Severe sociopolitical stressors and preterm births in New York City: 1 September 2015 to 31 August 2017

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ABSTRACT

Background Severe stressors can induce preterm birth (PTB; gestation <37 weeks), with such stressors including social and economic threats, interpersonal violence, hate crimes and severe sociopolitical stressors (ie, arising from political leaders' threatening rhetoric or from political legislation). We analysed temporal changes in risk of PTB among immigrant, Hispanic and Muslim populations targeted in the US 2016 presidential election and its aftermath.

Methods Trend analysis of all singleton births in New York City from 1 September 2015 to 31 August 2017 (n=230 105).

Results Comparing the period before the US presidential nomination (1 September 2015 to 31 July 2016) to the post-inauguration period (1 January 2017 to 31 August 2017), the overall PTB rate increased from 7.0% to 7.3% (relative risk (RR): 1.04; 95% CI 1.00 to 1.07). Among Hispanic women, the highest post-inauguration versus pre-inauguration increase occurred among foreign-born Hispanic women with Mexican or Central American ancestry (RR: 1.15; 95% CI 1.01 to 1.31). The post-inauguration versus pre-inauguration PTB rate also was higher for women from the Middle East/North Africa and from the travel ban countries, although non-significant due to the small number of events.

Conclusion Severe sociopolitical stressors may contribute to increases in the risk of PTB among targeted populations.

INTRODUCTION

Severe stress, induced by social and economic threats, interpersonal violence and hate crimes, can increase risk of preterm birth (PTB; gestation <37 weeks), especially spontaneous PTB,[1–4] as can severe sociopolitical stressors (ie, stressors that arise from political leaders' threatening rhetoric or from political legislation[3 5]). Recent changes in such stressors, as tied to the US 2016 presidential election and its aftermath,[5–11] including heightened anti-immigrant, anti-Hispanic and anti-Muslim policies, discrimination and hate crimes,[5–11] could potentially constitute severe sociopolitical stressors with adverse impacts on health, including increased PTB rates.[3–8] Such stressors could result in greater relative increases in risk among immigrant versus native-born populations, even if the former's absolute rates remain lower (due to the well-known 'healthy immigrant' effect[12]).

In the USA, several studies have reported increased risk of PTB and, related, low birth weight, among populations exposed to sociopolitical stressors, including heightened profiling and deportation of immigrants, which can both increase psychological distress and decrease access to health services.[3–8] An analysis of one of the largest single-site federal immigration raids in the USA, which took place in 2008 in Postville, Iowa, found that Hispanic mothers, both US born and immigrant, uniquely experienced a 1.24-fold increased risk (95% CI 0.98 to 1.57) of having a low birthweight baby during the year after, compared with the year preceding, the raid; no such increase was observed among the non-Hispanic White mothers.[3] A recent report by the Kaiser Family Foundation found that immigrant families experienced fear and uncertainty which adversely impacted their children's health.[6]

Motivated by the public health responsibility of monitoring trends in population health,[8] we accordingly examined PTB rates, given evidence of sensitivity of PTB rates to temporally acute stressors.[1–4] We focused on three time periods, defined in relation to phases of the 2016 election cycle and the corresponding escalating political rhetoric, policies and hate crimes.[6–11 13–15]

Time period 1: during campaign, before US presidential candidate nominations (September 2015 to July 2016)

Examples of this period's rising rhetoric[9] include candidate Trump's call for a border wall, stating, 'When Mexico sends its people, they're not sending their best … They're bringing crime. They're rapists'[14] and also his call for 'a total and complete shutdown of Muslims entering the United States.'[13]

Time period 2: nomination to inauguration (August 2016 to December 2016)

Escalation of the threatening anti-immigrant, anti-Hispanic and anti-Muslim rhetoric and policy proposals by nominee Trump[8–10] and corresponding hate crimes.[11]

Time period 3: post-inauguration (January 2017 to August 2017)

