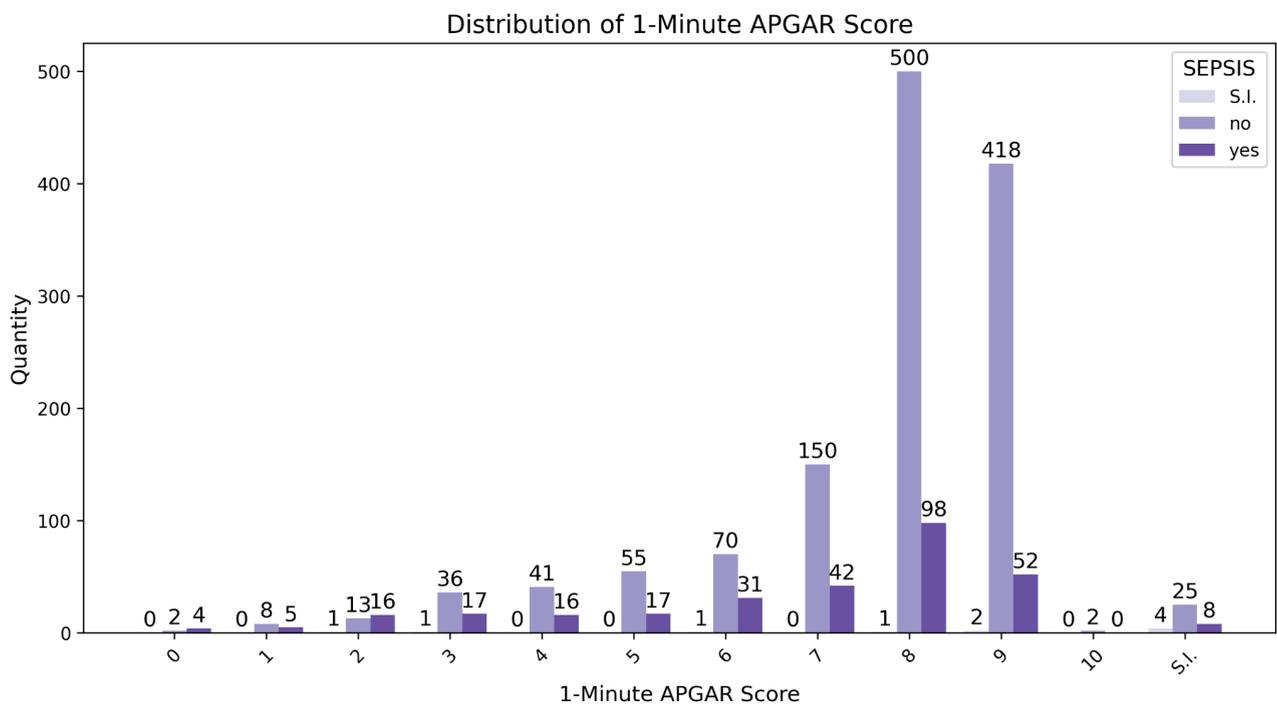


Figure 3. Apgar score at 1 minute stratified by sepsis outcome.

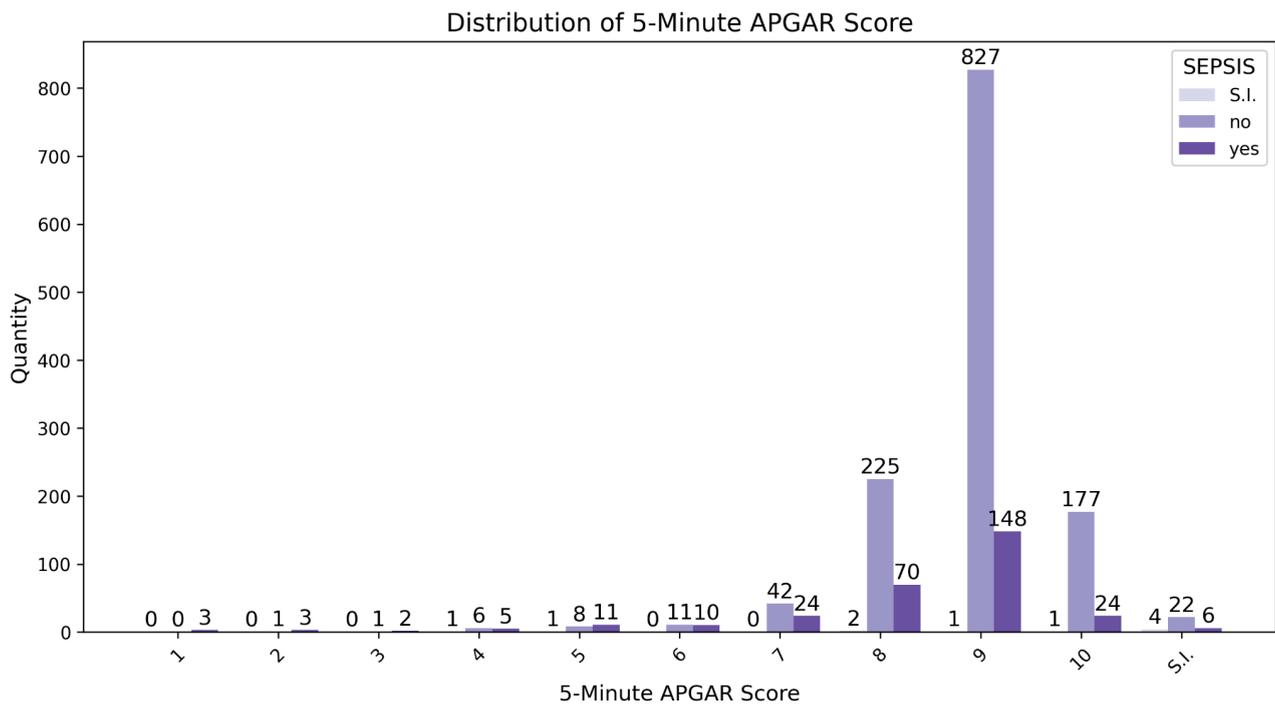


Figure 4. Apgar score at 5 minutes, stratified by sepsis outcome.

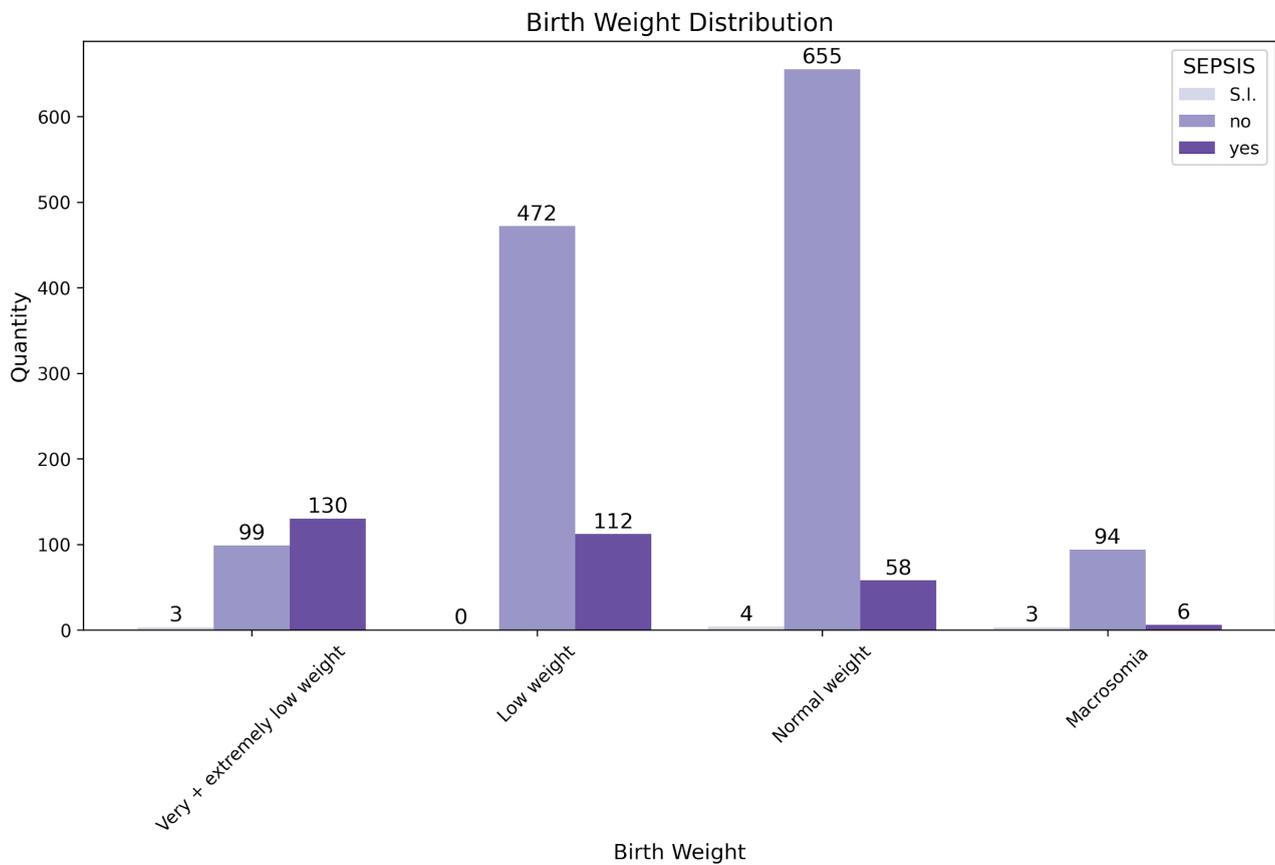


Figure 5. Birth weight distribution by sepsis status. The data are continuous, measured in grams and they were categorized according to the World Health Organization (WHO) guidelines for classifying birth weight ranges.

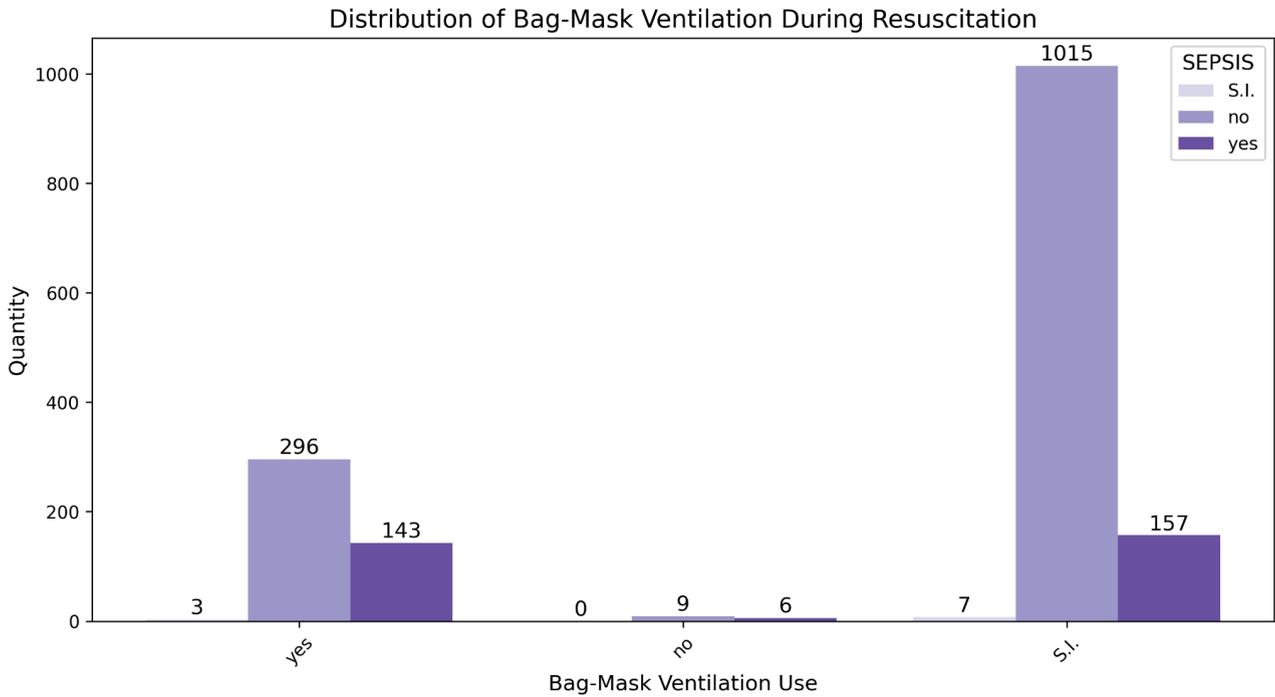


Figure 6. Bag-mask ventilation during resuscitation and sepsis association.

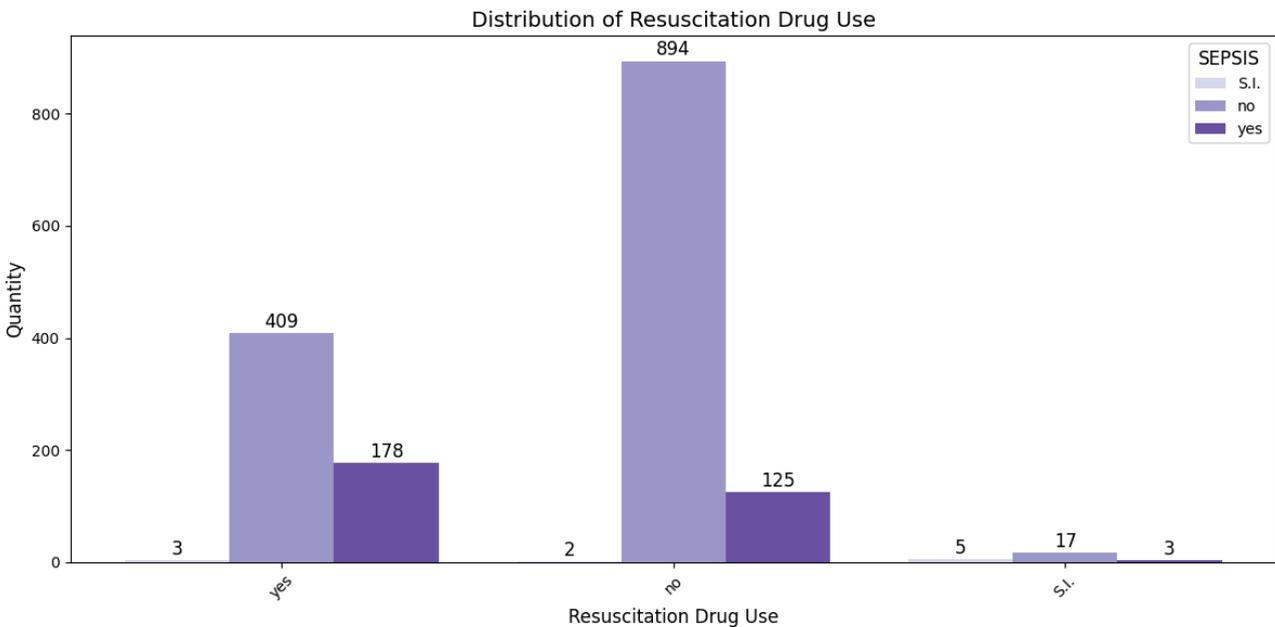


Figure 7. Use of resuscitation drugs by the sepsis association.

