



## Mothers' health following youth police stops

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### ABSTRACT

Research documents that criminal justice contact, such as incarceration, impairs health among family members of those experiencing the contact. Yet little is known about the health consequences of vicarious exposure to another common type of criminal justice contact, police stops. In the present study, we examined the association between youth police stops and mothers' health. We used data from the Fragile Families and Child Wellbeing Study, a cohort of urban children born around the turn of the 21st century and followed through adolescence (2014 to 2017), to estimate the association between youth police stops and mothers' health (measured by overall health and health limitations). We estimated these associations with propensity score matching, a counterfactual approach that accounts for observed selection into youth police stops. Analyses reveal that youth police stops had deleterious repercussions for mothers' health, net of their health prior to the stop. These health consequences emerged regardless of the frequency or intrusiveness of the stop. The negative association between youth police stops and overall health was larger among mothers of girls than among mothers of boys. Associations were similar across mothers' race/ethnicity and education. Taken together, results show that youth police stops exacerbate health problems among mothers. Given the concentration of police stops among youth of color, these findings highlight the consequences of the criminal justice system for population health inequalities.

### 1. Introduction

Research documents that criminal justice contact has deleterious health consequences for those who directly experience it (Massoglia and Pridemore, 2015; Wakefield and Uggen, 2010). Furthermore, those ensnared in the criminal justice system are connected to families, and a complementary literature documents how criminal justice contact, particularly incarceration, can have proliferating health consequences (Wildeman et al., 2019). For example, vicarious exposure to the incarceration of a parent, romantic partner, or child can have harmful repercussions for health (Goldman, 2019; Lee et al., 2013; Sirois, 2020; Wildeman et al., 2012).

Though much extant literature on the health consequences of direct and vicarious criminal justice contact has focused on incarceration, other forms of contact have emerged as critical public health concerns (American Public Health Association (APHA), n.d.; DeVlyder et al., 2020). Police stops, in particular, are a common form of criminal justice contact, with more than 54 million individuals reporting police contact annually (Davis et al., 2018). Despite the pervasiveness of criminal justice contact such as police stops, little is known about its vicarious

health consequences (Turney, 2021). Research shows that police stops are a distinctive stressor that can impair the health of individuals (Geller et al., 2014; Sewell and Jefferson, 2016; Sewell et al., 2016), including the health of youth (Del Toro et al., 2019; Jackson et al., 2019; Jahn et al., 2021; McFarland et al., 2019; Turney, 2020).

The stress process perspective, which highlights how stressors are concentrated among vulnerable groups and how these stressors can impair health, suggests that the stressor of youth police stops may proliferate to damage the health of their mothers (Pearlin, 1989). Mothers are well aware that such encounters can be traumatic (Brunson and Weitzer, 2009; Shedd, 2015). They may experience stress in learning about the stop or its associated invasiveness, injustices, or emotional degradation. Stress may also stem from the actual or anticipated consequences of the police stop for their youth, including future criminal justice contact, legal cynicism, or disengagement from institutions, all of which can impair their health (Brayne, 2014; Geller and Fagan, 2019).

Grounded in the stress process perspective, and its proposition that stressors can proliferate from the individual initially exposed to the stressor to those connected to them, we used data from the Fragile Families and Child Wellbeing Study to examine the association between

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youth police stops and mothers' health. We used these data, a survey of urban adolescents and their parents during the proactive policing era (Kubrin et al., 2010), to examine two indicators of mother's health: (1) overall health, a commonly used measure of wellbeing and an important predictor of mortality (Idler and Benyamini, 1997) and (2) health limitations, which captures interference with daily activities and embodies an array of possible health conditions (Turney and Hardie, 2018). We used a counterfactual framework, propensity score matching, to examine this association, matching on characteristics associated with selection into youth experiencing police stops (e.g., delinquency). We also examined the frequency and intrusiveness of stops, and considered heterogeneity in the association by youth's gender, mother's race/ethnicity, and mother's educational attainment. Given the concentration of police stops among youth of color, our results highlight how this form of criminal justice contact can exacerbate population health inequalities.

## 2. Methods

### 2.1. Data

We used data from the Fragile Families and Child Wellbeing Study, a cohort of urban children born around the turn of the 21st century. Children were sampled from hospitals in 20 U.S. cities, with mothers and fathers interviewed after their child's birth (Reichman et al., 2001). Parents were interviewed an additional five times (when children were about 1, 3, 5, 9, and 15 years old). Primary caregivers and youth were both interviewed during the most recent survey (conducted between 2014 and 2017). Unmarried parents were oversampled, which means that the sample is more economically disadvantaged than an overall sample of parents in the United States.

The analytic sample comprised 3139 of the original 4898 families. We first excluded the 1318 observations in which the youth's primary caregiver did not participate in the 15-year survey and an additional 434 observations in which the primary caregiver was someone besides the youth's mother. We also excluded an additional 7 observations missing data on either dependent variable. Attrition analyses, comparing baseline characteristics of the analytic and full samples, showed several small but statistically significant differences. Parents in the analytic sample, compared to those in the full sample, were more likely to identify as non-Hispanic Black, less likely to identify as Hispanic, and more likely to report education beyond high school.