President Trump announced the first federal travel ban in January 2017, which targeted Iran, Iraq, Syria, Yemen, Sudan, Libya and Somalia.[10] Also in January 2017, the President issued an Executive Order to establish a border wall with Mexico and to freeze federal funding to sanctuary cities; in mid-February Immigration and Customs Enforcement (ICE) agents intensified raids nationwide; and in February 2017 Homeland Security issued memos that tightened deportation and detention rules,

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Table 1 Preterm birth rate and rate ratios for each time period by nativity, race/ethnicity and ancestry, New York City, 1 September 2015 to 31 August 2017

	Total births (n)	Preterm births (n)	PTB rate (%)	Time period 1: during campaign, before US presidential nominations Rate (%)	Time period 2: nomination to inauguration Rate (%)	Time period 3: post-inauguration Rate (%)	Rate ratio (time period 2/time period 1) and 95% CI		Rate ratio (time period 3/time period 1) and 95% CI	
							Rate ratio	95% CI	Rate ratio	95% CI
Population (n)	230 105	16 331	7.1	7.0	7.1	7.3	1.01	0.97 to 1.05	1.04	1.00 to 1.07
Nativity										
US born	110 510	8164	7.4	7.4	7.2	7.5	0.98	0.93 to 1.04	1.02	0.97 to 1.07
Foreign born	119 456	8150	6.8	6.7	6.9	7.0	1.03	0.98 to 1.09	1.06	1.01 to 1.11
Race/ethnicity										
Hispanic	65 799	5126	7.8	7.7	7.5	8.2	0.97	0.91 to 1.04	1.07	1.01 to 1.13
Asian and Pacific Islander	40 488	2656	6.6	6.5	6.5	6.7	1.00	0.91 to 1.10	1.02	0.94 to 1.11
White non-Hispanic	77 874	3902	5.0	4.9	5.2	5.0	1.07	0.98 to 1.15	1.01	0.94 to 1.08
Black non-Hispanic	42 774	4410	10.3	10.2	10.0	10.6	0.98	0.91 to 1.05	1.04	0.98 to 1.11
Other	3004	218	7.3	6.8	8.1	7.4	1.18	0.85 to 1.64	1.08	0.80 to 1.45
Ancestry										
MENA (travel ban+rest of MENA)	7270	344	4.7	4.5	5.1	4.8	1.12	0.86 to 1.47	1.07	0.85 to 1.36