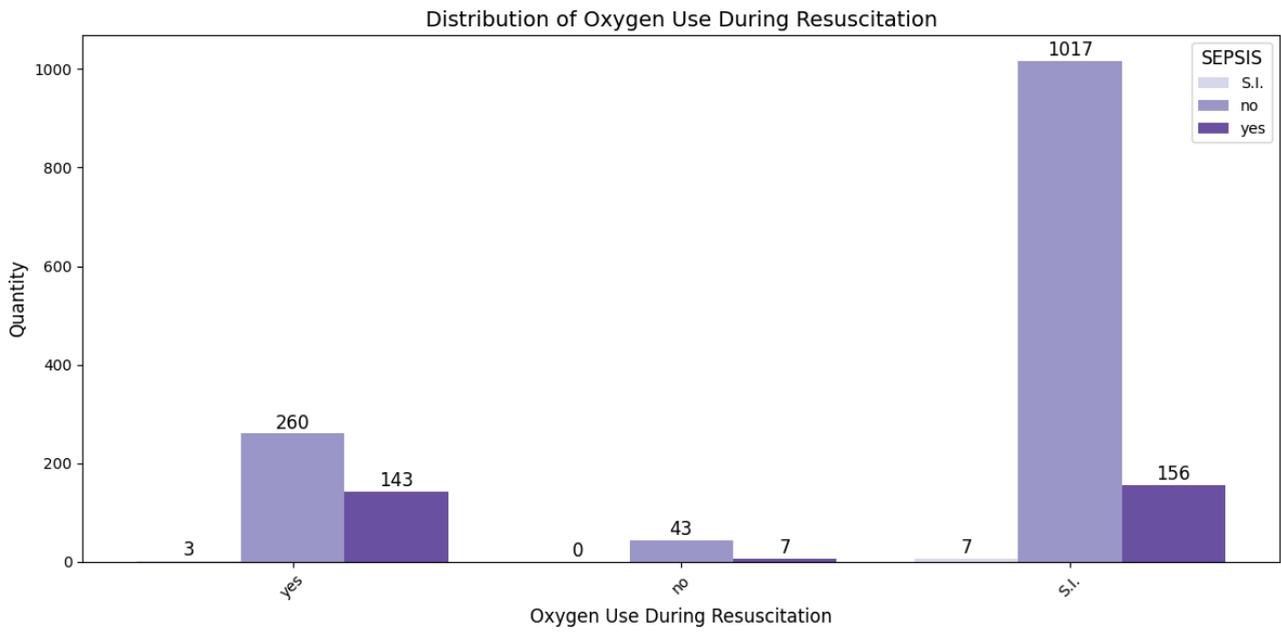


Figure 8. Distribution of oxygen use during resuscitation.

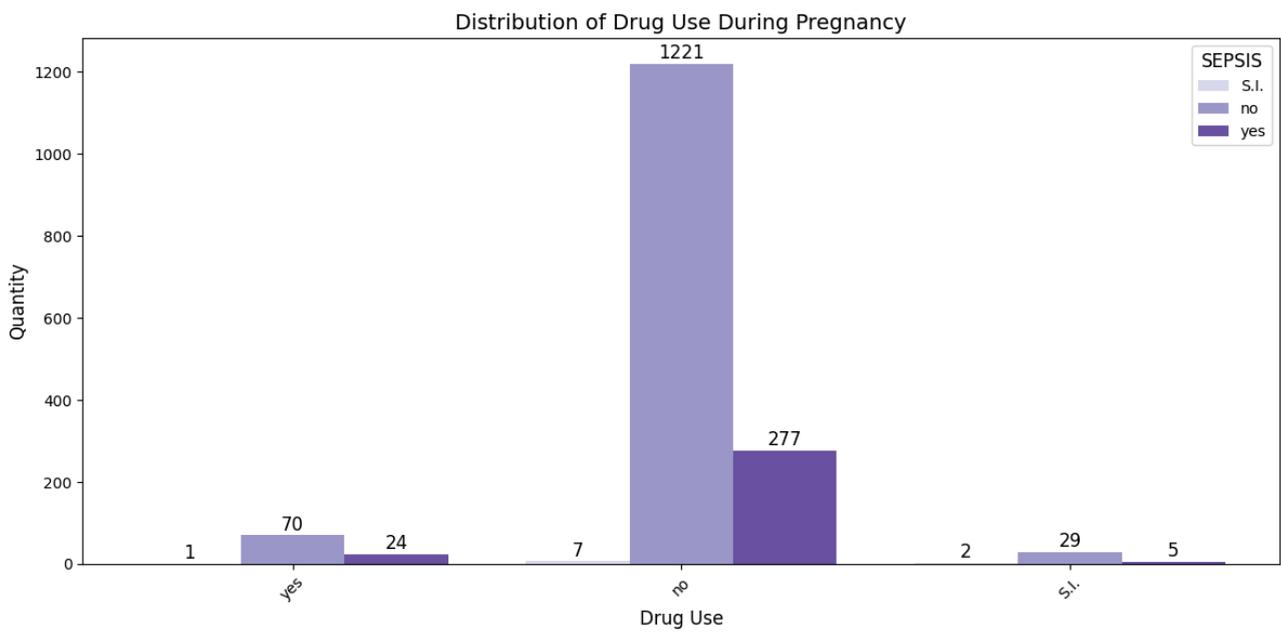


Figure 9. Distribution of drug use during pregnancy.

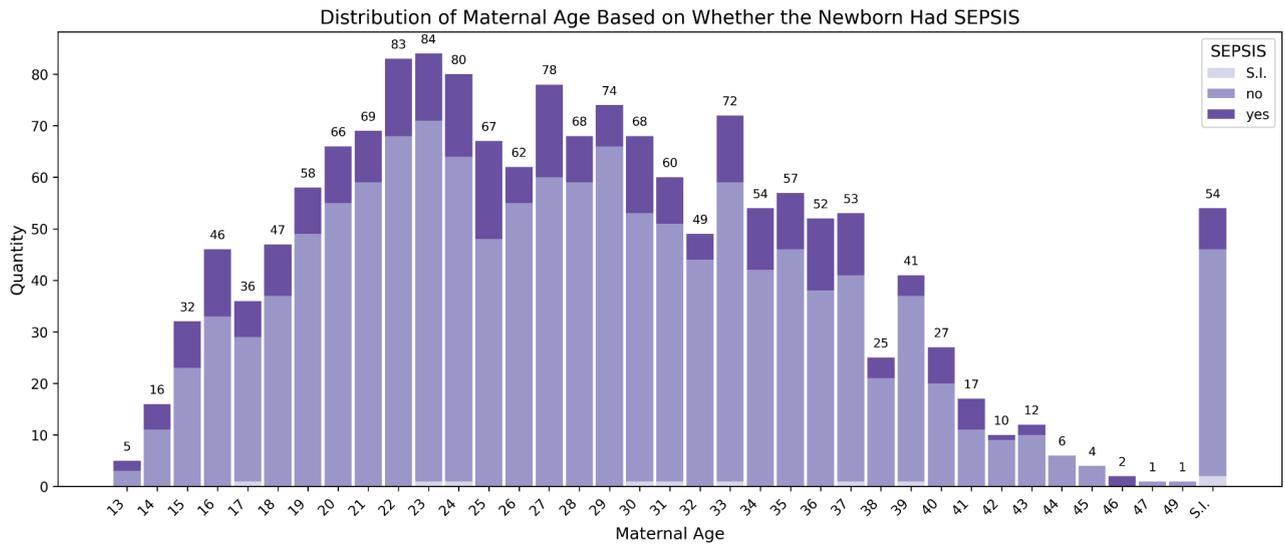


Figure 10. Distribution aggregation by the maternal age association at sepsis status.

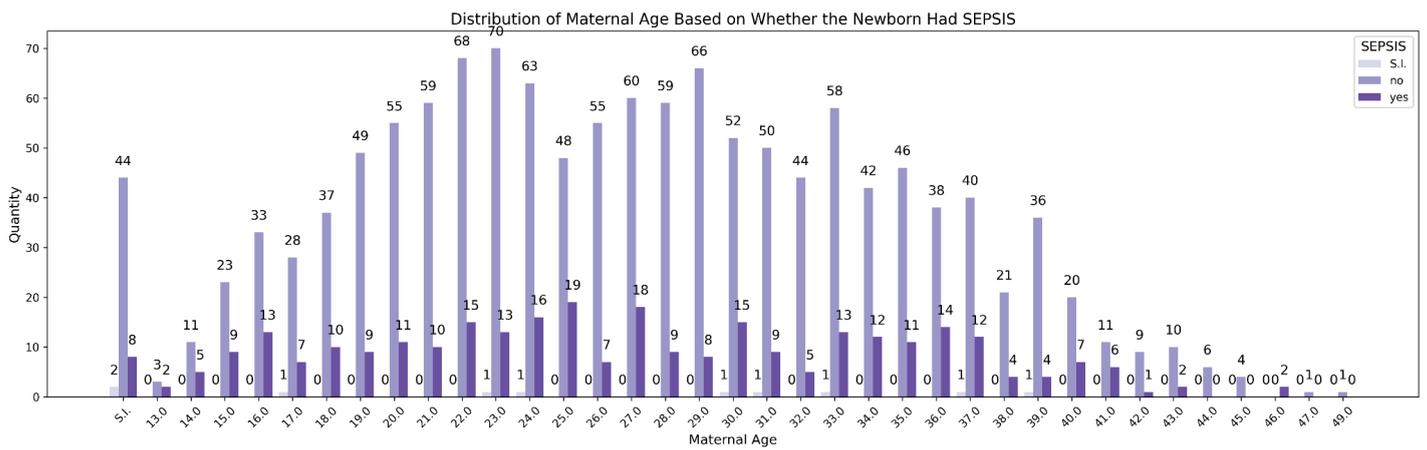


Figure 11. Distribution by the maternal age association at sepsis status.

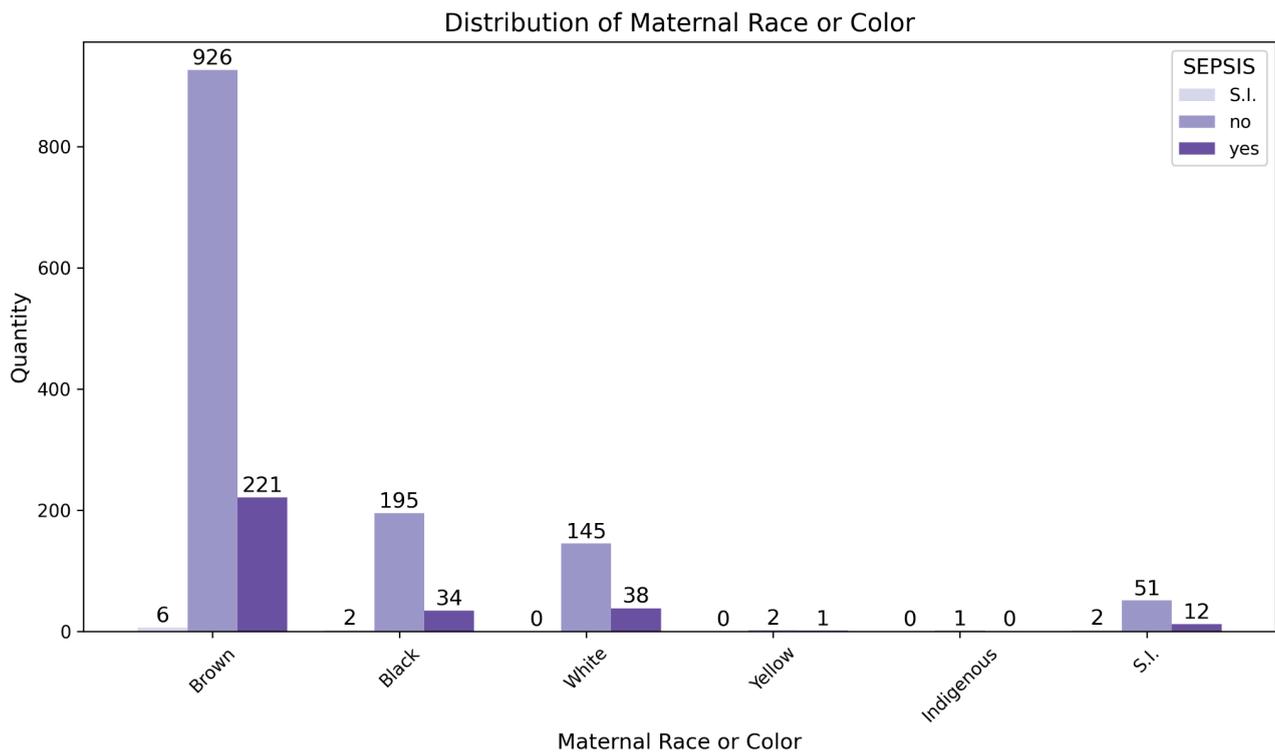


Figure12. Maternal race or color distribution.

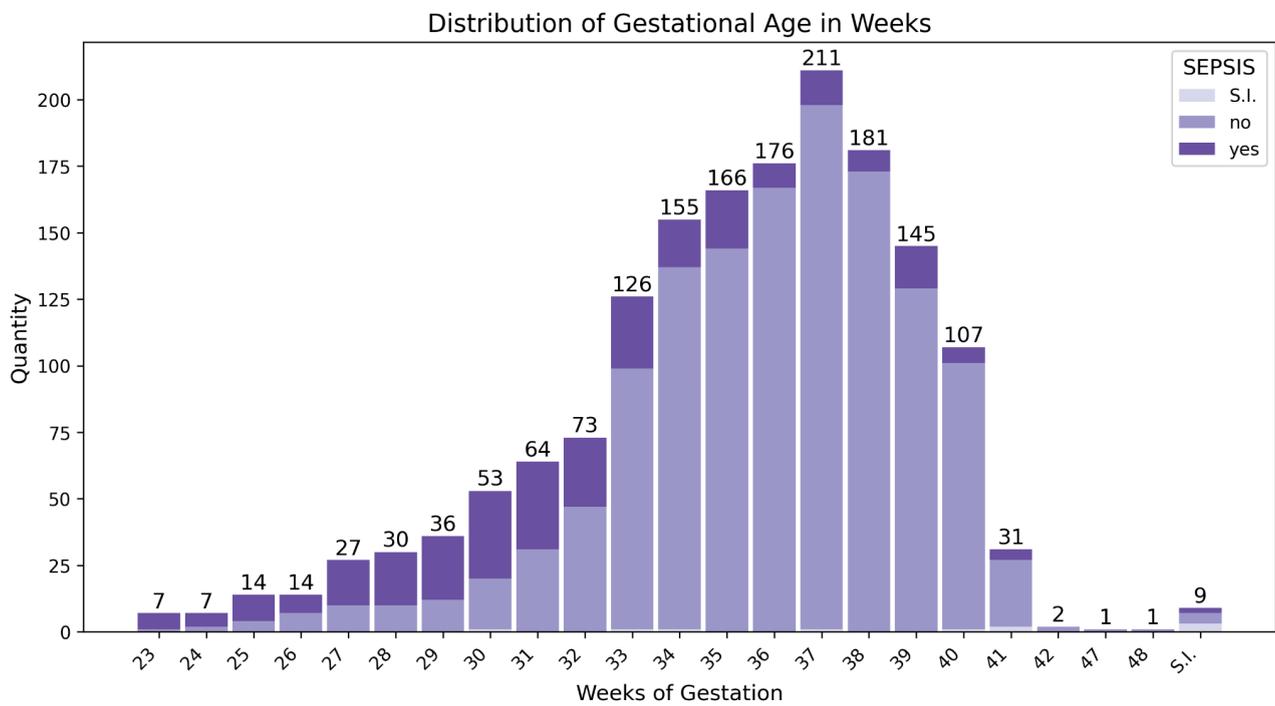


Figure 13. Gestational age distribution in weeks.