### 2.2. Measures

#### 2.2.1. Mothers' health

We examined two indicators of mothers' health, both measured at the 15-year survey. First, an ordinal variable indicates mothers' ratings of their overall health (1 = *poor* to 5 = *excellent*) (McFarland et al., 2019). Second, a binary variable indicates that the mother reported having a serious health problem that limits the amount or kind of work she can do.

#### 2.2.2. Youth police stops

The primary explanatory variable is a binary, mother-reported indicator the youth had ever been stopped by the police, ascertained at the 15-year survey. We examined two additional measures of youth police stops, both reported by youth: (1) the frequency of police stops (more than one stop versus one stop) and (2) the intrusiveness of police stops (any intrusiveness versus no intrusiveness). Any intrusiveness indicates the youth reported at least one of the following occurred during their most memorable police stop: officer engaged in a frisk or pat down; searched bags or pockets; used harsh language; used racial slurs; threatened physical force; and used physical force. Youth were also asked to report on their police stops and, in supplemental analyses, we considered the following explanatory variables: (1) mother knows youth

was stopped by the police (1 = *mother and youth both report youth was stopped*) and (2) mother does not know youth was stopped by the police (1 = *youth, but not mother, reports youth was stopped*).

#### 2.2.3. Control variables

The control variables included demographic characteristics such as mothers' and fathers' race/ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic, non-Hispanic other race), immigrant status, age, childhood family structure (1 = *lived with both biological parents at age 15*), relationship status with one another (married, cohabiting, non-residential or no relationship), relationship quality with one another (1 = *poor* to 5 = *excellent*), repartnered, and number of children in the household. Socioeconomic characteristics included mothers' and fathers' educational attainment (less than high school, high school diploma or GED, more than high school), employment, income-to-poverty ratio, and material hardship (a sum of 11 items [e.g., eviction] indicating hardship in the past year). Health characteristics included mothers' and fathers' depression (Kessler et al., 1998), parenting stress (an average of responses to four statements, 1 = *strongly disagree* to 4 = *strongly agree*), heavy drinking (1 = *four or more drinks in one sitting in the past month*), and illicit drug use (1 = *used drugs in the past month*). Additionally, some analyses (described below) included lagged indicators of overall health or health limitations (measured at the 9-year survey).

Neighborhood characteristics included mothers' and fathers' neighborhood disadvantage, measured by four indicators of tract-level 2000 census data that were summed together and standardized; neighborhood race/ethnic composition; neighborhood social control, an average of responses to five statements (1 = *very unlikely* to 4 = *very likely*); neighborhood social cohesion, an average of responses to five statements (1 = *strongly disagree* to 4 = *strongly agree*); neighborhood gang activity (1 = *strongly disagree* to 4 = *strongly agree*); fear of violence in neighborhood (1 = *afraid to let child outside because of neighborhood violence*); and witness violence in neighborhood (1 = *saw someone in neighborhood hit, slapped, or punched in past year*). Additional parent characteristics included mothers' and fathers' cognitive ability, impulsivity (Dickman, 1990), police stops (1 = *ever stopped by the police for reasons other than a minor traffic violation*), and incarceration (1 = *ever incarcerated*). All parent-reported control variables were measured at or prior to the 9-year survey.

Youth characteristics included gender (1 = *male*), age, low birth weight (1 = *less than 2500 g*), delinquency (a sum of self-reports about ever participating in 17 delinquent activities), and impulsivity (Dickman, 1990).

### 2.3. Analytic strategy

The analyses proceed in three stages, all of which used propensity score matching to estimate the association between youth police stops and mothers' health (Rosenbaum and Rubin, 1983). This counterfactual approach is one way to diminish concerns about the non-random distribution of youth police stops, as the stress process perspective suggests that stressors are concentrated among vulnerable groups (Pearlin, 1989).

First, we estimated the average associations between youth police stops and mothers' health. We used logistic regression to generate a propensity score for each observation based on control variables described above (including indicators of mental health that could be associated with overall health or health limitations) (Dowd and Todd, 2011) and baseline city (Appendix Table 1). These propensity scores, which ranged from 0 to 1, signify the probability of exposure to youth police stops. We matched observations in the treatment group (mothers of youth with police stops) to observations in the control group (mothers of youth without police stops), restricted the analyses to regions of common support, and checked the balance of covariates to ensure no observed differences across treatment and control groups (see Appendix Table 2). We present matched estimates, all based on kernel

matching (kernel = epanechnikov, bandwidth = 0.06). In some models, we present matched estimates that further adjusted for a lagged dependent variable, which allows us to hold constant prior health, and matched estimates that further adjusted for a lagged dependent variable and all covariates (Schafer and Kang, 2008). We used ordinary least squares (OLS) regression to estimate mothers' overall health (though results were robust to ordered logistic regression models) and logistic regression models to estimate mothers' health limitations. We carefully considered the time-ordering of the variables, with youth police stops occurring prior to the measurement of mothers' health and the covariates measured at or before the 9-year survey and, therefore, prior to youth police stops. A small number of youth ( $N = 32$ ) reported their first police stop at age 8; excluding these youth yielded substantively similar results.