MENA+Arab+Kurd+Muslim+Sikh	8058	384	4.8	4.6	4.7	5.0	1.02	0.79 to 1.32	1.08	0.86 to 1.34
Travel ban	2405	113	4.7	4.6	4.7	4.8	1.01	0.61 to 1.65	1.03	0.69 to 1.54
Rest of MENA	4865	231	4.7	4.5	5.2	4.9	1.18	0.85 to 1.62	1.09	0.81 to 1.46
Mexico and Central America	17 156	1289	7.5	7.2	7.1	8.2	0.98	0.85 to 1.13	1.13	1.01 to 1.28
Sub-Saharan Africa	5841	407	7.0	6.7	7.5	7.0	1.13	0.89 to 1.43	1.05	0.84 to 1.30
Caribbean	45 237	3892	8.6	8.5	8.3	9.0	0.98	0.90 to 1.06	1.05	0.98 to 1.13
North America other than USA	483	22	4.6	3.7	5.0	5.5	1.34	0.45 to 4.02	1.48	0.58 to 3.76
USA	49 157	4084	8.3	8.3	8.2	8.5	0.99	0.92 to 1.07	1.02	0.96 to 1.09
South America	14 320	1081	7.5	7.4	7.4	7.8	1.00	0.86 to 1.16	1.05	0.92 to 1.20
Rest of Asia excluding MENA	41 714	2623	6.3	6.3	6.3	6.3	1.00	0.91 to 1.10	1.00	0.92 to 1.09
Europe	27 072	1323	4.9	4.7	5.2	4.9	1.10	0.96 to 1.26	1.02	0.91 to 1.16
Oceania	324	18	5.6	8.1	4.3	2.8	0.53	0.15 to 1.83	0.35	0.10 to 1.21
Jewish or Hebrew	10 354	440	4.2	4.4	4.6	3.7	1.04	0.82 to 1.32	0.84	0.68 to 1.04
Nativity and ethnicity										
US born										
Hispanic	28 380	2451	8.6	8.5	8.4	9.0	0.98	0.89 to 1.09	1.06	0.97 to 1.15
Asian and Pacific Islander	4581	291	6.4	6.6	6.1	6.2	0.93	0.69 to 1.24	0.95	0.74 to 1.23
White non-Hispanic	52 686	2700	5.1	5.2	5.2	5.0	1.02	0.92 to 1.12	0.97	0.89 to 1.05
Black non-Hispanic	22 975	2570	11.2	11.3	10.3	11.7	0.92	0.83 to 1.01	1.04	0.96 to 1.13
Other	1800	142	7.9	7.2	8.5	8.4	1.17	0.78 to 1.76	1.16	0.80 to 1.66
Ancestry										
Travel ban	350	10	2.9	3.0	1.6	3.4	0.53	0.06 to 4.55	1.13	0.31 to 4.14
Rest of MENA	527	19	3.6	3.2	2.8	4.6	0.87	0.24 to 3.25	1.42	0.54 to 3.72
Mexico and Central America	3917	283	7.2	6.9	6.8	7.9	0.99	0.73 to 1.34	1.14	0.88 to 1.46
Sub-Saharan Africa	170	17	10.0	5.9	16.1	11.3	2.74	0.78 to 9.65	1.92	0.60 to 6.12