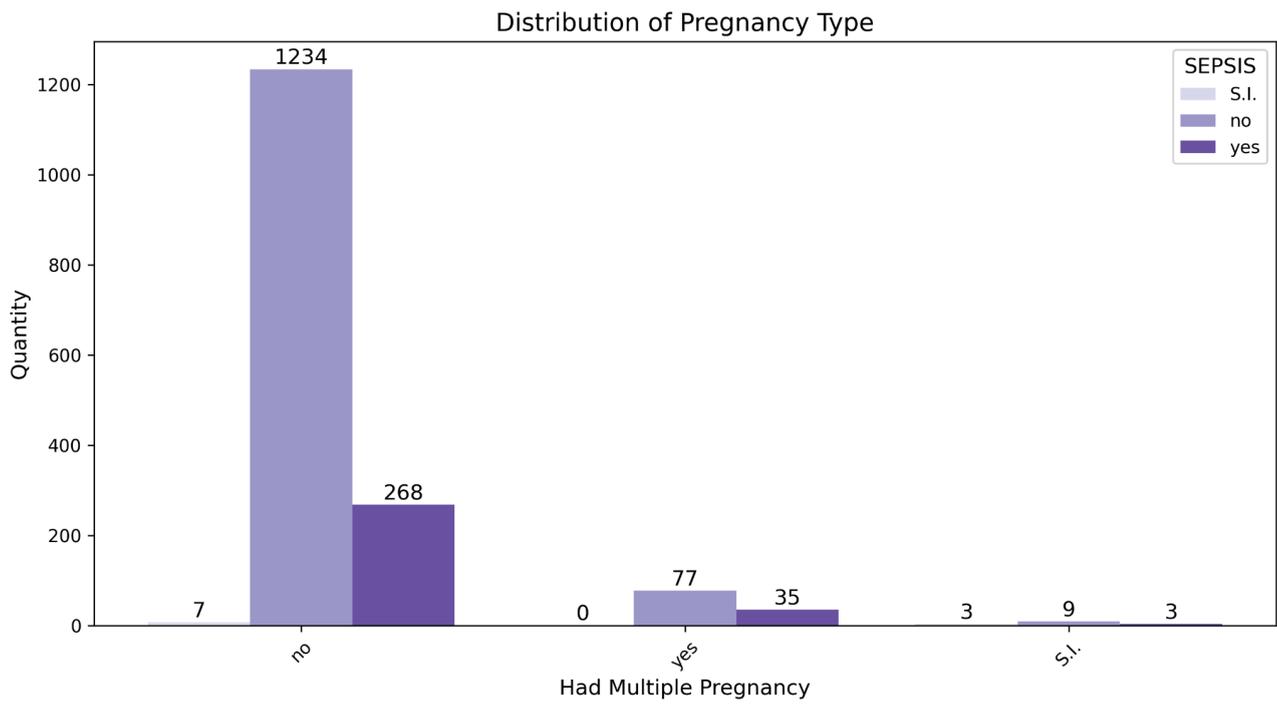


Figure 14. Distribution of pregnancy type.

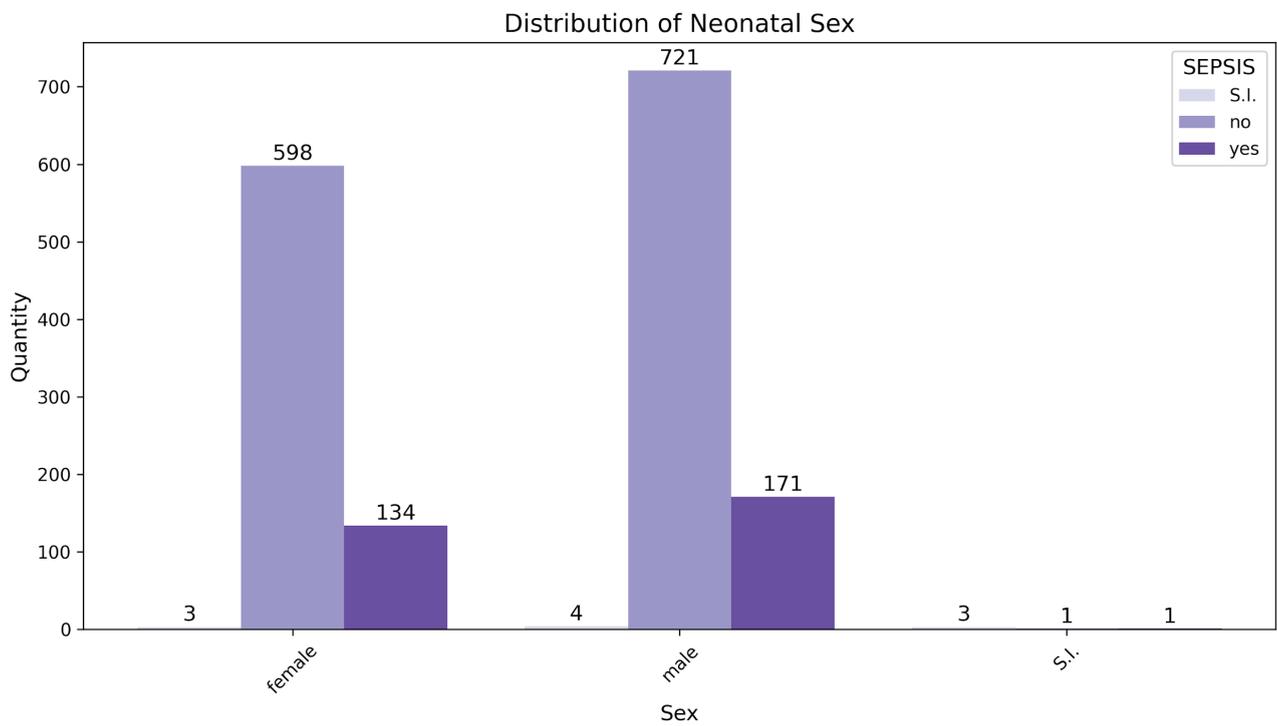


Figure 15. Distribution of neonatal sex.

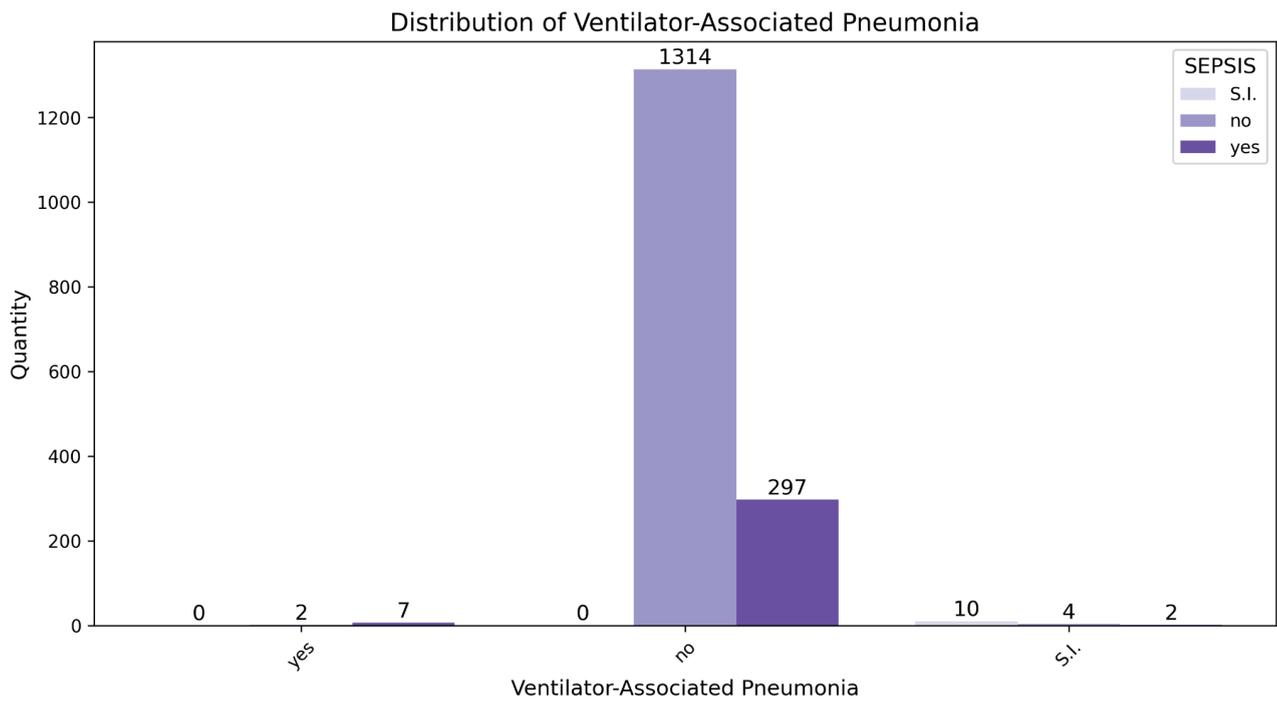


Figure 16. Distribution of ventilator-associated pneumonia.

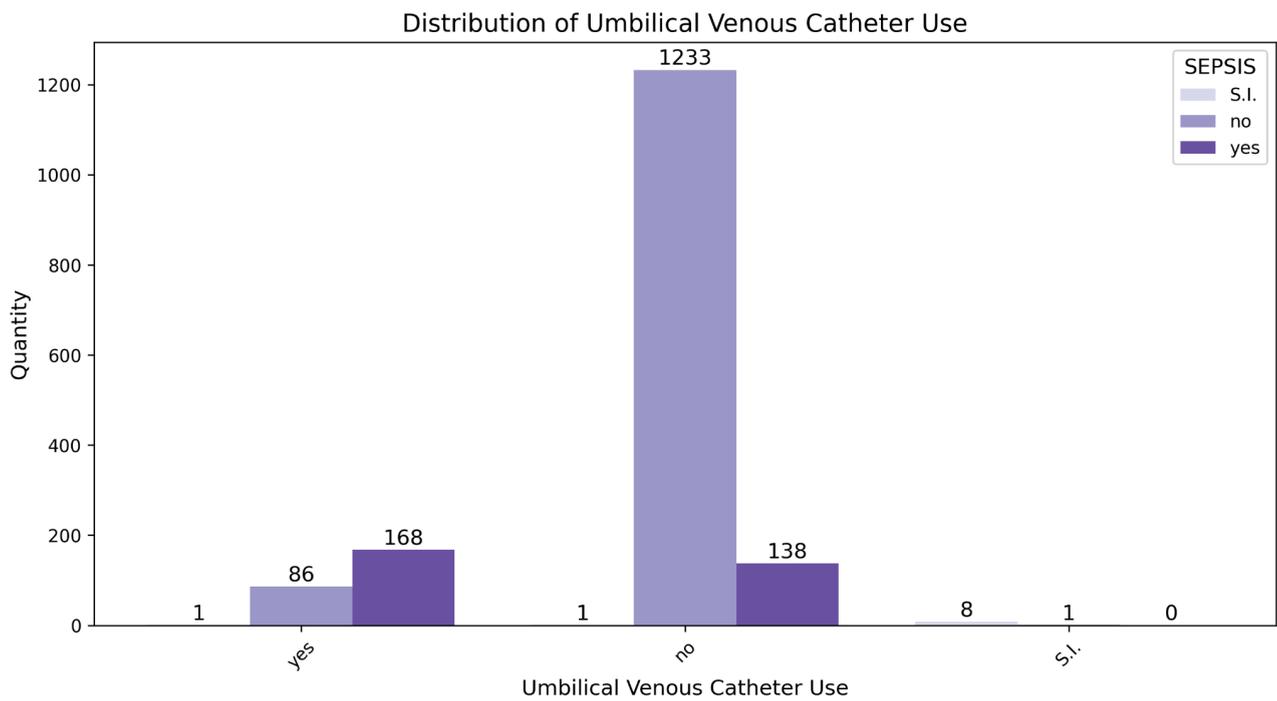


Figure 17. Distribution of umbilical venous catheter use.

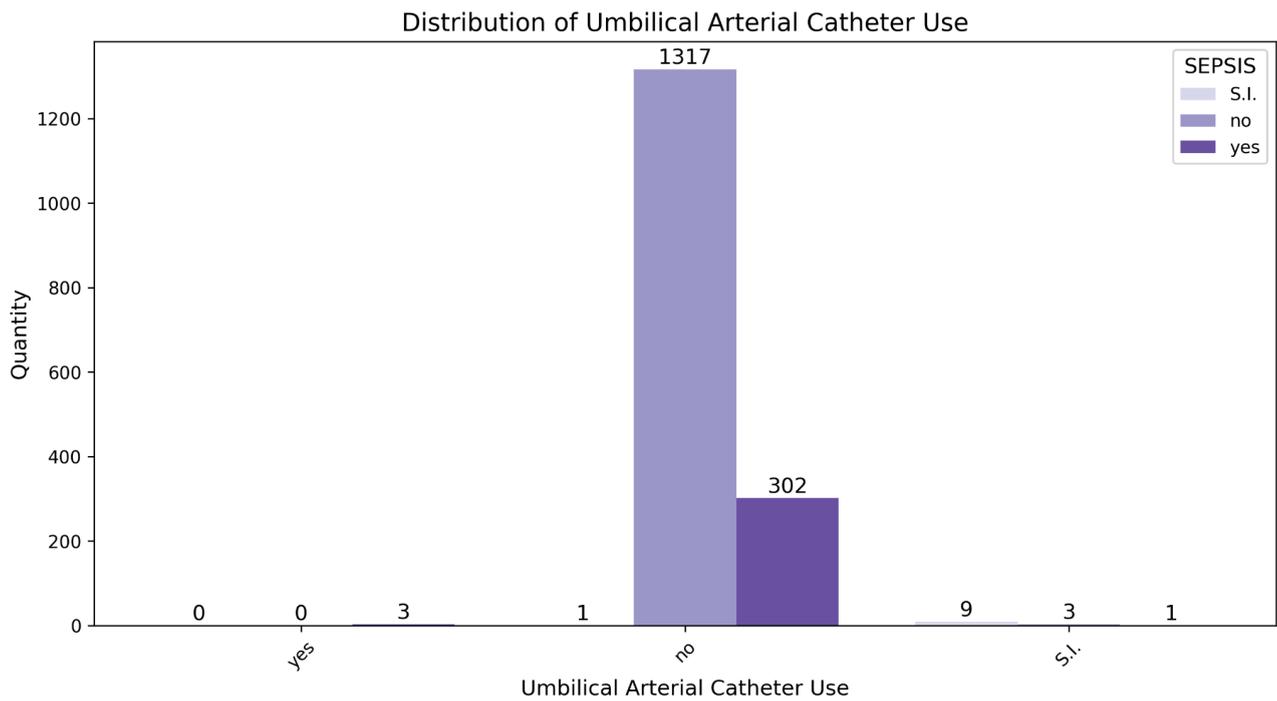


Figure 18. Distribution of umbilical arterial catheter use.

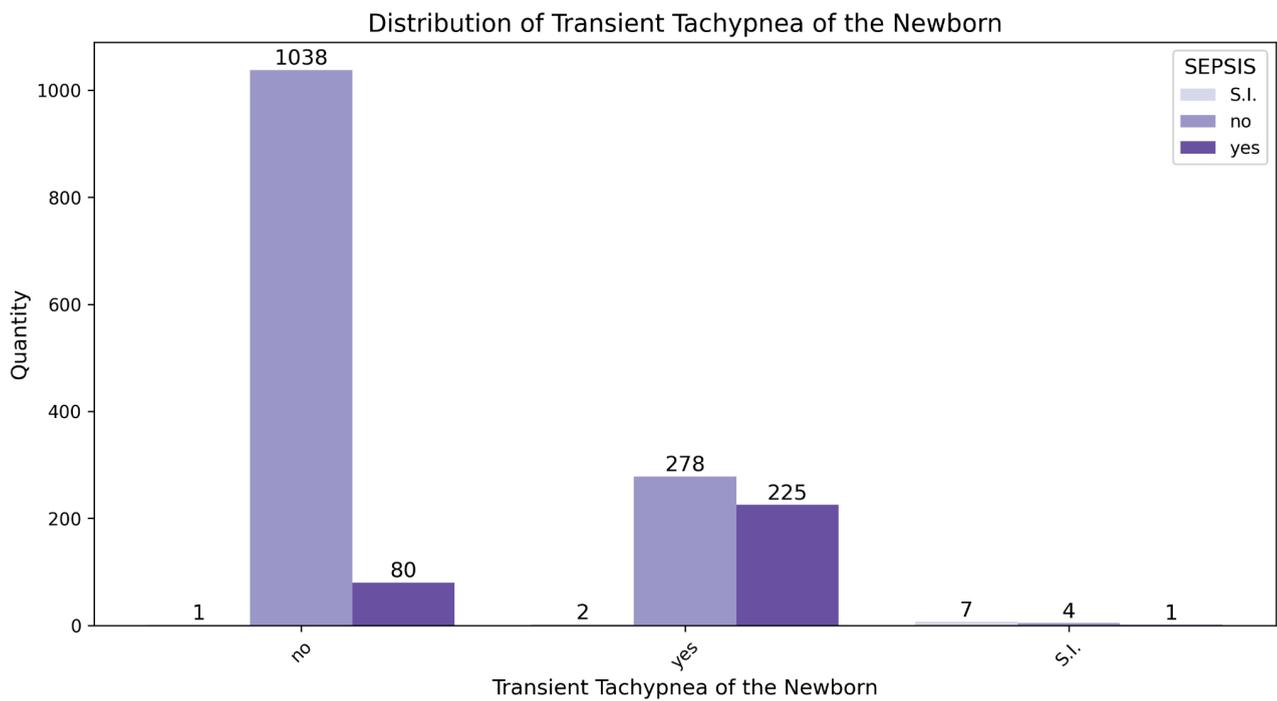


Figure 19. Distribution of transient tachypnea of the newborn.