Second, we considered variation in the frequency and intrusiveness of youth police stops, restricting these analyses to youth reporting any stops. Following procedures described above, we first matched mothers of youth reporting more than one stop to mothers of youth reporting only one stop. We then matched mothers of youth reporting any intrusiveness to mothers of youth reporting no intrusiveness.

Third, we estimated the association between youth police stops and mothers' health across demographic subgroups, again following procedures described above. We estimated these subgroup associations across youth's gender, mother's race/ethnicity, and mother's education, testing for statistically significant differences across groups (Paternoster et al., 1998).

Missing data, particularly for mother- and youth-reported characteristics, was relatively uncommon. We preserved observations missing information on covariates with multiple imputation, using the multivariate normal method and averaging estimates across 20 data sets. This study was exempted from Institutional Review Board (IRB) approval at the University of California, Irvine because the data were deidentified.

### 2.4. Sample description

Table 1 presents descriptive statistics for the analytic sample. Mothers, on average, reported overall health as 3.422. Nearly one-fifth (17.1%) reported health limitations. A nontrivial percentage of mothers (12.6%) reported their youth experienced a police stop. Most parents were racial/ethnic minorities (with 50.5% and 24.7% of mothers identifying as non-Hispanic Black and Hispanic, respectively). Nearly one-third (30.8%) of parents were married and one-tenth (9.1%) were cohabiting at the 9-year survey. Mothers reported health challenges at the 9-year survey, with 16.6% reporting depression, 8.5% reporting heavy drinking, and 5.8% reporting drug use. About one-fifth (20.5%) of mothers and three-fifths (59.5%) of fathers reported ever being stopped by the police themselves.

## 3. Results

### 3.1. Estimating the association between youth police stops and mothers' health

Table 2 examines the association between youth police stops and mothers' health. Model 1, the unmatched estimates, shows that mothers of youth with police stops, compared to mothers of youth without police stops, reported lower overall health ( $b = -0.341, p < .001$ ) and had a greater likelihood of health limitations ( $b = 0.644, p < .001$ ). Model 2, the matched estimates, shows that associations were reduced in magnitude but remained statistically significant. These associations remained in Model 3, which further adjusted for a lagged dependent variable, and in Model 4, which further adjusted for all covariates. In this final model, mothers of youth with police stops, compared to their counterparts, reported lower overall health ( $b = -0.183, p < .01$ ) and had a greater likelihood of health limitations ( $b = 0.442, p < .05$ ). Given the consistency across Models 2, 3, and 4, we present matched estimates

**Table 1**  
Descriptive statistics of all variables.

	M or %	(SD)	Range
Mother overall health (y15)	3.422	(1.046)	1–5
Mother health limitations (y15)	17.1%		
Youth police stops (y15)	12.6%		
<i>Mother characteristics</i>			
<i>Race/ethnicity (b)</i>			
White (non-Hispanic)	21.1%		
Black (non-Hispanic)	50.5%		
Hispanic	24.7%		
Other race (non-Hispanic)	3.6%		
Foreign-born (b)	14.0%		
Age (y9)	34.469	(6.029)	23–56
Lived with both biological parents (b)	42.5%		
<i>Relationship status with child's father (y9)</i>			
Married	30.8%		
Cohabiting	9.1%		
No residential relationship	60.0%		
Repartnered (y9)	33.9%		
Relationship quality (y9)	2.785	(1.477)	1–5
Number of children in household (y9)	2.717	(1.313)	0–8
<i>Educational attainment (y9)</i>			
Less than high school	20.6%		
High school diploma or GED	18.2%		
More than high school	61.2%		
Employment (y9)	63.6%		
Income-to-poverty ratio (y9)	2.080	(2.356)	0–41
Material hardship (y9)	1.474	(1.848)	0–10
Depression (y9)	16.6%		
Parenting stress (y9)	2.038	(0.686)	1–4
Heavy drinking (y9)	8.5%		
Illicit drug use (y9)	5.8%		
Neighborhood disadvantage (y9)	0.000	(1.000)	-1–8
Percent white in neighborhood (y9)	37.2%		
Percent Black in neighborhood (y9)	35.3%		
Percent Hispanic in neighborhood (y9)	20.3%		
Neighborhood social control (y9)	3.203	(0.839)	1–4
Neighborhood social cohesion (y9)	2.769	(0.487)	1–4
Gang activity in neighborhood (y9)	1.684	(0.899)	1–4
Fear of violence in neighborhood (y9)	19.1%		
Witness violence in neighborhood (y9)	23.6%		
Cognitive ability (y3)	6.816	(2.656)	0–15
Impulsivity (y3)	2.015	(0.607)	1–4
Ever stopped by police (y3, y5, y9)	20.5%		
Ever incarcerated (b, y1, y3, y5)	7.4%		
Overall health, lagged (y9)	3.578	(1.033)	1–5
Health limitations, lagged (y9)	11.9%		
<i>Father characteristics</i>			
<i>Race/ethnicity (b)</i>			
White (non-Hispanic)	18.5%		
Black (non-Hispanic)	53.0%		
Hispanic	24.7%		
Other race (non-Hispanic)	3.8%		
Foreign-born (b)	15.3%		
Age (b)	36.868	(7.122)	24–89
Lived with both biological parents (b)	44.2%		
Repartnered (y9)	2.9%		
Relationship quality (y9)	3.195	(1.380)	1–5
Number of children in household (y9)	0.999	(1.388)	0–8
<i>Educational attainment (y9)</i>			
Less than high school	26.0%		
High school diploma or GED	29.7%		
More than high school	44.3%		
Employment (y9)	70.9%		
Income-to-poverty ratio (y9)	2.600	(2.909)	0–74
Material hardship (y9)	1.420	(1.939)	0–11
Depression (y9)	16.3%		
Parenting stress (y9)	1.912	(0.701)	1–4
Heavy drinking (y9)	27.6%		
Illicit drug use (y9)	13.8%		
Neighborhood disadvantage (y9)	0.000	(1.000)	-5–5
Percent white in neighborhood (y9)	36.0%		
Percent Black in neighborhood (y9)	37.0%		
Percent Hispanic in neighborhood (y9)	20.1%		
Cognitive ability (y3)	6.449	(2.706)	0–15