Continued

Table 1 Continued

	Total births (n)	Preterm births (n)	PTB rate (%)	Time period 1: during campaign, before US presidential nominations Rate (%)	Time period 2: nomination to inauguration Rate (%)	Time period 3: post-inauguration Rate (%)	Rate ratio (time period 2/time period 1) and 95% CI		Rate ratio (time period 3/time period 1) and 95% CI	
							Rate ratio	95% CI	Rate ratio	95% CI
Caribbean	21 155	1899	9.0	8.9	8.5	9.4	0.96	0.85 to 1.07	1.05	0.95 to 1.16
North America other than USA	30	1	3.3	0.0	0.0	10.0	–	–	–	–
USA	44 147	3614	8.2	8.2	8.0	8.3	0.97	0.89 to 1.05	1.01	0.94 to 1.09
South America	2566	186	7.2	6.3	7.1	8.8	1.13	0.78 to 1.62	1.40	1.02 to 1.92
Rest of Asia excluding MENA	4367	269	6.2	6.4	5.9	5.9	0.92	0.68 to 1.25	0.93	0.71 to 1.21
Europe	15 456	818	5.3	5.3	5.3	5.3	1.00	0.83 to 1.19	1.01	0.86 to 1.17
Oceania	46	4	8.7	14.3	0.0	6.7	0	–	0.47	0.05 to 4.36
Jewish or Hebrew	8977	383	4.3	4.7	4.6	3.5	0.98	0.76 to 1.26	0.75	0.59 to 0.94
MENA+Arab+Kurd+Muslim+Sikh	1012	34	3.4	3.1	2.0	4.5	0.64	0.22 to 1.91	1.43	0.71 to 2.90
Foreign born										
Hispanic	37 405	2673	7.1	7.0	6.7	7.6	0.96	0.87 to 1.06	1.08	0.99 to 1.17
Asian and Pacific Islander	35 899	2364	6.6	6.5	6.6	6.7	1.01	0.91 to 1.12	1.03	0.94 to 1.13
White non-Hispanic	25 132	1200	4.8	4.4	5.3	4.9	1.18	1.03 to 1.37	1.12	0.98 to 1.27
Black non-Hispanic	19 778	1835	9.3	9.0	9.6	9.4	1.07	0.96 to 1.20	1.04	0.94 to 1.15
Other	1204	76	6.3	6.2	7.4	5.7	1.19	0.69 to 2.05	0.91	0.54 to 1.54
MENA	7995	417	5.2	5.0	5.4	5.4	1.09	0.85 to 1.39	1.10	0.89 to 1.36
Seven countries in travel ban	2495	131	5.3	5.0	5.3	5.5	1.06	0.67 to 1.68	1.12	0.77 to 1.63
Rest of MENA	5500	286	5.2	5.0	5.4	5.4	1.10	0.82 to 1.47	1.08	0.83 to 1.40
Mexico + Central America	13 414	1022	7.6	7.3	7.2	8.4	0.99	0.85 to 1.16	1.15	1.01 to 1.31
Caribbean	26 293	2227	8.5	8.2	8.4	8.9	1.02	0.92 to 1.13	1.08	0.98 to 1.18
South America	12 845	1014	7.9	7.8	7.9	8.0	1.01	0.86 to 1.17	1.03	0.90 to 1.18
North America other than USA and Mexico and Central America	1270	66	5.2	4.3	8.2	4.5	1.90	1.09 to 3.31	1.04	0.58 to 1.86
Europe	12 546	568	4.5	4.3	5.2	4.3	1.17	0.96 to 1.43	0.97	0.80 to 1.17
Oceania	491	22	4.5	4.4	4.3	4.6	0.97	0.31 to 3.02	1.04	0.42 to 2.59
Sub-Saharan Africa	7380	513	7.0	6.7	7.2	7.1	1.07	0.87 to 1.33	1.05	0.87 to 1.28
Asia (not including MENA)	37 079	2285	6.2	6.1	6.2	6.3	1.02	0.92 to 1.13	1.04	0.95 to 1.14
MENA+Arab+Kurd+Muslim+Sikh	8030	418	5.2	4.9	5.4	5.5	1.08	0.85 to 1.39	1.10	0.89 to 1.36