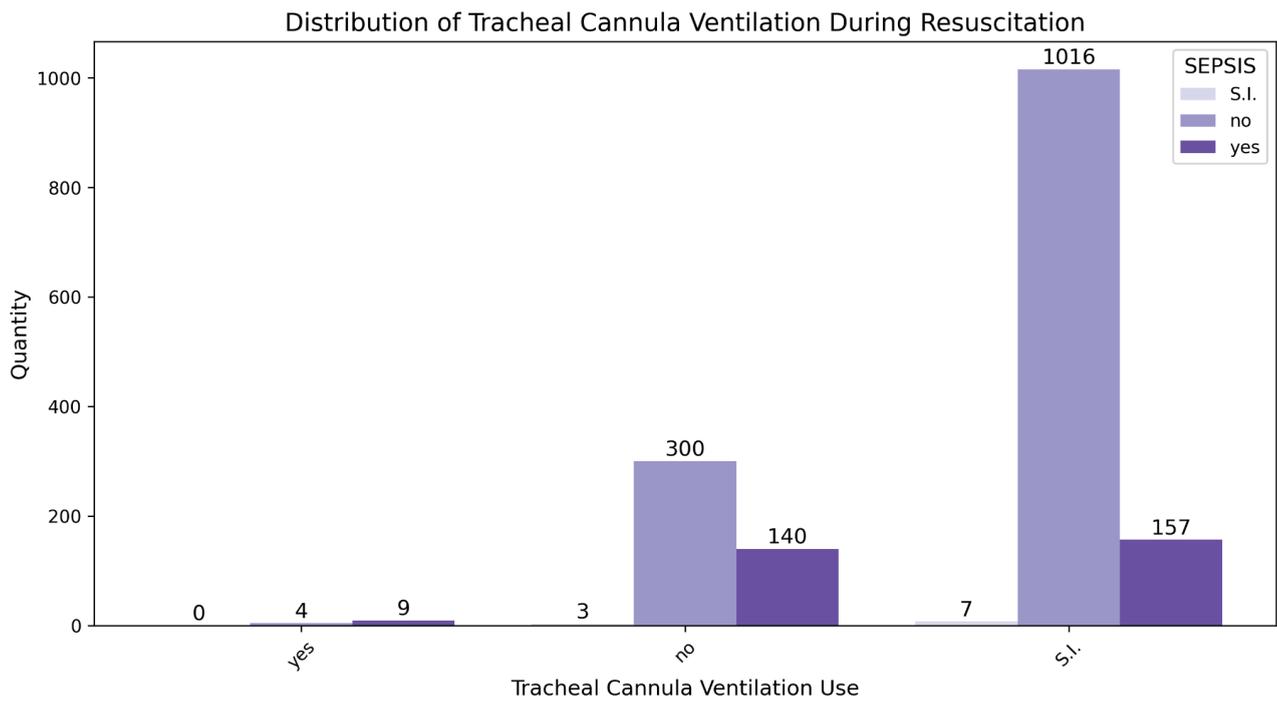


Figure 20. Distribution of tracheal cannula ventilation during resuscitation.

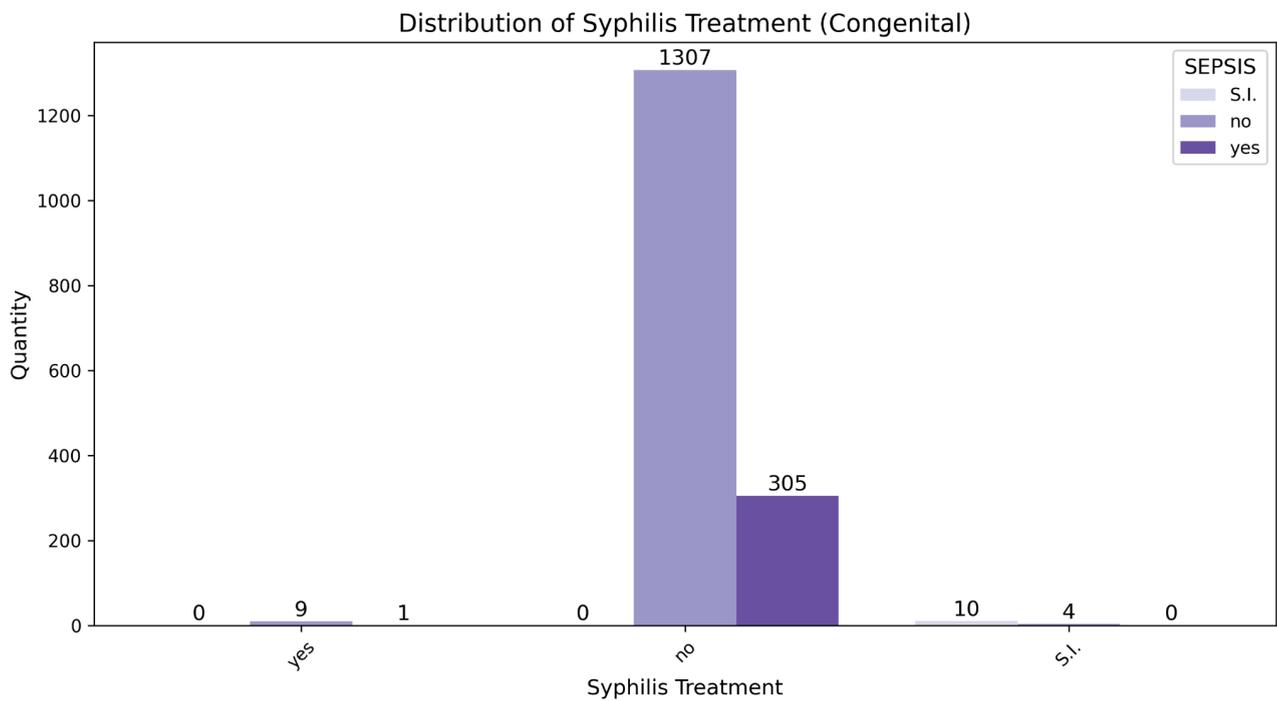


Figure 21. Distribution of congenital syphilis treatment.

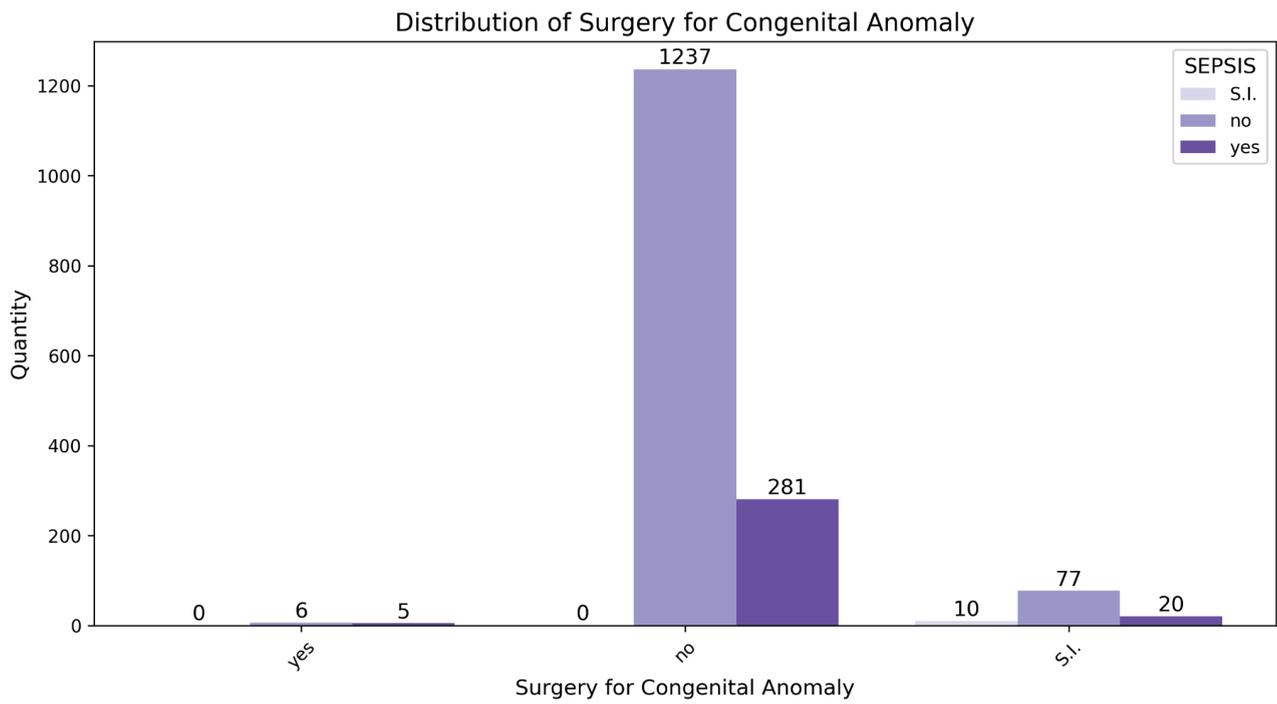


Figure 22. Distribution of surgery for congenital anomaly.

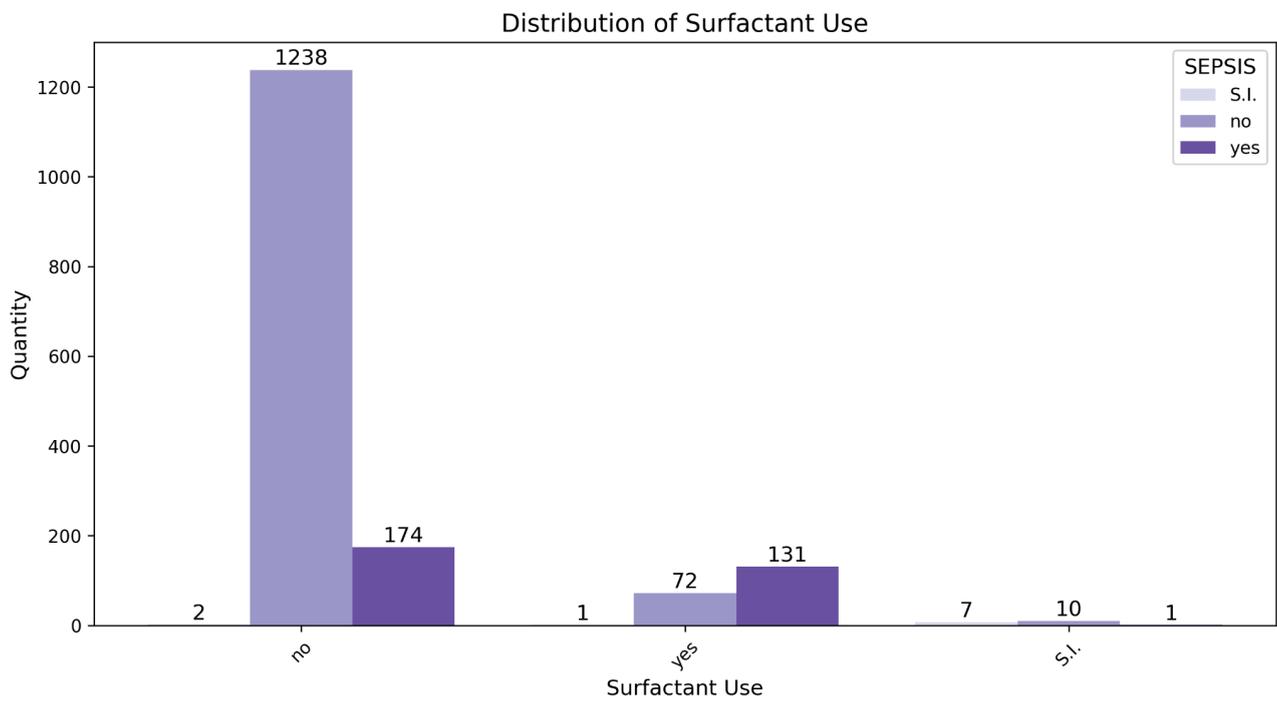


Figure 23. Distribution of surfactant use.

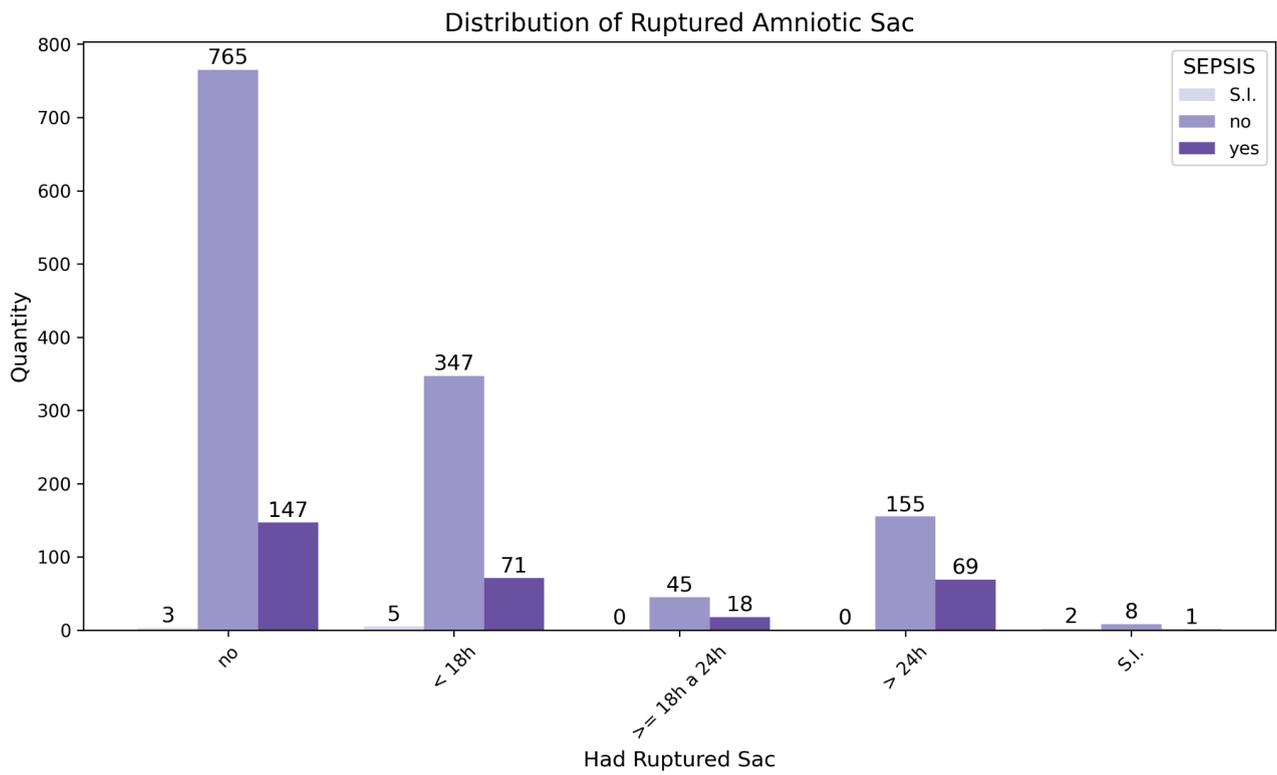


Figure 24. Distribution of ruptured amniotic sac.

