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**Background:** COVID-19 pandemic-related increased social distancing could have changed the incidence of extremely preterm live births.

Increased social distancing was not associated with a lower incidence of **Objective:** To test the hypothesis that increased social distancing was extremely preterm live birth but was associated with a higher gestational age associated with a lower incidence of extremely preterm live births at the NICHD Neonatal Research Network sites during the initial COVIDof the extremely preterm births in the initial COVID-19 pandemic period. 19 pandemic period.

## Methods:

**Study Design:** Prospective observational study.

**Eligibility Criteria:** All extremely preterm (≤ 28 6/7 weeks gestational age) live births (EPLB) and intrapartum stillbirths (EPIS) at the NICHD Neonatal Research Network sites (calendar weeks 9 to 30 of 2018, 2019, and 2020).

## **Comparison:**

- The incidence of EPLB and EPIS as a proportion of total births during the pandemic period (calendar weeks 9 to 30 of 2020) was compared to that of the reference period (corresponding calendar weeks of 2018 and 2019).
- Maternal and fetal-neonatal characteristics and neonatal outcomes were compared between the periods.
- We correlated the change in the incidence of EPLB and EPIS over time with the social distancing as measured by site state-specific social distancing index (SDI), defined as the extent to which residents of the state practiced social distancing, computed from six mobility metrics (including % staying home, % reduction of all trips compared to pre-COVID-19 benchmark, % reduction of work trips, % reduction of non-work trips, % reduction of travel distance, and % reduction of out-of-county trips, available from https://data.covid.umd.edu).

### **Results**:

- EPLB and EPIS as percentages of total births did not significantly decrease in the pandemic period (1.83 to 1.77%, p=0.40, and 0.10 to 0.06%, p=0.05, respectively).
- The SDI (Mean ± SD=39.9 ± 11.3 for the pandemic period) was not significantly cross-correlated with the percent change of EPLB (coefficient=0.26, 95% CI=-0.16, 0.67) and EPIS (coefficient=-0.18, 95% CI=-0.59, 0.24, Figure 1).
- The mean gestational age for all extremely preterm births was higher in the pandemic period until calendar week 18 (Mean  $\pm$  SD= 26.0  $\pm$ 1.5 vs. 25.7  $\pm$  1.4 weeks, all p< 0.01) and was positively cross-correlated with the SDI (coefficient=0.55, 95% CI=0.13, 0.97 Figure 2), but the mean gestational age was not significantly different between the study periods (Table 1).

**Conclusion:** Increased social distancing was not associated with a lower incidence of extremely preterm live birth but was associated with a higher gestational age of the extremely preterm births in the initial COVID-19 pandemic period.





## <sup>th</sup> Association of Social Distancing with Extremely Preterm Live Births and Intrapartum Stillbirths in the Initial COVID-19 Pandemic Period



#### Figure 1: Correlation of Social Distancing Index with Extremely Preterm Live Figure 2: Correlation of Social Distancing Index with Extremely Preterm births and Intrapartum Stillbirths. Birth Gestational Age

The social distancing index was positively cross-correlated with extremely preterm The social distancing index was not significantly cross-correlated with the percent change of extremely preterm live births (coefficient=0.26, 95% CI=-0.16, 0.67) and birth gestational age (coefficient=0.55, 95% CI=0.13, 0.97). intrapartum stillbirths (coefficient=-0.18, 95% CI=-0.59, 0.24).

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# NEONATAL RESEARCH NETWORK

Table: Group Comparison					
Extremely Preterm Intrapartum Stillbirths					
Characteristic	Category	Reference Period (N=89)	Pandemic Period (N=28)	P-value	Mean Difference/ Odds Ratio (95% CI)
Antenatal steroids, n (%)	Complete course	21 (23.6)	10 (37.0)	0.2072	ref.
	Incomplete course	12 (13.5)	1 (3.7)		0.18 (0.00, 1.57)
Antepartum bleeding, n (%)	None	56 (62.9)	16 (59.3)		0.60 (0.22, 1.74)
		24 (27.0)	10 (37.0)	0.3403	1.59 (0.57, 4.30)
Race, n (%)	Black	40 (46.5)	13 (48.1)	1	ref.
	White	38 (44.2)	12 (44.4)		0.97 (0.36, 2.64)
	Other	8 (9.3)	2 (7.4)		0.77 (0.07, 4.61)
Ethnicity, n (%)	Hispanic or Latino	13 (14.9)	9 (33.3)	0.0495	0.36 (0.12, 1.10)
	Other	74 (85.1)	18 (66.7)		ref.
Insurance, n (%)	Medicaid	49 (55.7)	20 (74.1)	0.3252	ref.
	Private	38 (43.2)	7 (25.9)		0.45 (0.15, 1.27)
	Self- pay/uninsured	1 (1.1)	0 (0.0)		2.50 (0.00, 47.50)
Gestational age (weeks), M (SD)		23.5 (1.7)	24.0 (1.9)	0.2191	-0.5 (-1.3, 0.3)
Birth weight (g), M (SD)		519 (248)	472 (315)	0.5065	47.2 (-95.9, 190.2)
Extremely Preterm Live births					
Characteristic	Category	Reference Period (N=1674)	Pandemic Period (N=767)	P-value	Mean Difference/ Odds Ratio (95% CI)
Antenatal steroids, n (%) Antepartum bleeding, n (%)	Complete course	1133 (75.5)	490 (70.7)	0.01	1.28 (1.04, 1.57)
	Incomplete course	367 (24.5)	203 (29.3)		ref.
		371 (22.2)	209 (27.2)	<0.01	1.32 (1.07, 1.61)
Race, n (%)	Black	640 (39.7)	303 (41.6)	0.63	ref.
	White	868 (53.8)	377 (51.7)		0.92 (0.76, 1.11)
	Other	104 (6.5)	49 (6.7)		1.00 (0.67, 1.45)
Ethnicity, n (%)	Hispanic or Latino	272 (16.5)	132 (17.6)	0.51	1.08 (0.85, 1.37)
	Other	1378 (83.5)	618 (82.4)		ref.
Insurance, n (%)	Medicaid	890 (53.4)	397 (52.0)	0.04	ref.
	Private	734 (44.0)	333 (43.6)		1.02 (0.85, 1.22)
	Self- pay/uninsured	43 (2.6)	34 (4.5)		1.77 (1.08, 2.89)
Gestational age (weeks), M (SD)		26.0 (1.9)	26.2 (1.8)	0.07	-0.1 (-0.3, 0.0)
Birth weight (g), M (SD)		825 (263)	847 (259)	0.05	-22.2 (-44.6, 0.2)
		Hospital Outco	omes		
Death < 12 h after birth, n (%)		138 (8.2)	25 (3.3)	<0.01	0.38 (0.23, 0.58)
Discharge home, n (%)		1258 (75.1)	599 (78.9)	0.04	1.24 (1.00, 1.53)
Steroids for bronchopulmonary dysplasia, n (%)		408 (26.6)	176 (24.0)	0.18	0.87 (0.70, 1.07)
Intraventricular hemorrhage (grade 3 or 4), n (%)		256 (17.1)	99 (13.8)	0.04	0.77 (0.60, 1.00)
Proven necrotizing enterocolitis, n (%)		170 (11.1)	73 (10.0)	0.42	0.89 (0.65, 1.19)