(continued on next page)

**Table 1** (continued)

	M or %	(SD)	Range
Impulsivity (y1)	2.002	(0.666)	1–4
Ever stopped by police (y1, y3, y5, y9)	59.5%		
Ever incarcerated (b, y1, y3, y5, y9)	49.0%		
<i>Youth characteristics</i>			
Male (b)	51.6%		
Age (y15)	15.574	(0.758)	14–19
Born low birth weight (b)	9.2%		
Delinquency (y9)	1.241	(1.787)	0–17
Impulsivity (y15)	2.459	(0.700)	1–4
N	3139		

Notes: b = measured at baseline, y1 = measured at 1-year survey, y3 = measured at 3-year survey, y5 = measured at 5-year survey, y9 = measured at 9-year survey, y15 = measured at 15-year survey

(the equivalent of Model 2) in remaining analyses.

In supplemental analyses (not presented), we used information on both mother- and youth-reported stops, separately estimating the following two treatments (comparing both to observations where youth reported no stop): (1) mother knows youth was stopped by the police and (2) mother does not know youth was stopped by the police. These matched results show the magnitude of the association is larger when mothers know about youth stops (overall health:  $b = -0.237, p < .05$ ; health limitations:  $b = 0.264, n.s.$ ) than when mothers do not know about youth stops (overall health:  $b = 0.036, n.s.$ , health limitations:  $b = -0.154, n.s.$ ), consistent with expectations.

Additionally, as police stops may be indicative of other criminal justice contact such as arrests, we estimated the following two treatments (comparing both to observations where the mother reported the youth was not stopped): (1) mother reports youth was stopped and arrested and (2) mother reports youth was stopped but not arrested. These matched results show that both treatments are associated with

**Table 2**

Propensity score models estimating the association between youth police stops and mother’s health.

	Model 1		Model 2		Model 3		Model 4		
	Unmatched		Matched		Matched, lagged dependent variable		Matched, lagged dependent variable + doubly robust		
	b	(se)	b	(se)	b	(se)	b	(se)	
Mother’s overall health	-0.341	(0.056)	***	-0.188	(0.072)	**	-0.181	(0.065)	**
Mother’s health limitations	0.644	(0.126)	***	0.347	(0.160)	*	0.345	(0.174)	*
N	3139			3133–3139			3133–3139		

Notes: Mother’s overall health is estimated with ordinary least squares regression. Mother’s health limitations is estimated with logistic regression. Coefficients for treatment (based on kernel matching) presented. All estimates are restricted to the region of common support. Treatment N varies across multiply imputed data sets (ranging from 389 to 397).

\*  $p < .05$ .  
 \*\*  $p < .01$ .  
 \*\*\*  $p < .001$ .

**Table 3**

Propensity score models estimating the association between youth police stops and mother’s health, considering variation in police contact.

	Mother’s overall health				Mother’s health limitations					
	Model 1		Model 2		Model 1		Model 2			
	Unmatched		Matched		Unmatched		Matched			
	b	(se)	b	(se)	b	(se)	b	(se)		
More than one stop	-0.202	(0.077)	**	-0.134	(0.098)	0.356	(0.183)	-	0.217	(0.225)
Any intrusion	-0.247	(0.076)	**	-0.148	(0.106)	0.401	(0.180)	*	0.244	(0.237)

Notes: Mother’s overall health is estimated with ordinary least squares regression. Mother’s health limitations is estimated with logistic regression. All analyses restricted to observations in which youth reports a police stop. Coefficients for treatment (based on kernel matching) presented. All estimates are restricted to the region of common support. Treatment N varies across multiply imputed data sets (ranging from 426 to 439 for more than one stop and 373 to 393 for any intrusion).

\*  $p < .10$ .  
 \*  $p < .05$ .  
 \*\*  $p < .01$ .

mothers’ overall health (stopped with arrest:  $b = -0.218, p < .10$ ; stopped without arrest:  $b = -0.207, p < .01$ ) and health limitations (stopped with arrest:  $b = -0.440, p < .10$ ; stopped without arrest:  $b = 0.345, p < .10$ ).