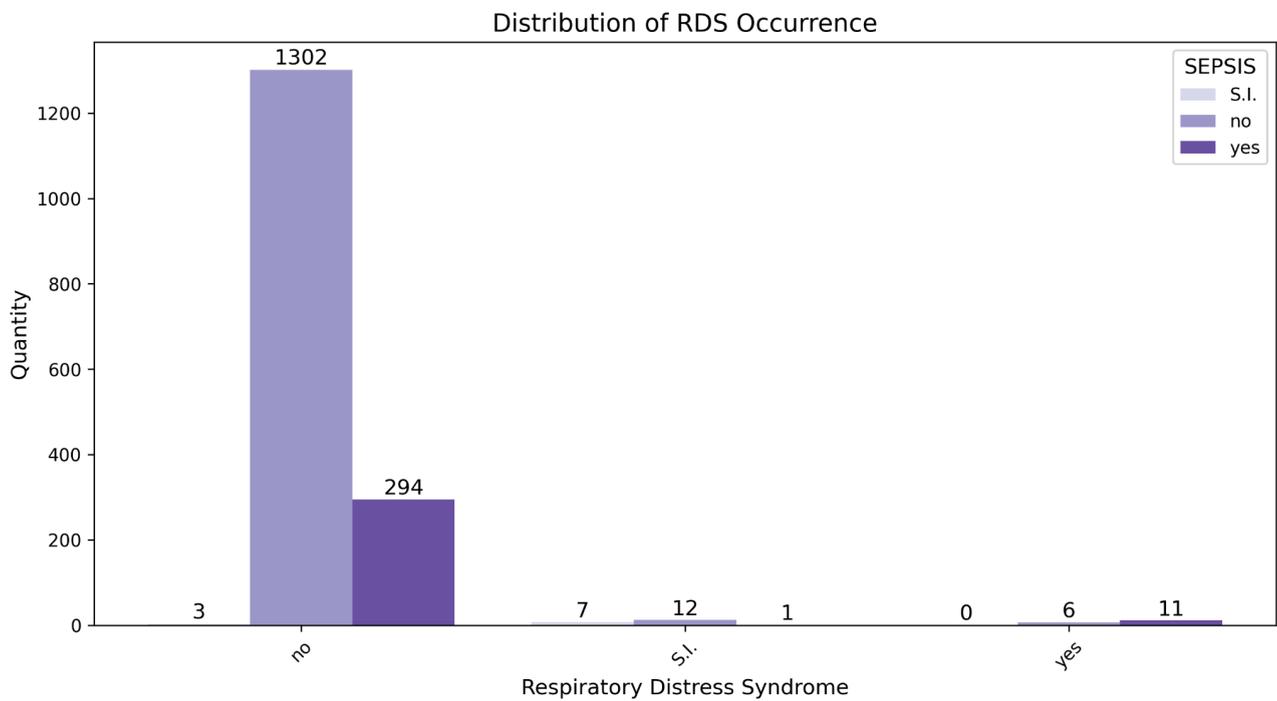


Figure 25. Distribution of RDS occurrence.

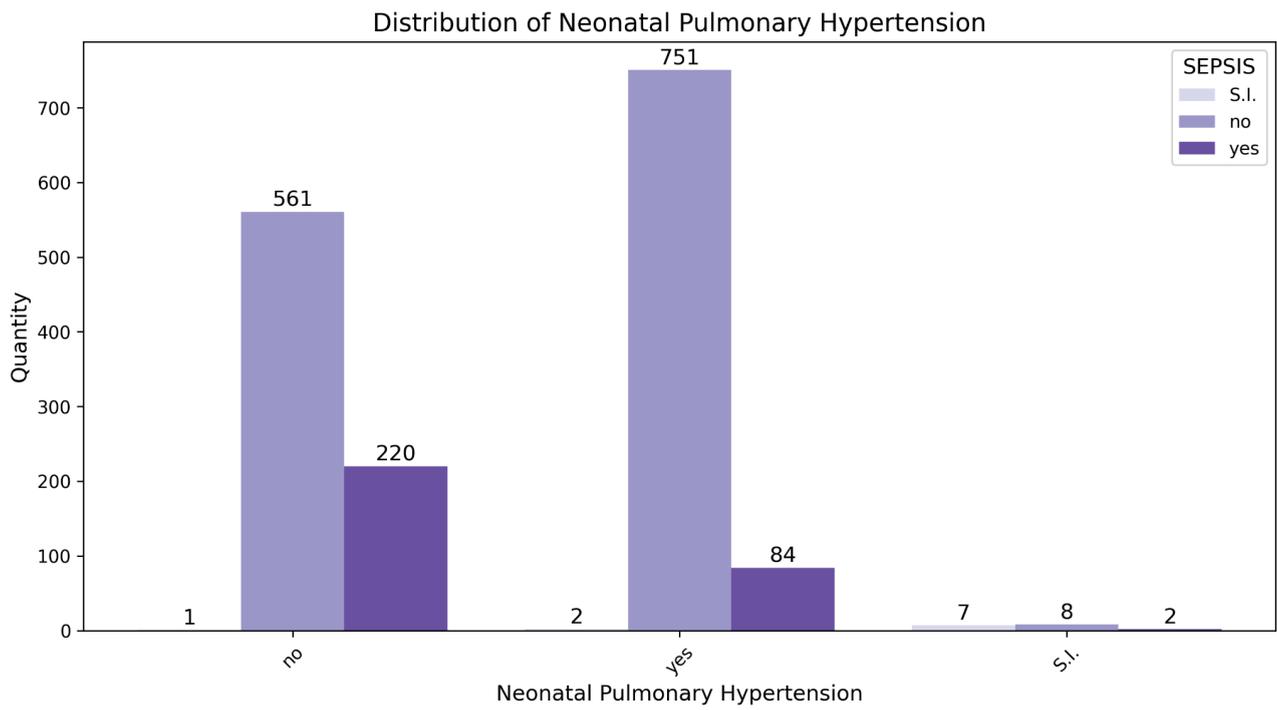


Figure 26. Distribution of neonatal pulmonary hypertension.

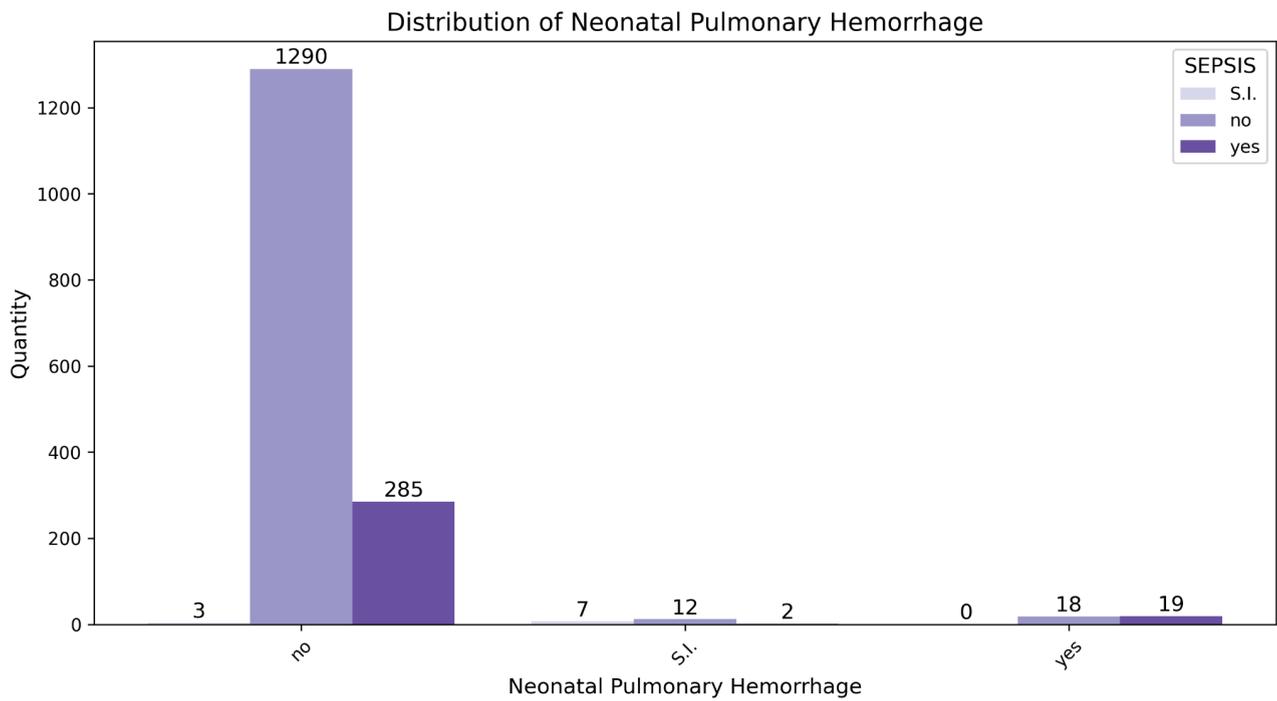


Figure 27. Distribution of neonatal pulmonary hemorrhage.

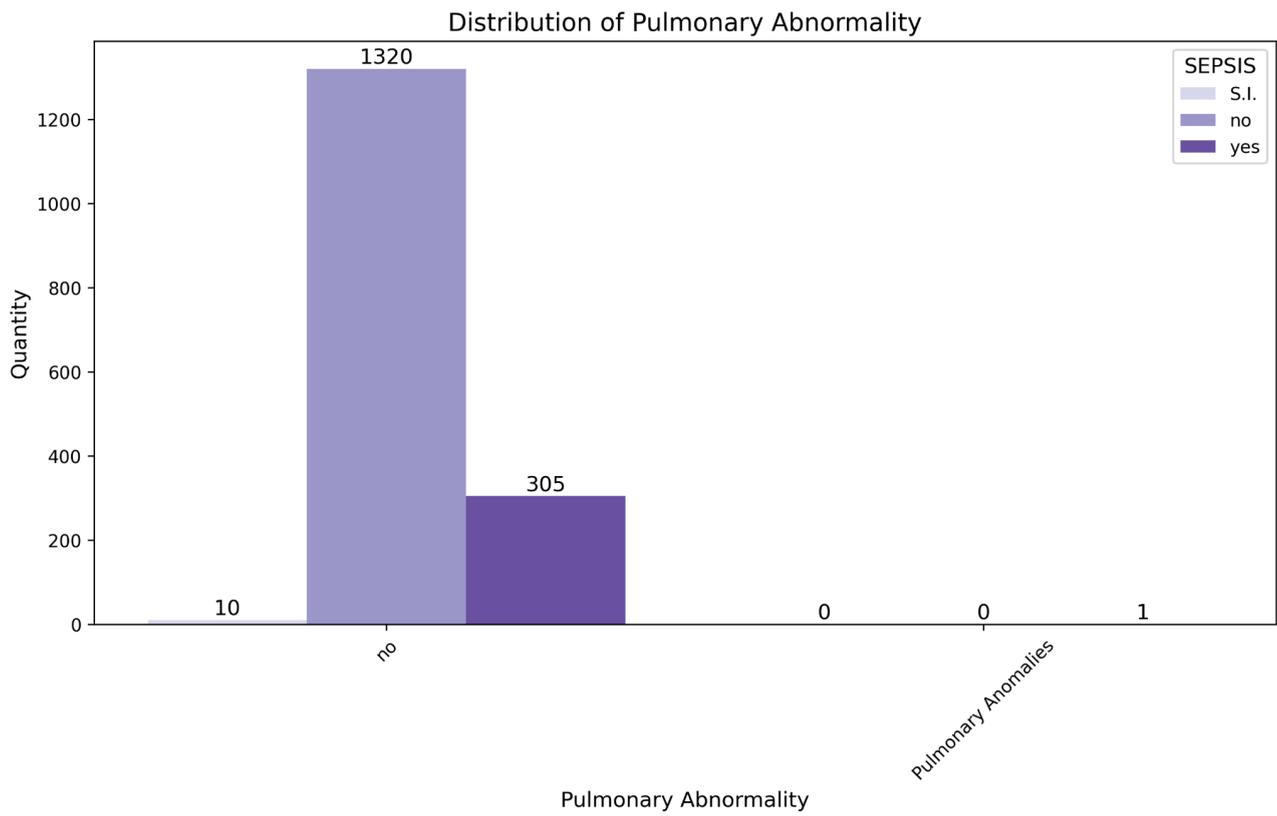


Figure 28. Distribution of pulmonary abnormality.

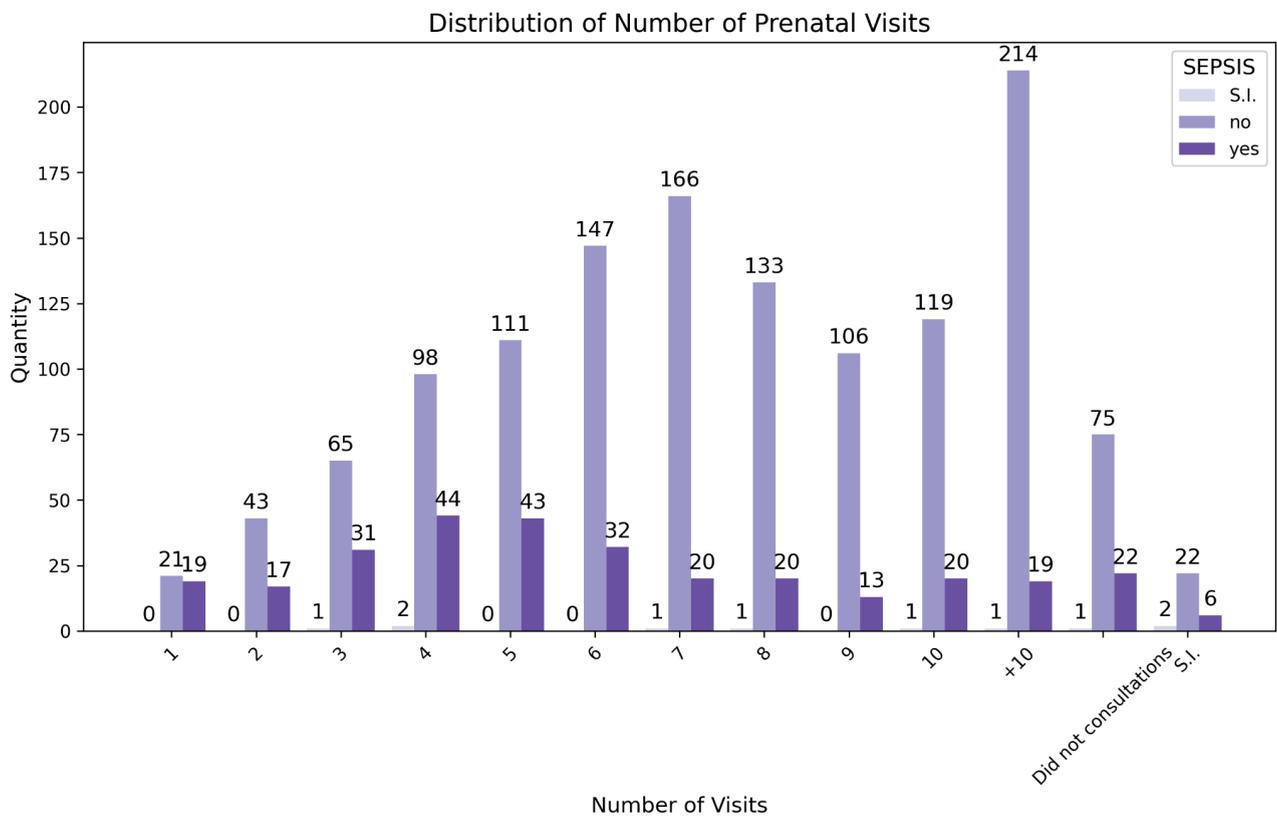


Figure 29. Distribution of numbers of prenatal visits.