Categories employed for maternal nativity, race/ethnicity and ancestry:
– Maternal race/ethnicity, ancestry and nativity data were reported at the time of birth by the mother. Maternal race/ethnicity was categorised using race and ancestry, categorised as White, Black, Asian/Pacific Islander and Hispanic.[16] Hispanic ethnicity includes persons of Hispanic origin based on ancestry reported on the birth certificate, regardless of reported race. Black, White and Asian/Pacific Islander race categories do not include persons of Hispanic origin. For the ancestry question, mothers are able to specify the ancestry group in an open text field. Maternal nativity is categorised as born in the USA (US born) and born outside the USA. If mothers indicate that they were born outside the USA, they can specify their country of birth in a text field.
– Women who may be at risk for anti-Muslim discrimination were categorised based on ancestry and/or country of birth. The travel ban group captured any women whose reported country of birth or ancestry was included in the original seven-country travel ban (Iran, Iraq, Syria, Yemen, Sudan, Libya and Somalia). MENA group captured women whose reported country of birth or ancestry included any country belonging to the MENA region as designated by the United Nations Human Rights Office of the High Commissioner (Algeria, Bahrain, Egypt, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Occupied Palestinian Territory, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, United Arab Emirates, Yemen).[17] MENA+Arab+Kurd+Muslim+Sikh group attempts to capture those women who were born in MENA countries or identified a MENA ancestry or specified an ancestry of Arab, Kurd, Muslim or Sikh (with this last group included because even though Sikhs are not Muslims, they have experienced anti-Muslim attacks on account of their appearance).[18]
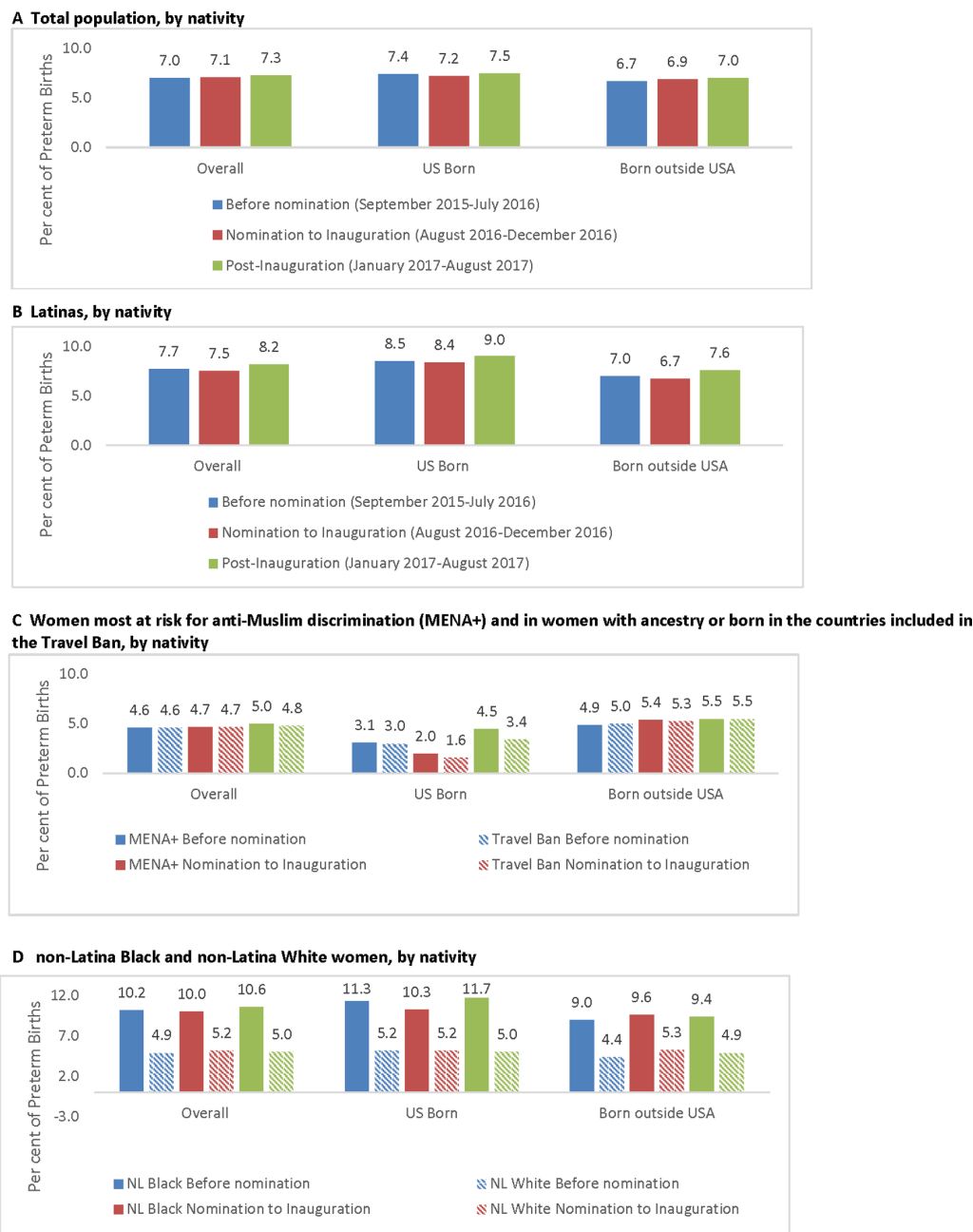MENA, Middle Eastern and North African; PTB, preterm birth.