3.2. Considering variation in youth stop experiences

Table 3 considers the frequency and intrusiveness of youth police stops. We first examined the association between more than one stop and mothers’ health. The unmatched estimates showed that more than one stop, compared to one stop, was negatively associated with mothers’ overall health ( $b = -0.202, p < .01$ ) and positively associated with mothers’ health limitations ( $b = 0.356, p < .10$ ). The matched estimates were not statistically significant, suggesting these unmatched differences result from selection. We next examined the association between any intrusiveness and mothers’ health. The unmatched estimates showed that any intrusiveness, compared to no intrusiveness, was negatively associated with mother’s overall health ( $b = -0.247, p < .01$ ) and positively associated with health limitations ( $b = 0.401, p < .05$ ). The matched estimates were again not statistically significant, suggesting these unmatched differences result from selection. In supplemental analyses (not presented), we considered the two most frequent types of intrusion, frisks and searches, and whether the youth reported being handcuffed but did not report an arrest. These specific measures were not significantly associated with mothers’ health after matching.

3.3. Considering heterogeneity in consequences of youth police stops

Table 4 examines the relationship between youth police stops and mothers’ health by youth’s gender, mother’s race/ethnicity, and mother’s educational attainment. First, matched estimates show the magnitude of the association between youth police stops and mothers’

**Table 4**  
Propensity score models estimating the association between youth police stops and mother’s health, by demographic subgroups.

	Overall health				Health limitations						
	Model 1		Model 2		Model 1		Model 2				
	Unmatched		Matched		Unmatched		Matched				
	b	(se)	b	(se)	b	(se)	b	(se)			
Youth gender											
Boys (n = 1621)	-0.323	(0.071)	***	-0.144	(0.093)	0.639	(0.156)	***	0.390	(0.213)	
Girls (n = 1518)	-0.436	(0.096)	***	-0.445	(0.129)	**	0.620	(0.224)	**	0.465	(0.306)
Mother race/ethnicity											
White, non-Hispanic (n = 662-664)	-0.636	(0.129)	***	-0.352	(0.225)	1.243	(0.280)	***	0.733	(0.560)	
Black, non-Hispanic (n = 1584 - 1587)	-0.249	(0.074)	**	-0.143	(0.108)	0.486	(0.162)	**	0.229	(0.207)	
Hispanic (n = 775-777)	-0.224	(0.121)	^	-0.132	(0.158)	0.219	(0.334)		-0.172	(0.531)	
Mother educational attainment											
High school or less (n = 1216 - 1219)	-0.361	(0.086)	***	-0.244	(0.121)	*	0.615	(0.178)	**	0.368	(0.265)
More than high school (n = 1920 - 1923)	-0.301	(0.074)	***	-0.151	(0.096)		0.583	(0.183)	**	0.315	(0.236)

Notes: Mother’s overall health is estimated with ordinary least squares regression. Mother’s health limitations is estimated with logistic regression. Coefficients for treatment (based on kernel matching) presented. All estimates are restricted to the region of common support. Ns vary across multiply imputed data sets.

^ p < .10.  
\* p < .05.  
\*\* p < .01.  
\*\*\* p < .001.

overall health was larger for mothers of girls ( $b = -0.445, p < .01$ ) than mothers of boys ( $b = -0.144, n.s.$ ), and these differences across groups were marginally significant ( $z = 1.89$ ). The magnitude of the association between youth police stops and mothers’ health limitations was similar for mothers of boys and girls. Second, matched estimates show the association between youth police stops and mothers’ health was largest among white people, compared to among Black and Hispanic people, but none of the subgroup coefficients reached statistical significance and group differences were not statistically significant. Third, matched estimates show the association between youth police stops and mothers’ overall health was larger for mothers with a high school diploma or less ( $b = -0.244, p < .05$ ) than mothers with more than high school ( $b = -0.151, n.s.$ ), but these group differences were not statistically significant. The association between youth police stops and mothers’ health limitations was also similar across groups.

**4. Discussion**

Research documents the deleterious health consequences of police stops for youth and a complimentary literature documents the deleterious consequences of vicarious criminal justice stops (Del Toro et al., 2019; Jackson et al., 2019; Jahn et al., 2021; Lee et al., 2013; McFarland et al., 2019; Turney, 2020; Wildeman et al., 2012; Wildeman et al., 2019). Little research examines how youth police stops, a pervasive form of criminal justice contact, can impair family member health, despite good reasons to expect this stressor to have proliferating repercussions (Turney, 2021). In this paper, we provide one of the first examinations of the association between youth police stops and mothers’ health (Jackson and Turney, 2021; Turney, 2021).

The findings document three primary conclusions. First, mothers of youth with police stops, compared to mothers of youth without police stops, reported lower overall health and more health limitations (net of their prior overall health and health limitations, respectively). These findings are consistent with the stress process perspective, which highlights the unequal distribution of stressors across the population and the deleterious health consequences of vicariously experienced stressors (Pearlin, 1989). Indeed, youth police stops are a stressor concentrated among youth of color and youth living in highly surveilled and disadvantaged neighborhoods (Geller, 2021; Turney, 2021). This stressor has proliferating health repercussions for mothers of youth exposed to the stop. These findings complement prior research, which has focused on the individual health consequences of police stops (Del Toro et al., 2019;

Geller, 2021; Jackson et al., 2019; Jahn et al., 2021; McFarland et al., 2019; Turney, 2020) and the proliferating health consequences of later stage criminal justice contact such as incarceration (Goldman, 2019; Lee et al., 2013; Sirois, 2020; Wildeman et al., 2012). Considering the proliferating health consequences of police stops is important because this is a common type of criminal justice contact (Davis et al., 2018).