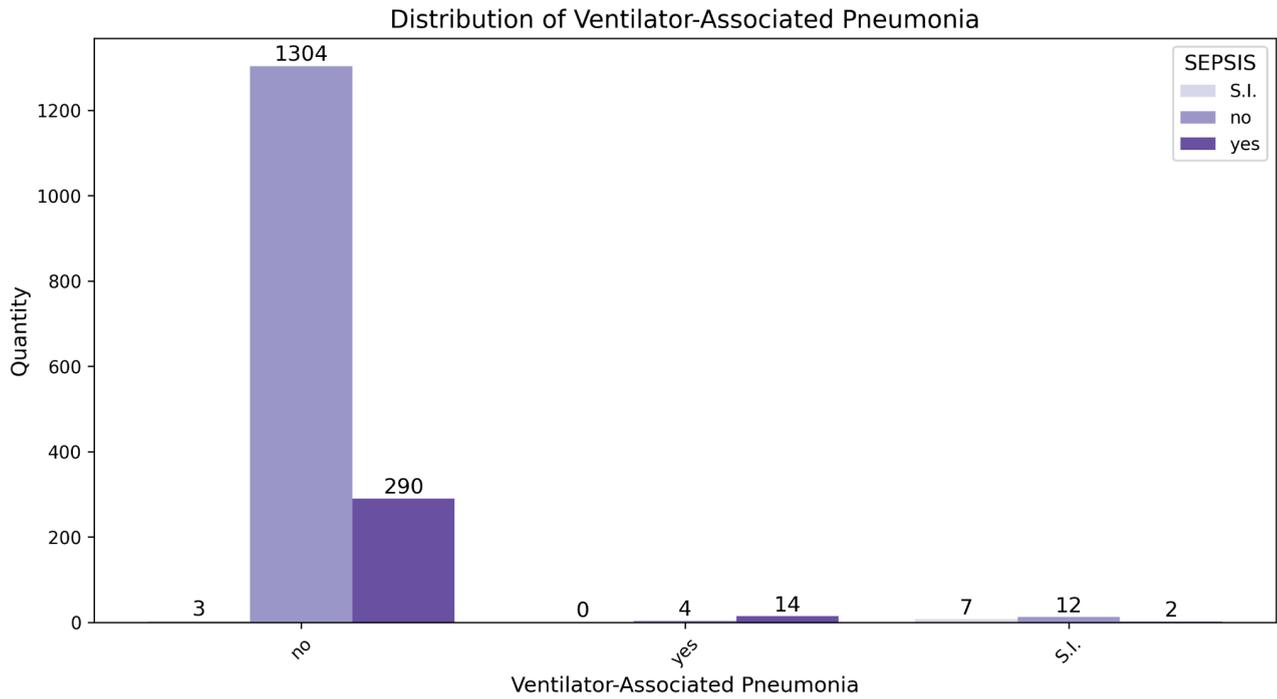


Figure 30. Distribution of ventilator-associated pneumonia.

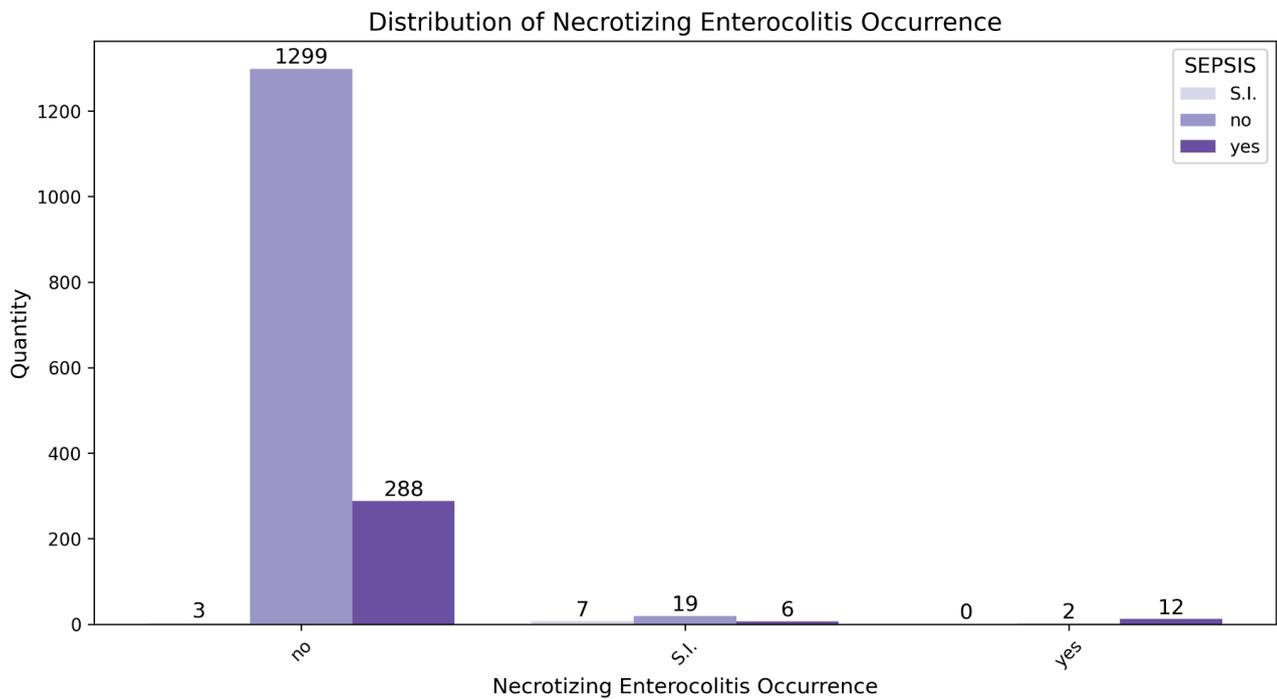


Figure 31. Distribution of necrotizing enterocolitis occurrence.

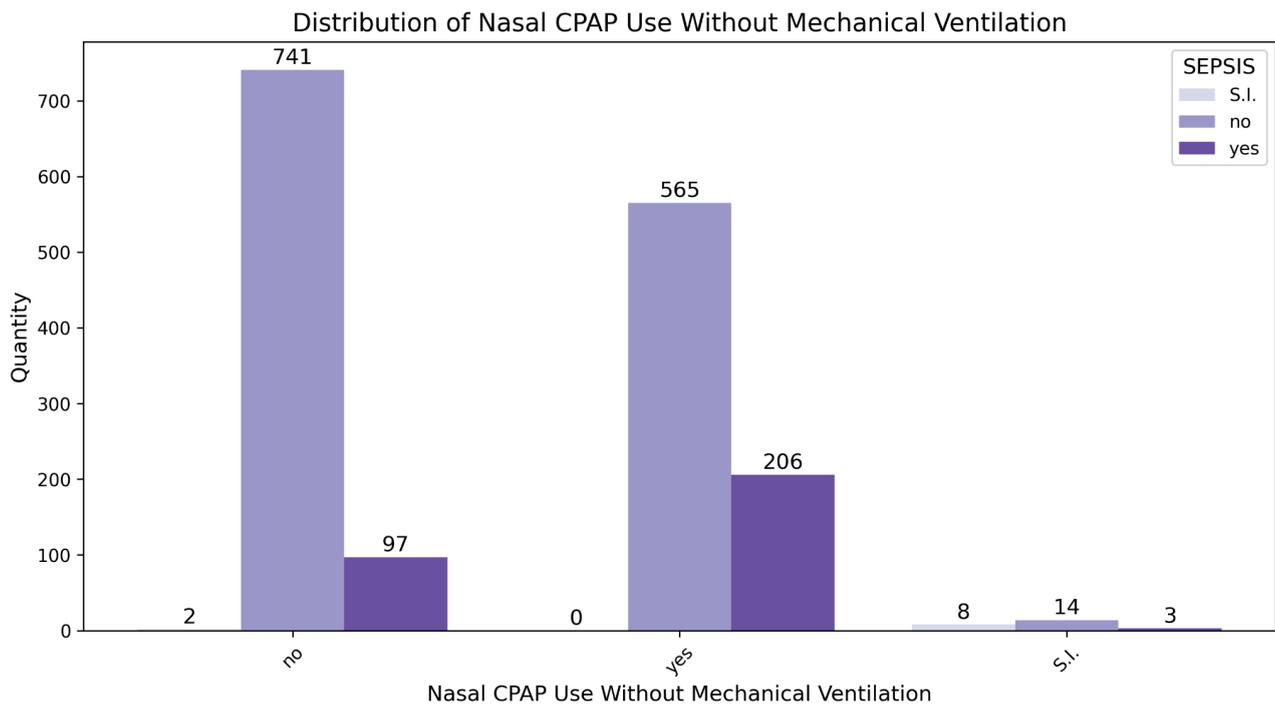


Figure 32. Distribution of nasal CPAP use without mechanical ventilation.

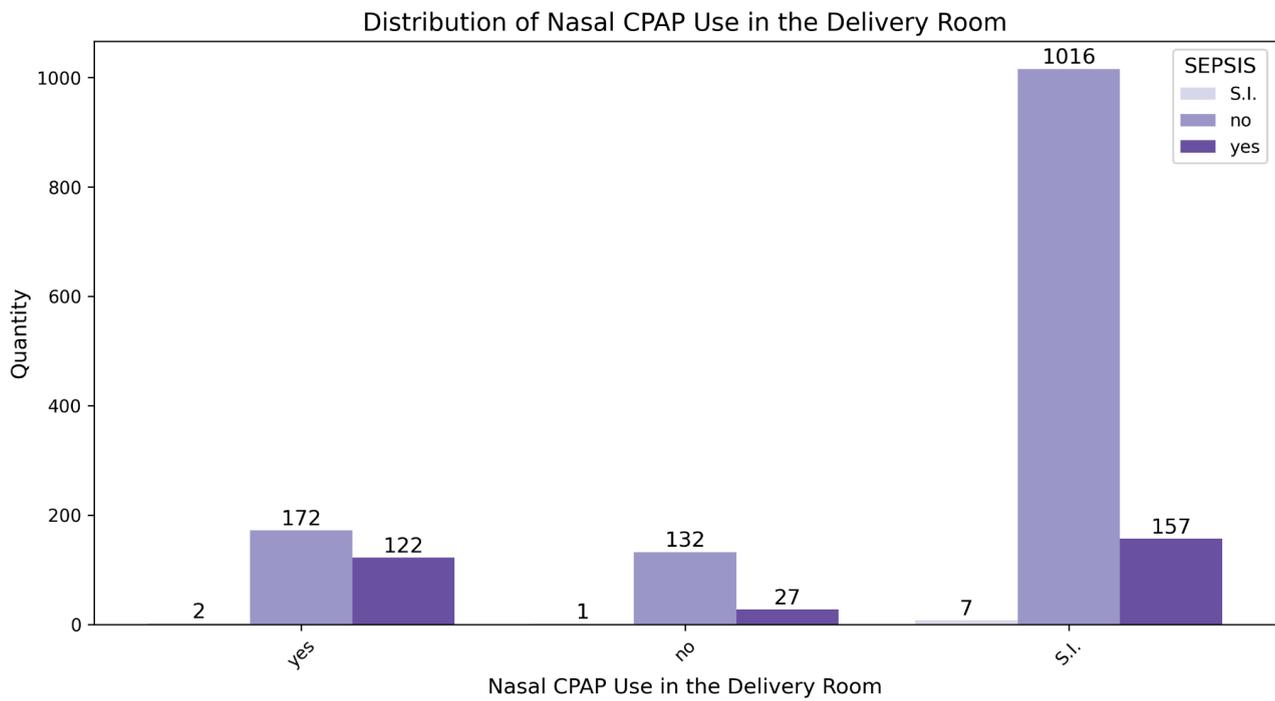


Figure 33. Distribution of nasal CPAP use in the delivery room.

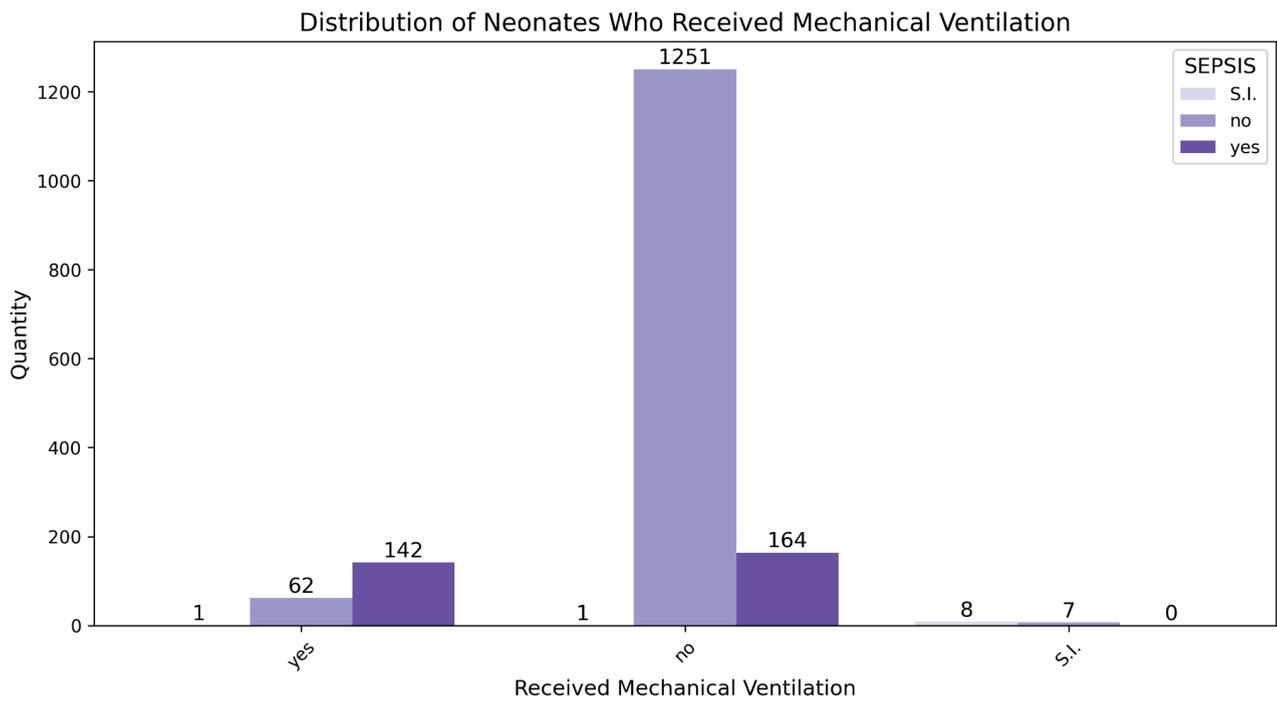


Figure 34. Distribution of neonates who received mechanical ventilation.