A Total population, by nativity

Before nomination (September 2015-July 2016)
Nomination to Inauguration (August 2016-December 2016)
Post-Inauguration (January 2017-August 2017)

B Latinas, by nativity

Before nomination (September 2015-July 2016)
Nomination to Inauguration (August 2016-December 2016)
Post-Inauguration (January 2017-August 2017)

C Women most at risk for anti-Muslim discrimination (MENA+) and in women with ancestry or born in the countries included in the Travel Ban, by nativity

MENA+ Before nomination   Travel Ban Before nomination
MENA+ Nomination to Inauguration   Travel Ban Nomination to Inauguration

D non-Latina Black and non-Latina White women, by nativity

NL Black Before nomination   NL White Before nomination
NL Black Nomination to Inauguration   NL White Nomination to Inauguration

Source: NYC DOHMH Bureau of Vital Statistics, 2015-2017

Figure 1 Preterm births before, during and after the 2016 US presidential election, New York City, by nativity, for: (A) total population; (B) Latinas; (C) women most at risk of anti-Muslim discrimination (MENA+) or with ancestry or born in countries included in the travel ban; and (D) non-Latina White and non-Latina Black population. MENA, Middle Eastern and North African; NL, non-Latina.

followed by further intensified ICE raids and fear of such raids, including in New York City (NYC).[7 8 10]

Our hypothesis was that mothers belonging to social groups singled out by anti-immigrant, anti-Hispanic and anti-Muslim rhetoric, policies and violence would be more likely to have a PTB post-inauguration.

METHODS

We conducted a trend analysis utilising birth certificates from 1 September 2015 to 31 August 2017 for all singleton births that occurred in NYC (n=230 105). PTB was defined as a birth that occurred before 37 weeks of gestation, using data based on obstetrical estimates as recorded in the birth certificate. We used the self-report data from the birth certificate on maternal 'race', 'ancestry' and 'nativity' to classify mothers in relation to being at risk of anti-immigrant, anti-Hispanic and anti-Muslim discrimination, using the categories delineated in table 1.[16–18]

Statistical analysis

PTB rates were calculated (number of preterm births×100/number of live births) city-wide and by maternal race/ethnicity, ancestry and nativity groupings. Rate ratios were calculated to determine if there was a significant change in the rates between time periods (ie, time period 3 rate/time period 1 rate). This analysis received Institutional Review Board exemption due to

the use of deidentified data. Data analyses were conducted with SAS V.9.4.

RESULTS

Table 1 presents the total number of births, PTBs and PTB rates during the study time periods, overall and by race/ethnicity, ancestry and nativity. Between 1 September 2015 and 31 August 2017, the overall PTB rate in NYC was 7.1% (n=230 105 births and 16 331 PTBs) (figure 1), with the highest PTB rates (≥9%) observed among the non-Hispanic Black women (US born: 11.2%; foreign born: 9.3%) and among US-born women with sub-Saharan African or Caribbean ancestry (10% and 9%, respectively).

When PTB rates were compared between the period before the US presidential nomination (1 September 2015 to 31 July 2016) and post-inauguration (1 January 2017 to 31 August 2017), the overall PTB rate significantly increased from 7.0% to 7.3% (relative risk (RR)=1.04; 95% CI 1.00 to 1.07) (figure 1). Although the rate of PTB was, as expected,[12] lower among mothers who were born outside the USA compared with US born in both time periods, it was only among the foreign-born mothers that the PTB rate increased (from 6.7% to 7.0%; RR: 1.06 (95% CI 1.01 to 1.11) vs no change for the US-born women: from 7.4% to 7.5%; RR: 1.02 (95% CI 0.97 to 1.07)).

Significant increases in PTB rates were especially evident for births to Hispanic women. The Hispanic PTB rate was higher post-inauguration versus pre-inauguration (RR=1.07; 95% CI 1.01 to 1.13). This pattern was driven by births to Hispanic women born outside of the USA (RR=1.08; 95% CI 0.99 to 1.17), with the increase greatest among foreign-born Hispanic women with Mexican or Central American ancestry (RR=1.15; 95% CI 1.01 to 1.31).

Non-significant post-election versus pre-election rises in PTB rates occurred among both Middle Eastern and North African women, and women affected by the travel ban, with precision of estimates limited by the small number of events. PTB rates among non-Hispanic Black women did not significantly differ across time periods, but these women consistently had the highest rates of PTB for all women, by nativity, and in each time period as compared with other women.