Second, the frequency or invasiveness of youth police stops is not independently associated with mothers’ overall health or health limitations; instead, any exposure to police stops has deleterious repercussions. Though not a formal test of mechanisms, this suggests the frequency and invasiveness of stops may not explain associations between youth police stops and mothers’ health. Other potential mechanisms include fear or anxiety about future criminal justice contact or changes in the youth such as increased delinquency, increased legal cynicism, or disengagement from institutions (Brayne, 2014; Del Toro et al., 2019; Wiley and Esbensen, 2016). Supplemental analyses suggest that mothers’ knowledge of the stop, as opposed to stops that occur without the mothers’ knowledge, are especially consequential. Future research should investigate the mechanisms through which youth police stops impair mothers’ health.

Third, by and large, associations between youth police stops and mothers’ health are similar across youth’s gender, mother’s race/ethnicity, and mother’s education. There is one exception, with the repercussions of youth police stops for mothers’ overall health larger for mothers of girls than mothers of boys. The less common—and likely less anticipated—nature of police stops among girls may make it especially harmful to mothers’ health (Turney, 2017). The similar associations across race/ethnicity and mother’s educational attainment, given the unequal distribution of exposure to youth police stops across groups, suggests this unequal exposure can drive population health inequalities.

These results suggest that youth police stops constitute a preventable cause of illness and disease among proximate family members. Programs and policies to support youth after criminal justice stops can be enhanced by providing supplemental support to family members—particularly mothers—who also experience health repercussions from the stop. Physicians and public health practitioners, particularly those serving marginalized and disadvantaged communities, should consider screening for vicarious exposure to criminal justice contact. The association between youth police stops and mothers’ health likely results from actual or anticipated adverse consequences of the stop. Mitigating these concerns could improve mothers’ health by either minimizing the adverse consequences of police interactions for youth

and/or providing health resources for coping with attendant consequences. Beyond direct support to family members following youth police stops, preventing youth criminal justice contact could also correspond to improved health among mothers. Curtailment of the over-policing of youth (i.e., including stops not resulting in arrest or court processing) is needed to reduce mothers' vicarious exposure to police through their youth, thereby potentially improving their health.

4.1. Limitations

We used the best available data and a rigorous analytic approach, but there remain limitations. First, the measures of overall health and health limitations, though broad in nature and linked to wellbeing throughout the life course (Idler and Benyamini, 1997; Turney and Hardie, 2018), are reported by mothers. Future research should examine physician-reported indicators of health (e.g., diagnoses of stress-related health conditions such as asthma or high blood pressure). Second, though youth police stops likely affects fathers' health, data limitations necessitated a focus on mothers' health (as only 7% of primary caregivers participating the 15-year survey were children's fathers). Third, these data only include information about police stops among focal children; mothers may have other children who experience police stops and, accordingly, these estimates may be conservative. Fourth, propensity score matching cannot account for unobserved characteristics that may be associated with both youth police stops and mothers' health (for example, time-varying neighborhood violence). Future research should collect fine-grained longitudinal data allowing for fixed-effects models that account for time-invariant unobserved characteristics.

Appendix

Appendix Table 1

Logistic regression model estimating youth police stops.

	b	se	
<i>Mother characteristics</i>			
Race/ethnicity (reference = white [non-Hispanic])			
Black (non-Hispanic)	-0.467	(0.285)	
Hispanic	-0.259	(0.294)	
Other race (non-Hispanic)	0.034	(0.436)	
Foreign-born	-0.343	(0.346)	
Age	-0.018	(0.017)	
Lived with both biological parents	-0.348	(0.142)	*
Relationship status (reference = married)			
Cohabiting	0.027	(0.278)	
No residential relationship	0.081	(0.246)	
Repartnered	-0.163	(0.160)	
Relationship quality	-0.041	(0.067)	
Number of children	0.026	(0.051)	
Educational attainment (reference = less than high school)			
High school diploma or GED	0.289	(0.192)	
More than high school	-0.021	(0.174)	
Employment	-0.027	(0.144)	
Income-to-poverty ratio	-0.091	(0.068)	
Material hardship	0.028	(0.044)	
Depression	0.080	(0.165)	
Parenting stress	0.385	(0.105)	***
Heavy drinking	0.419	(0.198)	*
Illicit drug use	-0.359	(0.269)	
Neighborhood disadvantage	0.071	(0.089)	
Percent white in neighborhood	0.024	(0.013)	
Percent Black in neighborhood	0.017	(0.012)	
Percent Hispanic in neighborhood	0.017	(0.012)	
Neighborhood social control	0.121	(0.096)	
Neighborhood social cohesion	-0.090	(0.182)	
Gang activity in neighborhood	-0.001	(0.100)	
Fear of violence in neighborhood	0.056	(0.192)	
Witness violence in neighborhood	0.037	(0.165)	

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5. Conclusions

Research on criminal justice contact and health typically focuses on the health consequences of incarceration (Massoglia and Pridemore, 2015; Wakefield and Uggen, 2010), while often overlooking how other forms of criminal justice contact—such as police stops—can affect the health of exposed individuals and their family members. We find that youth police stops impair mothers' health, above and beyond characteristics associated with youth police stops, complementing the burgeoning research on the health ramifications of police stops for youth themselves (Del Toro et al., 2019; Jackson et al., 2019; Jahn et al., 2021; McFarland et al., 2019; Turney, 2020). These findings, understood in a context of systemic inequality where youth of color and youth living in highly surveilled neighborhoods are commonly exposed to police stops, document another avenue through which police stops have ramifications for population health inequities.