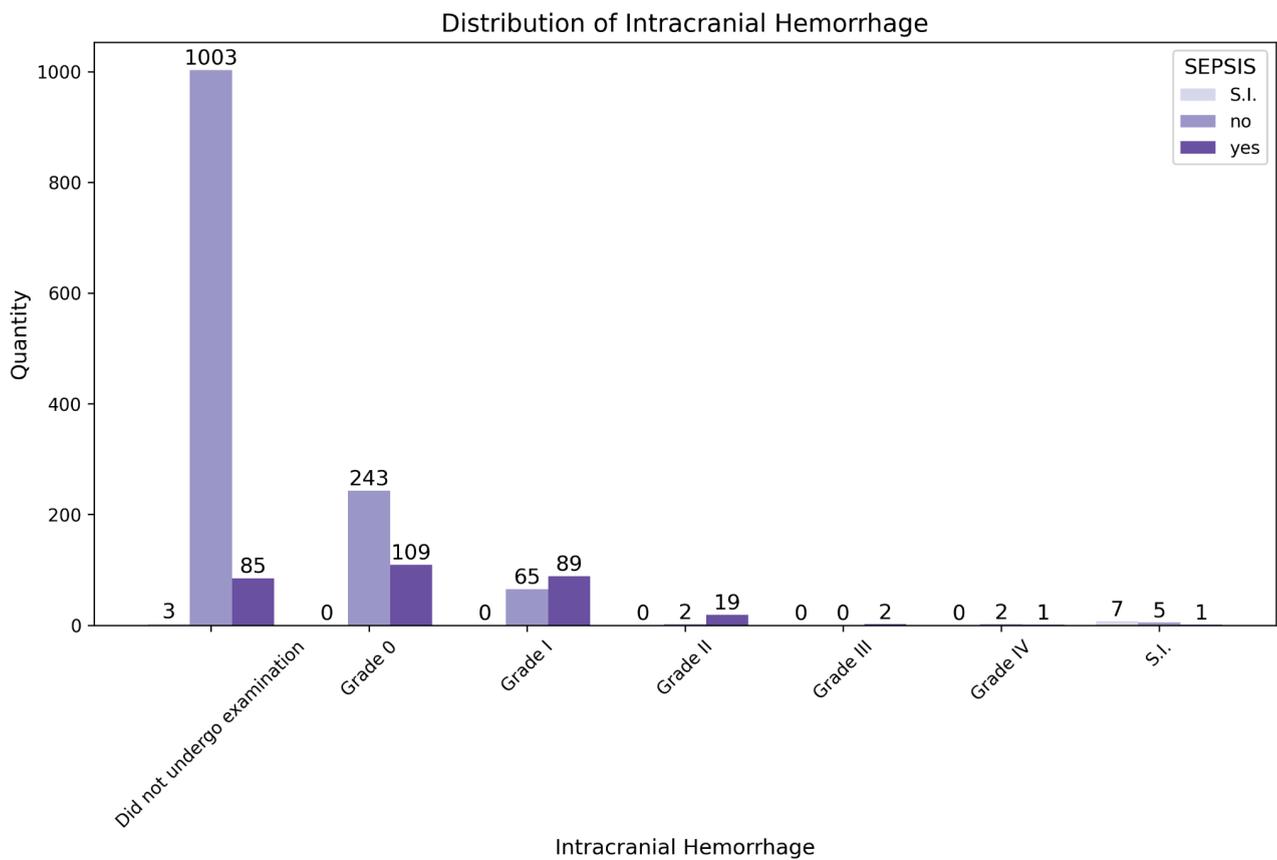


Figure 35. Distribution of intracranial hemorrhage.

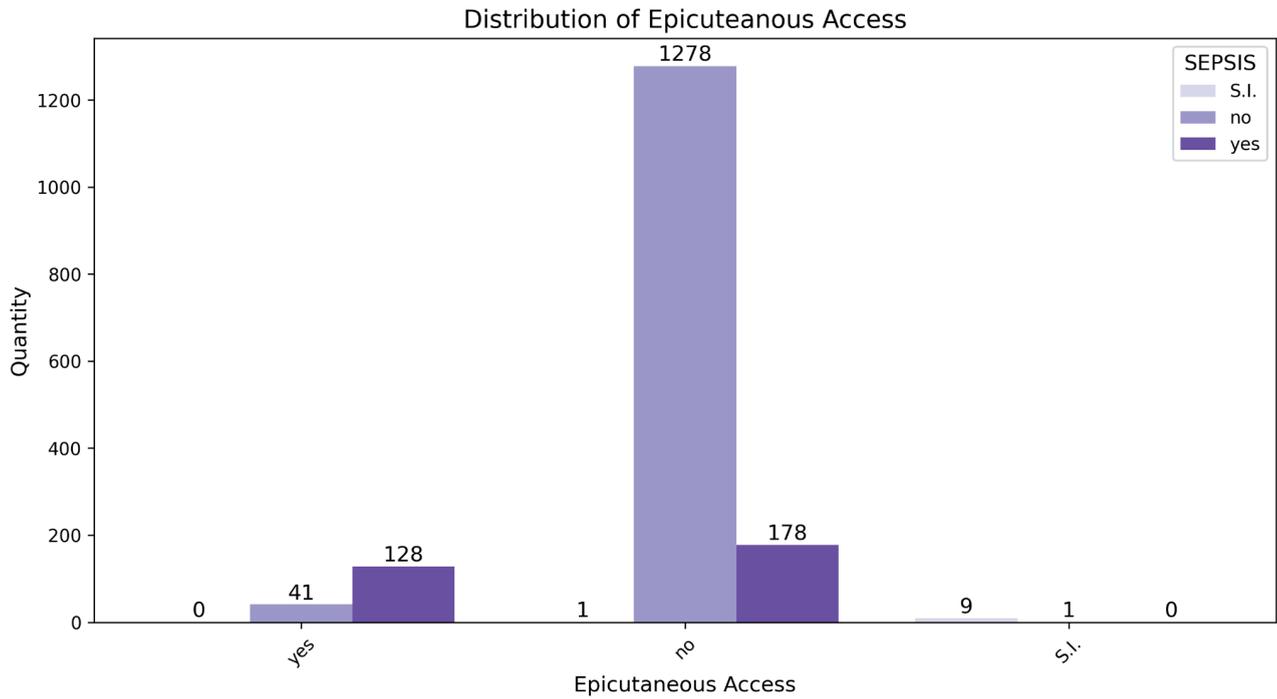


Figure 36. Distribution of epcuteanous access

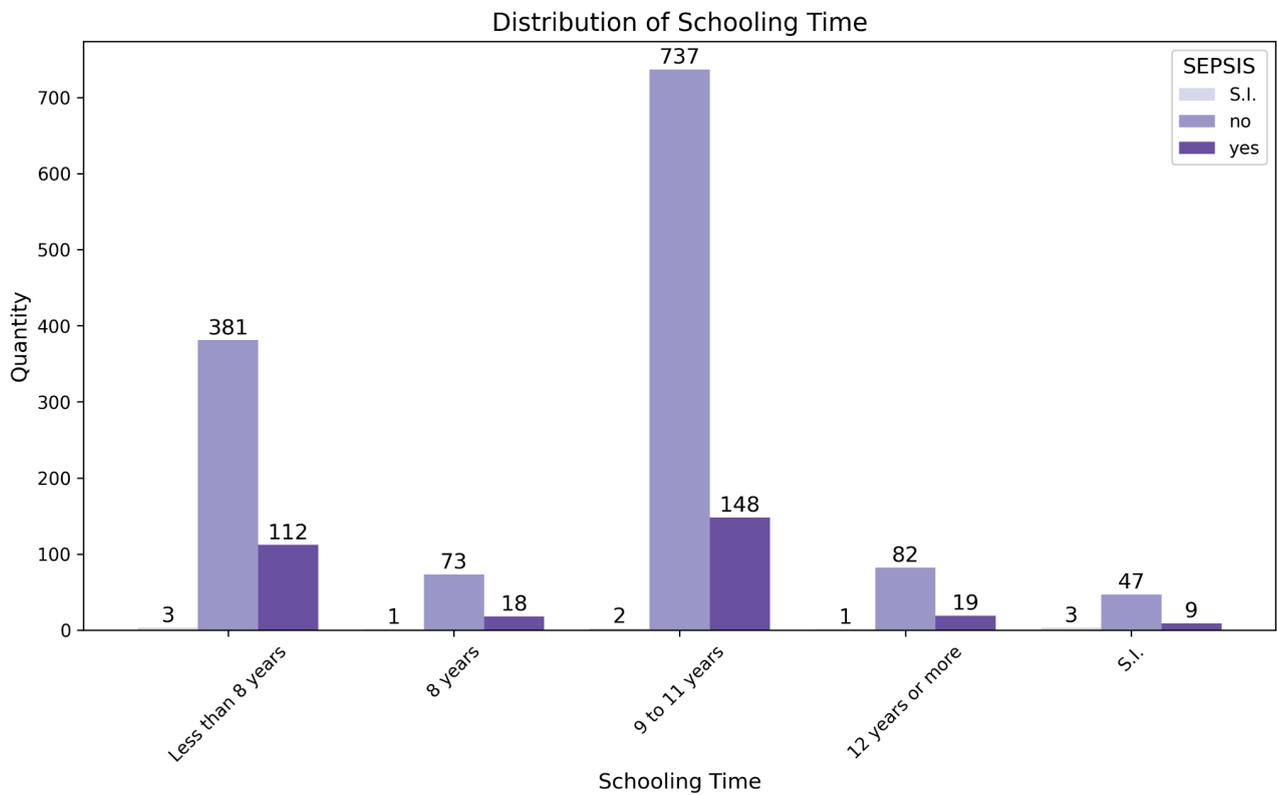


Figure 37. Distribution of schooling time.

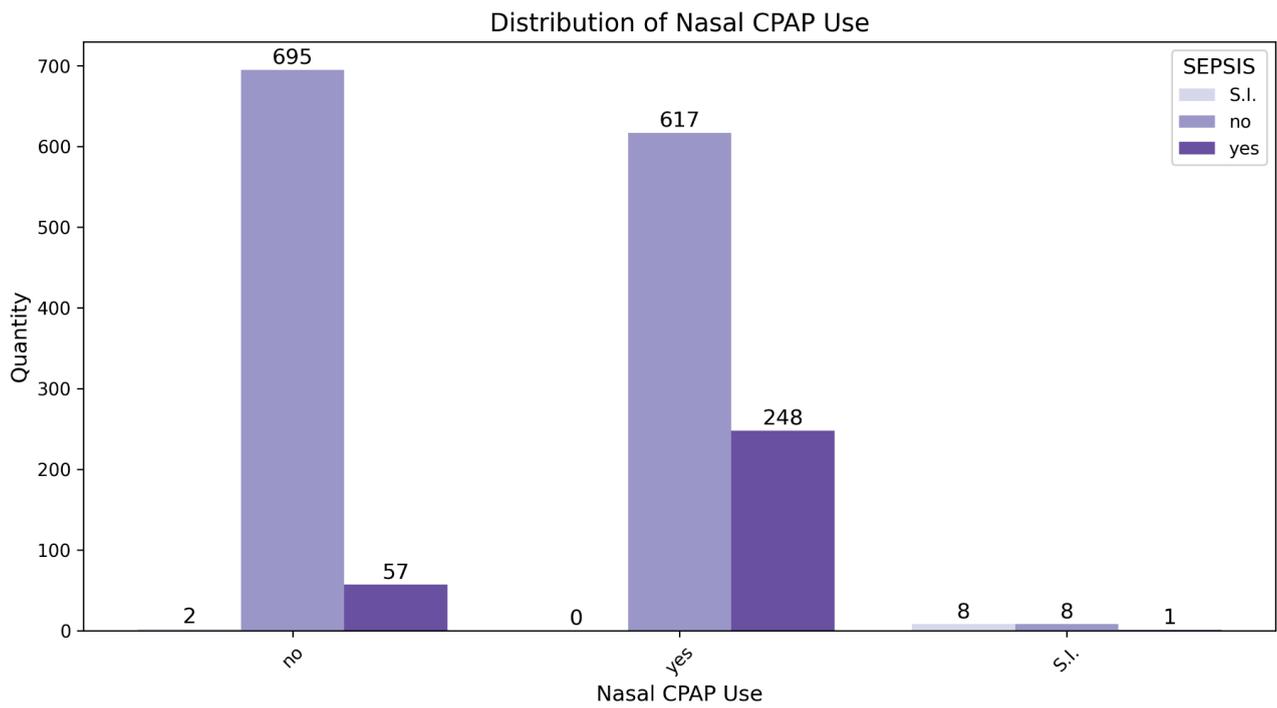


Figure 38. Distribution of nasal CPAP use.

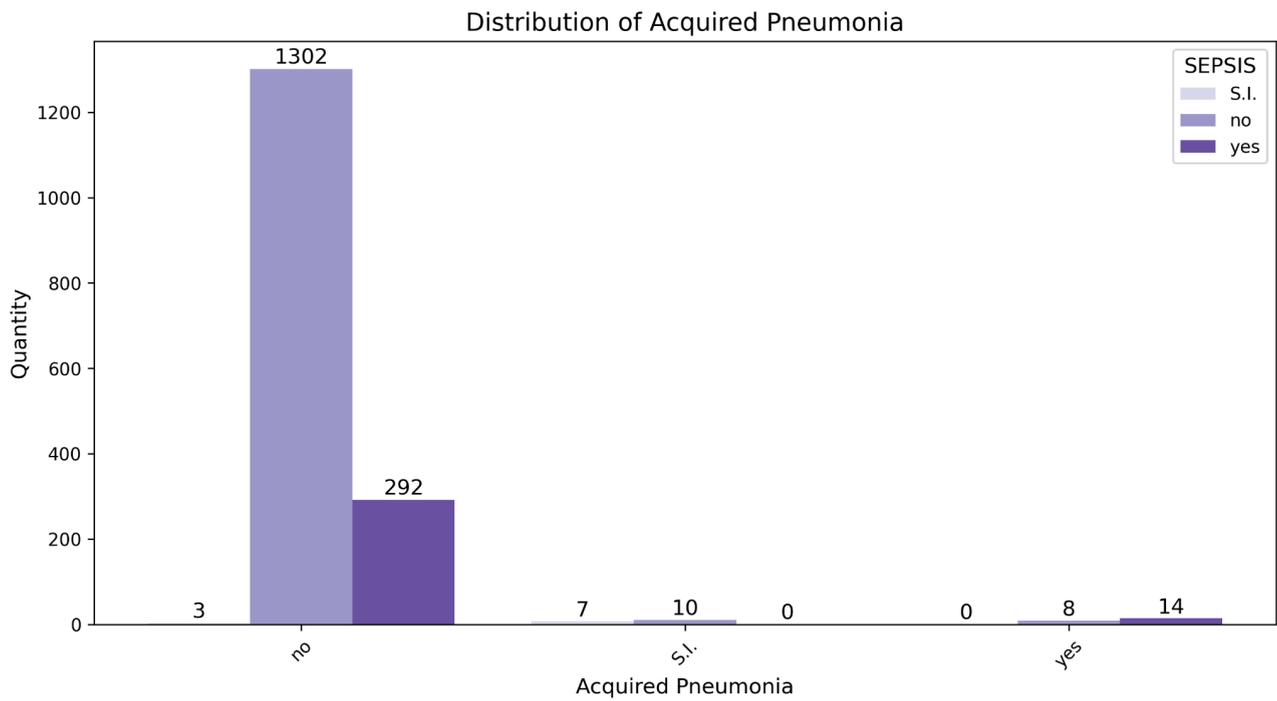


Figure 39. Distribution of acquired pneumonia.