CONCLUSION

These descriptive results suggest acute increases in severe stressors, including sociopolitical stressors and hate crimes tied to the 2016 US presidential election and its aftermath,[5–11] and may contribute to increases in the risk of PTB among targeted populations, particularly among Hispanic women. Although this study lacked data on potential confounders, the risk increases observed in this study are unlikely to be due to changes in other sociodemographic or medical factors, given the short time frame of observation.[2–4] The impact of these acute increases in sociopolitical stressors and related rises in hate crimes, moreover, was observed in a context of persistent social inequities affecting PTB rates, as reflected by the highest rates of PTB occurring among the non-Hispanic Black women, pointing to the ongoing embodied impact of racism, via politically and socially structured material and psychosocial pathways.[1 4 19]

Providing context for our findings, provisional US birth data for 2017, newly released by the National Center for Health Statistics, indicated that the US PTB rate 'rose for the third year in a row to 9.93% in 2017.'[20] This rise, however, was not uniform across either weeks of gestation or race/ethnicity of the mother. Whereas the early PTB rate (<34 weeks) remained unchanged between 2016 and 2017 (at 2.76%), it increased for the late PTB rate (34–36 weeks' completed gestation), from 7.09% in 2016 to 7.17% in 2017.[20] Additionally, whereas the PTB rate, comparing 2016 to 2017, was 'essentially unchanged among births to non-Hispanic white women (9.04% to 9.06%),' these rates increased 'for births to non-Hispanic blacks (13.77% to 13.92%) and Hispanic (9.45% to 9.61%) women.'[20]

Although a local health department has limited ability to counteract the public health impact of federal policies, the NYC Department of Health and Mental Hygiene is committed to implementing local health strategies to protect vulnerable populations, collaborating with others to advance health equity and contributing to local and national conversation about the health impacts of adverse policies and conditions, including structural racism.[19] A unique vital role going forward is to monitor PTB trends over time, as well as track federal policies that are detrimental to these populations, such as the attempts to repeal the Affordable Care Act, deportation of Deferred Action Childhood Arrivals (DACA) recipients and the enacted tax reform bill.[8 10] Our PTB results, combined with national trends,[20] suggest comparable activities should be carried out by additional local, state and federal health agencies, to monitor—and bring to public attention—the health impacts of political campaigns and policies that affect both population health and health inequities.

What is already known on this subject

► Robust evidence indicates risk of preterm birth (PTB; gestation <37 weeks) can be raised by exposure to severe stressors, including economic and social threats and interpersonal violence. Severe sociopolitical stressors (ie, stressors that arise from political leaders' threatening rhetoric or from political legislation) may also elevate PTB risk. Evidence additionally indicates that in the USA, exposure to severe sociopolitical stressors for targeted racial/ethnic, immigrant and Muslim populations, and also hate crimes, has been on the rise since the fall 2015 start of the US presidential campaigns and as reflected in the policies and rhetoric of the Trump Administration, which assumed office on 20 January 2017.

What this study adds

► This is the first study to look at the impact of the most recent US presidential campaign and election on rates of PTB (gestation <37 weeks), with analysis focused on singleton births (n=230 105) in New York City for the period 1 September 2015 to 31 August 2017. The overall rise of PTB rates during this time period (from 7.0% to 7.3%; relative risk (RR) 1.04; 95% CI 1.00 to 1.07) was most pronounced for post-inauguration versus pre-inauguration period births among Hispanic women with Mexican or Central American ancestry who were born outside of the USA (RR=1.15; 95% CI 1.01 to 1.31). The results suggest changes in the severity of sociopolitical stressors may be adversely impacting health of the targeted populations and these health impacts warrant public health monitoring.

data. MH and WL ran the statistical analysis. NK, PDW, MH, WL and GVW interpreted the results. All authors provided critical feedback on the manuscript and reviewed and approved the final version prior to submission.

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