Credit author statement

K. Turney made substantial contributions to conceptualization of the study, data preparation, data analysis, interpretation, revisions, and final approval of the article. D. Jackson made substantial contributions to conceptualization of the study, interpretation, revisions, and final approval of the article.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix Table 1 (continued)

	b	se	
Cognitive ability	0.002	(0.027)	
Impulsivity	-0.026	(0.112)	
Ever stopped by police	-0.074	(0.152)	
Ever incarcerated	0.347	(0.213)	
<i>Father characteristics</i>			
Race/ethnicity (reference = white [non-Hispanic])			
Black (non-Hispanic)	0.425	(0.317)	
Hispanic	-0.219	(0.340)	
Other race (non-Hispanic)	0.564	(0.410)	
Foreign-born	-0.213	(0.331)	
Age	-0.002	(0.014)	
Lived with both biological parents	0.118	(0.159)	
Repartnered	-0.398	(0.408)	
Relationship quality	-0.046	(0.080)	
Number of children	0.181	(0.071)	*
Educational attainment (reference = less than high school)			
High school diploma or GED	-0.293	(0.174)	~
More than high school	-0.168	(0.180)	
Employment	-0.263	(0.185)	
Income-to-poverty ratio	0.002	(0.046)	
Material hardship	0.001	(0.043)	
Depression	0.250	(0.215)	~
Parenting stress	0.201	(0.115)	
Heavy drinking	-0.006	(0.168)	
Illicit drug use	0.240	(0.207)	
Neighborhood disadvantage	-0.077	(0.118)	
Percent white in neighborhood	-0.015	(0.014)	
Percent Black in neighborhood	-0.012	(0.010)	
Percent Hispanic in neighborhood	-0.004	(0.013)	
Cognitive ability	0.001	(0.031)	~
Impulsivity	-0.265	(0.139)	
Ever stopped by police	0.109	(0.149)	
Ever incarcerated	0.402	(0.154)	*
<i>Youth characteristics</i>			
Male	0.923	(0.134)	***
Age	0.372	(0.100)	***
Born low birth weight	-0.055	(0.213)	
Delinquency	0.096	(0.033)	**
Impulsivity	0.436	(0.095)	***
Constant	-10.651		
Log likelihood	-965		
N	3139		

Notes: Model also includes indicators of baseline city.

- ~ p < .10.
- \* p < .05.
- \*\* p < .01.
- \*\*\* p < .001.

Appendix Table 2

Covariate balance, before and after matching.

	Unmatched mean			Matched mean			
	E(X)   d = 1	E(X)   d = 0	p	E(X)   d = 1	E(X)   d = 0	Bias	p
<i>Mother characteristics</i>							
Race/ethnicity							
White (non-Hispanic)	0.177	0.216	0.072	0.175	0.167	2.0	0.766
Black (non-Hispanic)	0.598	0.492	< 0.000	0.600	0.598	0.5	0.879
Hispanic	0.194	0.254	0.010	0.194	0.200	-1.3	0.848
Other race (non-Hispanic)	0.030	0.037	0.494	0.030	0.036	-2.8	0.694
Foreign-born	0.058	0.151	< 0.000	0.059	0.065	-2.1	0.714
Age	32.697	34.727	< 0.000	32.692	32.738	-0.8	0.858
Lived with both biological parents	0.295	0.445	< 0.000	0.292	0.291	0.3	0.896
Relationship status with child's father							
Married	0.162	0.328	< 0.000	0.169	0.185	-3.9	0.542
Cohabiting	0.098	0.088	0.504	0.094	0.102	-2.7	0.707
No residential relationship	0.740	0.583	< 0.000	0.738	0.713	5.3	0.443
Repartnered	0.414	0.336	0.002	0.405	0.389	3.5	0.634
Relationship quality	2.305	2.837	< 0.000	2.324	2.397	-5.0	0.473
Number of children	2.963	2.680	< 0.000	2.960	2.950	0.7	0.869
Educational attainment							
Less than high school	0.242	0.201	0.056	0.241	0.247	-1.5	0.829

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Appendix Table 2 (continued)