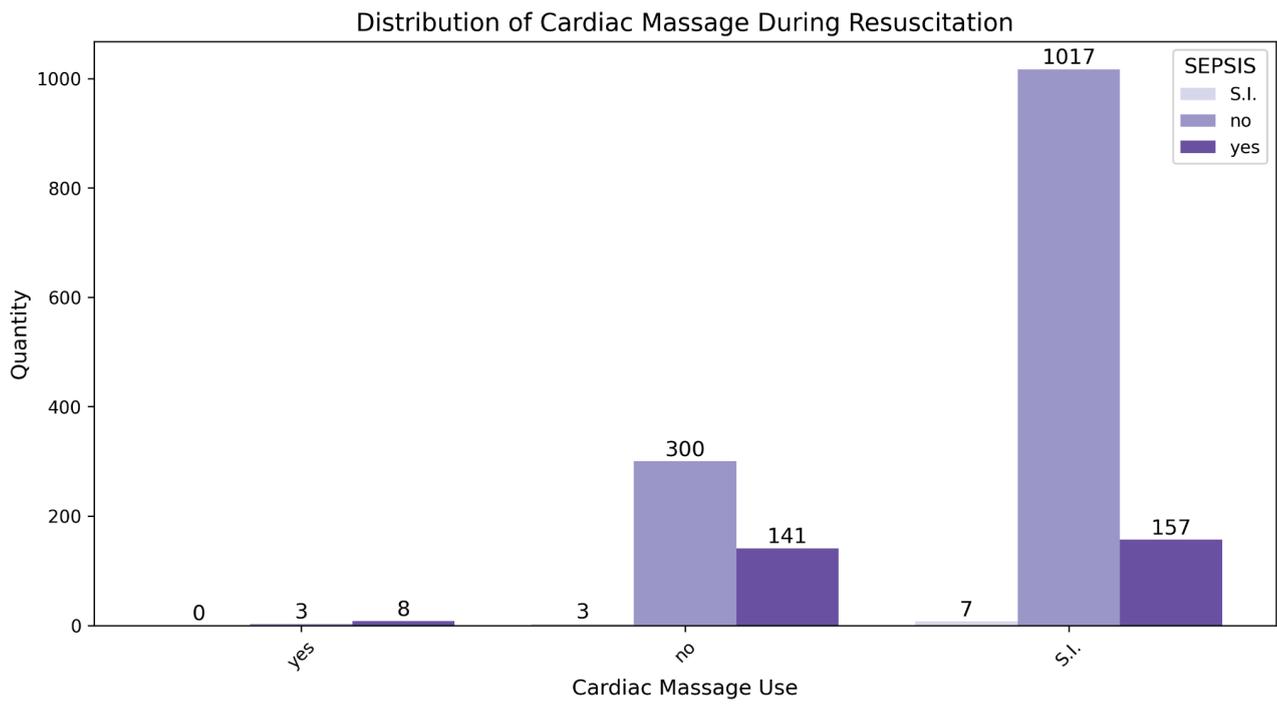


Figure 40. Distribution of cardiac massage during resuscitation.

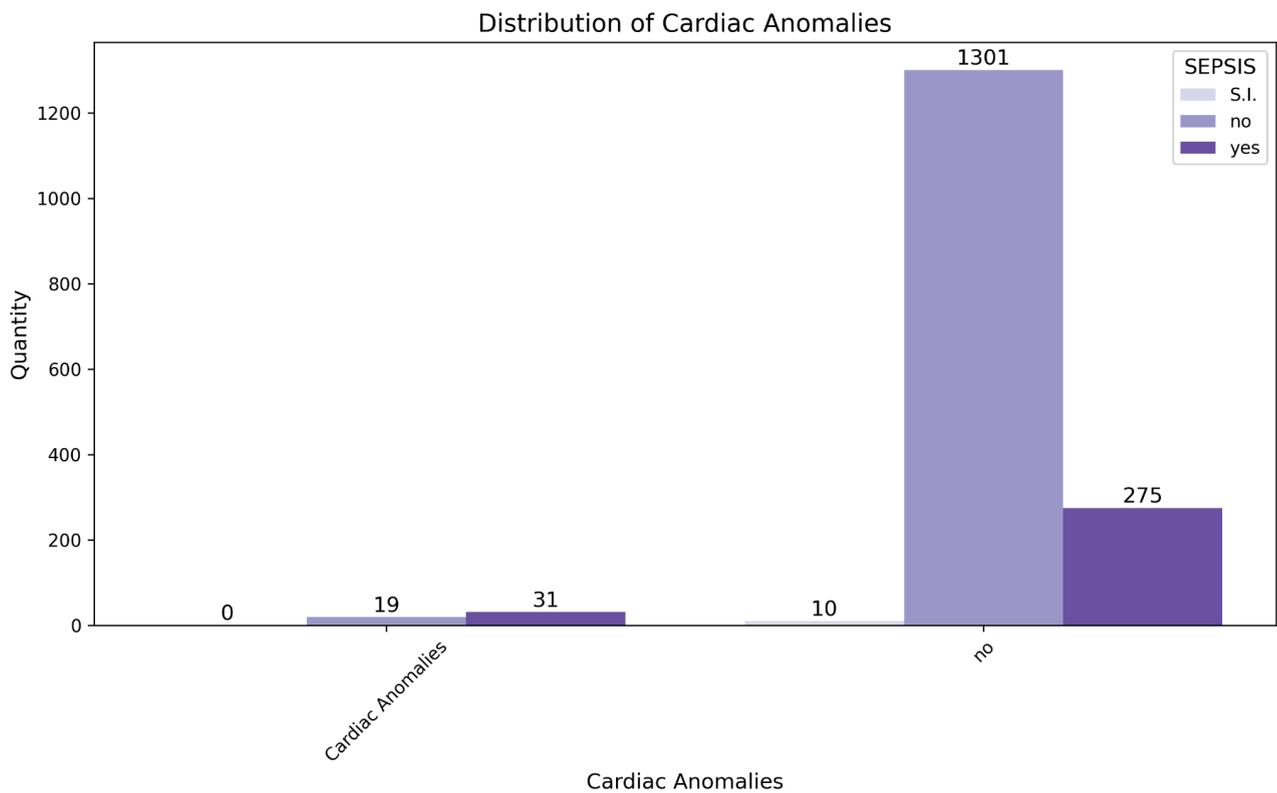


Figure 41. Distribution of cardiac anomalies.

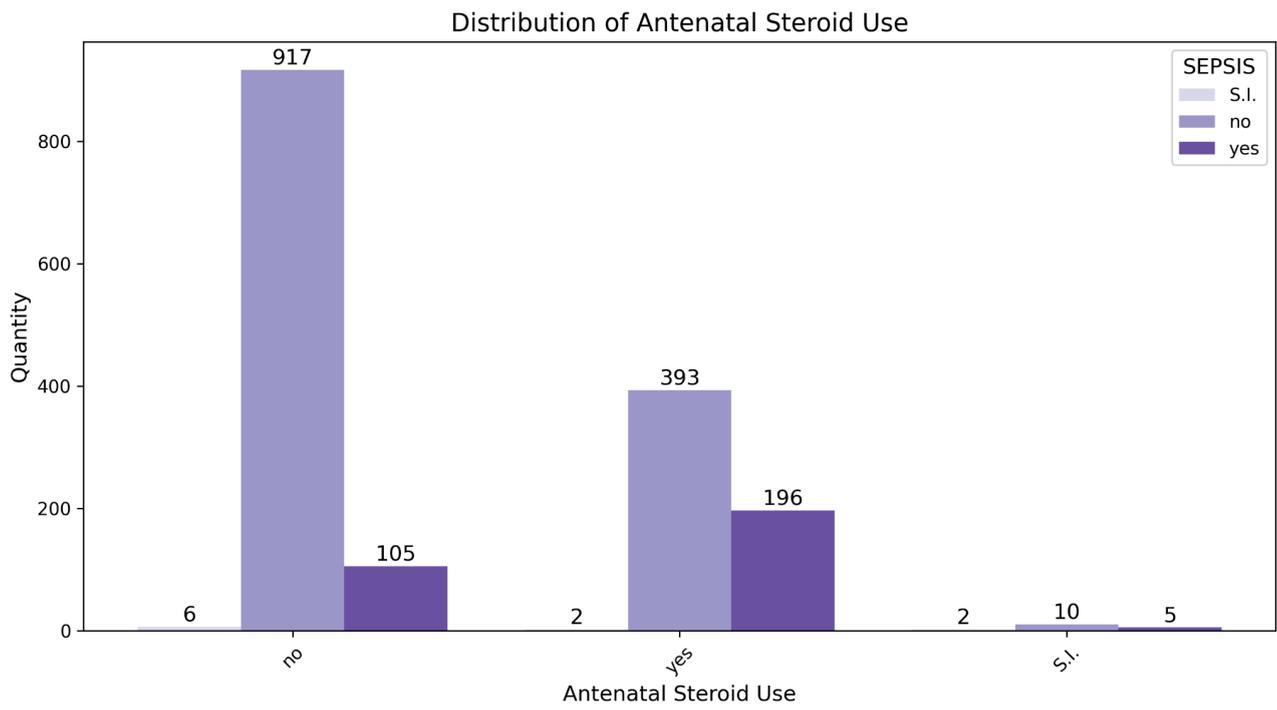


Figure 42. Distribution of antenatal steroid use.

Table 2. Analysis descriptive statistics of the datas

	count	unique	top	freq
DELIVERY_TYPE	1636	4	cesarean	901
APGAR_1MIN	1636	12	8	599
APGAR_5MIN	1636	11	9	976
BAG_MASK_VENTILATION_RESUSCITATION	1636	3	S.I.	1179
RESUSCITATION_DRUG	1636	3	no	1021
OXYGEN_RESUSCITATION	1636	3	S.I.	1180
GESTATIONAL_DRUGS	1636	3	no	1505
GESTATIONAL_AGE_WEEKS	1636	23	37	211
MATERNAL_RACE_COLOR	1636	6	Brown	1153
MATERNAL_AGE	1636.0	37.0	23.0	84.0
MULTIPLE_GESTATION	1636	3	no	1509
SEX	1636	3	male	896
MECHANICAL_VENTILATION	1636	3	no	1416
SURFACTANT	1636	3	no	1414
CARDIAC_ANOMALIES	1636	2	no	1586
INTRACRANIAL_HEMORRHAGE	1636	7	Did not undergo examination	1091
EPICUTANEOUS_ACCESS	1636	3	no	1457
NASAL_CPAP_DELIVERY_ROOM	1636	3	S.I.	1180
CPAP_NASAL	1636	3	yes	865
NASAL_CPAP_WITHOUT_MECHANICAL_VENTILATION	1636	3	no	840
ANTENATAL_STEROID	1636	3	no	1028
PRENATAL_VISITS	1636	13	+10	234
RUPTURED_MEMBRANE	1636	5	no	915
TTN	1636	3	no	1119
PULMONARY_HYPERTENSION	1636	3	yes	837
PULMONARY_HEMORRHAGE	1636	3	no	1578
EDUCATION_YEARS	1636	5	9 to 11 years	887
UMBILICAL_VENOUS_CATHETER	1636	3	no	1372
SEPSIS	1636	3	no	1320
UMBILICAL_ARTERIAL_CATHETER	1636	3	no	1620
TRACHEAL_CANNULA_VENTILATION_RESUSCITATION	1636	3	S.I.	1180
PULMONARY_ANOMALIES	1636	2	no	1635
RDS	1636	3	no	1599
SYPHILIS_TREATMENT_CONGENITAL	1636	3	no	1612
ACQUIRED_PNEUMONIA	1636	3	no	1613
PNEUMOTHORAX_MECHANICAL_VENTILATION	1636	3	no	1597

NEC	1636	3	no	1590
SURGERY_CONGENITAL_ANOMALY	1636	3	no	1518
CONGENITAL_PNEUMONIA	1636	3	no	1597
VENTILATOR_ASSOCIATED_PNEUMONIA	1636	3	no	1611
CARDIAC_MESSAGE_RESUSCITATION	1636	3	S.I.	1181
BIRTH_WEIGHT	1636	4	Normal weight	717

WEIGHT_WEITH	1622.0	1.416769	0.802627	0.0	1.0	1.0	2.0	3.0
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Table 4. Transformations of the datas

Attribute	Description	Transformations of values
ACQUIRED_PNEUMONIA	Diagnosis of hospital-acquired pneumonia (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
ANTENATAL_STEROID	Use of antenatal corticosteroids (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
APGAR_1MIN	APGAR score at the 1st minute after birth (0 to 10 or ``S.I.").	Numeric values kept; S.I. = -1.
APGAR_5MIN	APGAR score at the 5th minute after birth (1 to 10 or ``S.I.").	Numeric values kept; S.I. = -1.
BAG_MASK_VENTILATION_RESUSCITATION	Use of bag-mask ventilation at birth (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
BIRTH_WEIGHT	Birth weight in grams (e.g., 355–6605g or "S.I.").	Categorical based on the WHO diretriz (< 1,500 g = 0; between 1,500g and 2,499g = 1; between 2,500g and 3,999g = 2; equal or more 4,000g = 3); S.I. = -1.
CARDIAC_ANOMALIES	Presence of cardiac anomalies (Yes, No).	Yes = 1, No = 0.
CARDIAC_MASSAGE_RESUSCITATION	Surgery for congenital anomalies (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
CONGENITAL_PNEUMONIA	Diagnosis of congenital pneumonia (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
PRENATAL_VISITS	Number of prenatal consultations (1–10, >10, None, or ``S.I.").	Numeric counts kept (1–10), ">10" encoded as 11, "None" = 0; S.I. = -1.
DELIVERY_TYPE	Type of delivery: Cesarean, Vaginal, Forceps, or ``S.I.".	Categorical text converted to integers (e.g., Vaginal = 1, Cesarean = 2, Forceps = 3); S.I. = -1.
EDUCATION_YEARS	Time of the Maternal education (<8, 8, 9–11, ≥12 years, or ``S.I.").	Categories encoded numerically (e.g., <8 = 1, 8 = 2, 9–11 = 3, ≥12 = 4); S.I. = -1.
EPICUTANEOUS_ACCESS	Use of epicutaneous catheter (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
GESTATIONAL_AGE_WEEKS	Gestational age at birth in weeks (23–48 or ``S.I.").	Numeric values kept; S.I. = -1.
INTRACRANIAL_HEMORRHAGE	Grade of intracranial hemorrhage (0, I, II, III, IV, Not Examined, or ``S.I.").	Categories mapped to integers (e.g., 0 = 1, I = 2, II = 3, III = 4, IV = 5, Not Examined = 0); S.I. = -1.
MATERNAL_AGE	Mother's age in years (13 to 49 or ``S.I.").	Numeric values kept; S.I. = -1.
MATERNAL_RACE_COLOR	Self-declared maternal race/color: Black, Brown, White, Yellow, Indigenous, or ``S.I.".	Categories encoded numerically (e.g., White = 1, Brown = 2, Black = 3, Yellow = 4, Indigenous = 5); S.I. = -1.
MECHANICAL_VENTILATION	Use of mechanical ventilation (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
MULTIPLE_GESTATION	Whether the pregnancy was multiple (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
USED_CPAP	Use of nasal CPAP (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
NEC	Diagnosis of necrotizing enterocolitis (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
OXYGEN_RESUSCITATION	Use of oxygen (O ₂) after birth (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
PNEUMOTHORAX_MECHANICAL_VENTILATION	Pneumothorax related to mechanical ventilation (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
GESTATIONAL_DRUGS	Use of medications during pregnancy (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
PULMONARY_ANOMALIES	Presence of pulmonary anomalies (Yes, No).	Yes = 1, No = 0.
PULMONARY_HEMORRHAGE	Presence of pulmonary hemorrhage (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
PULMONARY_HYPERTENSION	Presence of pulmonary hypertension (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
RDS	Diagnosis of Respiratory Distress Syndrome (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
RESUSCITATION_DRUG	Use of resuscitation drugs at birth (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.

RUPTURED_MEMBRANES	Time of ruptured membranes (<18h, 18–24h, >24h, No rupture, or ``S.I.").	Categories encoded numerically (e.g., <18h = 0, 18–24h = 1, >24h = 2, No rupture = 3); S.I. = -1.
SEPSIS	Diagnosis of neonatal sepsis (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
SEX	Newborn's sex: Male, Female, or ``S.I.".	Male = 1, Female = 2; S.I. = -1.
SURFACTANT	Use of surfactant (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
CONGENITAL_ANOMALY_SURGERY	Surgery for congenital anomalies (yes, no or "S.I.").	Yes = 1, No = 0; S.I. = -1.
TRACHEAL_CANNULA_VENTILATION_RESUSCITATION	Use of tracheal cannula ventilation (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
SYPHILIS_TREATMENT_CONGENITAL	Treatment for congenital syphilis (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
TTN	Diagnosis of Transient Tachypnea of the Newborn (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
UMBILICAL_ARTERY_CATHETER	Use of umbilical arterial catheter (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
UMBILICAL_VENOUS_CATHETER	Use of umbilical venous catheter (Yes, No, or ``S.I.").	Yes = 1, No = 0; S.I. = -1.
PNEUMONIA_ASSOCIATED_MECHANICAL_VENTILATION	Pneumonia associated with mechanical ventilation (yes, no or "S.I.").	Yes = 1, No = 0; S.I. = -1.