	Unmatched mean			Matched mean			
	$E(X)   d = 1$	$E(X)   d = 0$	$p$	$E(X)   d = 1$	$E(X)   d = 0$	Bias	$p$
High school diploma or GED	0.225	0.175	0.017	0.226	0.214	2.9	0.700
More than high school	0.533	0.624	0.001	0.534	0.539	-1.1	0.858
Employment	0.604	0.646	0.097	0.593	0.586	1.4	0.834
Income-to-poverty ratio	1.475	2.171	< 0.000	1.433	1.444	-0.5	0.851
Material hardship	2.039	1.374	< 0.000	1.994	1.949	2.4	0.753
Depression	0.235	0.156	< 0.000	0.239	0.240	-0.3	0.871
Parenting stress	2.241	2.007	< 0.000	2.255	2.237	2.6	0.726
Heavy drinking	0.144	0.076	< 0.000	0.149	0.151	-0.7	0.851
Illicit drug use	0.078	0.056	0.080	0.074	0.073	0.5	0.900
Neighborhood disadvantage	0.128	-0.018	0.007	0.135	0.131	0.5	0.895
Percent white in neighborhood	0.340	0.377	0.033	33.686	34.159	-1.5	0.826
Percent Black in neighborhood	0.385	0.348	0.050	38.974	39.045	-0.2	0.882
Percent Hispanic in neighborhood	0.212	0.202	0.467	21.161	20.560	2.4	0.744
Neighborhood social control	3.198	3.208	0.826	3.168	3.166	0.3	0.880
Neighborhood social cohesion	2.719	2.778	0.023	2.709	2.715	-1.3	0.843
Gang activity in neighborhood	1.793	1.662	0.007	1.811	1.807	0.4	0.914
Fear of violence in neighborhood	0.222	0.184	0.067	0.232	0.238	-1.5	0.822
Witness violence in neighborhood	0.323	0.221	< 0.000	0.319	0.316	0.7	0.860
Cognitive ability	6.673	6.847	0.224	6.680	6.635	1.8	0.792
Impulsivity	2.135	1.996	< 0.000	2.116	2.108	1.2	0.861
Ever stopped by police	0.225	0.198	0.008	0.255	0.260	-1.2	0.849
Ever incarcerated	0.131	0.065	< 0.000	0.130	0.134	-1.3	0.827
<i>Father characteristics</i>							
<i>Race/ethnicity</i>							
White (non-Hispanic)	0.119	0.195	< 0.000	0.119	0.120	-0.3	0.901
Black (non-Hispanic)	0.657	0.511	< 0.000	0.657	0.647	2.0	0.779
Hispanic	0.187	0.256	0.003	0.187	0.197	-2.3	0.734
Other race (non-Hispanic)	0.038	0.038	0.974	0.037	0.036	0.7	0.900
Foreign-born	0.078	0.164	< 0.000	0.077	0.081	-1.1	0.844
Age	35.128	37.106	< 0.000	35.067	35.079	-0.2	0.886
Lived with both biological parents	0.366	0.463	< 0.000	0.365	0.373	-1.5	0.811
Repartnered	0.023	0.028	0.518	0.029	0.028	0.5	0.885
Relationship quality	2.656	3.256	< 0.000	2.787	2.826	-2.8	0.695
Number of children	1.096	0.868	0.003	1.261	1.259	0.1	0.849
<i>Educational attainment</i>							
Less than high school	0.341	0.247	< 0.000	0.344	0.332	2.6	0.733
High school diploma or GED	0.303	0.296	0.787	0.306	0.307	-0.3	0.924
More than high school	0.356	0.456	< 0.000	0.350	0.360	-2.1	0.764
Employment	0.576	0.723	< 0.000	0.576	0.581	-1.1	0.814
Income-to-poverty ratio	1.944	2.734	< 0.000	1.842	1.863	-0.8	0.861
Material hardship	1.942	1.364	< 0.000	1.844	1.797	2.3	0.734
Depression	0.255	0.157	< 0.000	0.229	0.225	0.9	0.795
Parenting stress	2.061	1.885	< 0.000	2.080	2.057	3.2	0.664
Heavy drinking	0.283	0.277	0.823	0.308	0.306	0.4	0.817
Illicit drug use	0.225	0.128	< 0.000	0.225	0.225	0.1	0.861
Neighborhood disadvantage	0.024	-0.031	0.296	0.132	0.143	-1.1	0.810
Percent white in neighborhood	0.351	0.372	0.210	31.108	31.347	-0.8	0.830
Percent Black in neighborhood	0.392	0.359	0.084	41.459	41.479	0.0	0.857
Percent Hispanic in neighborhood	0.192	0.200	0.596	21.131	20.797	1.3	0.844
Cognitive ability	6.539	6.429	0.452	6.432	6.448	-0.6	0.890
Impulsivity	2.037	1.981	0.113	2.042	2.042	0.0	0.907
Ever stopped by police	0.674	0.580	< 0.000	0.697	0.683	2.9	0.683
Ever incarcerated	0.705	0.459	< 0.000	0.706	0.689	3.5	0.613
<i>Youth characteristics</i>							
<i>Male</i>							
Age	15.815	15.543	< 0.000	15.809	15.795	1.9	0.781
Born low birth weight	0.098	0.092	0.654	0.097	0.096	0.3	0.890
Delinquency	1.908	1.118	< 0.000	1.935	1.923	0.6	0.838
Impulsivity	2.690	2.421	< 0.000	2.685	2.681	0.5	0.900

Notes:  $E(X) | d = 1$  indicates means for treatment group (mothers of youth experiencing a police stop).  $E(X) | d = 0$  indicates means for control group (mothers of youth not experiencing a police stop). Post-match estimates based on kernel matching.

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