

Major Traffic Safety Reform and Road Traffic Injuries among Low-Income New York Residents, 2009-2021

Kacie L. Dragan, PhD, MPH

The Dartmouth Institute
Harvard University GSAS
NYU Wagner

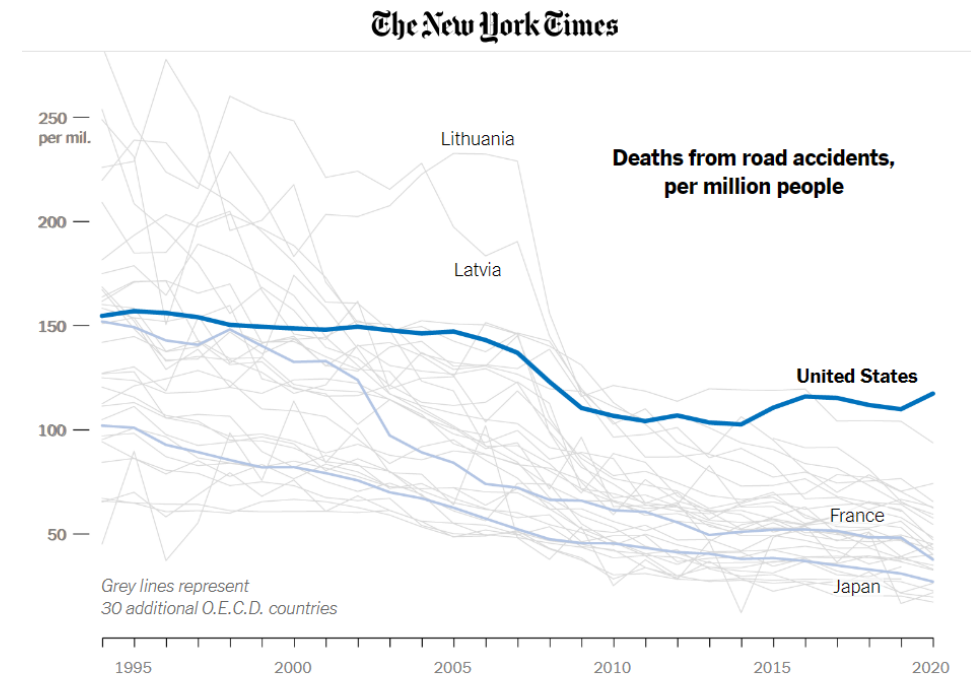
PREVIEW OF FINDINGS

- Can non-targeted transportation safety reforms (“Vision Zero”) reduce injuries among low-income New Yorkers?
- Empirical problem: many competing trends in traffic safety (increased recklessness, trends in car design, Citibike, Uber/Lyft)
- Using nearby counties as comparators in a **difference-in-differences** analysis, **we estimate that Vision Zero reduced injuries by 20-30%**, with greater reductions among Black New Yorkers (30-50%)
- The program’s impact appears to have been undone by the pandemic, potentially due to lower ticketing rates during 2020-2021

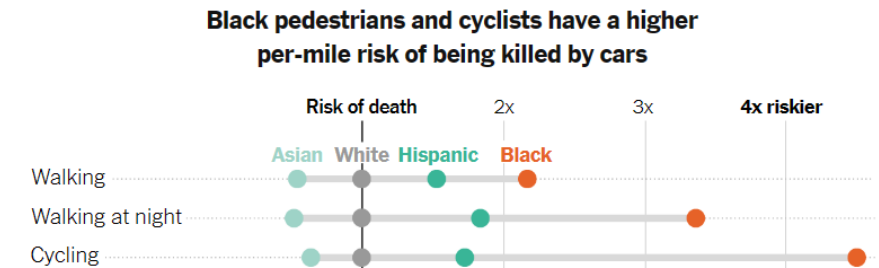


TRAFFIC INJURIES AND FATALITIES IN THE US

- The causes of rises and falls in traffic-related injuries and deaths are complex
 - Traffic laws
 - Car design
 - Roadway design
 - Recessions / economy (changes in *who* is on the road)
 - Car-first culture
- 45K deaths/year, but 2.5-5M injuries/year
- 59 American cities have committed to “Vision Zero” policies as of 2023
- Black & Hispanic communities most at risk of traffic-related injuries and deaths



Source: Organization for Economic Cooperation and Development • The New York Times



Source: “Disparities in Activity and Traffic Fatalities by Race/Ethnicity” in The American Journal of Preventive Medicine.

"VISION ZERO" TRAFFIC POLICY



Plan commits to ramped up enforcement of speeding and failure to yield, borough-by-borough campaigns to redesign dangerous corridors, improving taxi safety

City will work with state leaders to reduce citywide speed limit and expand use of speed and red light enforcement cameras

Mayor de Blasio Releases 'Vision Zero' Action Plan, Launching Citywide Effort to Prevent Traffic Fatalities

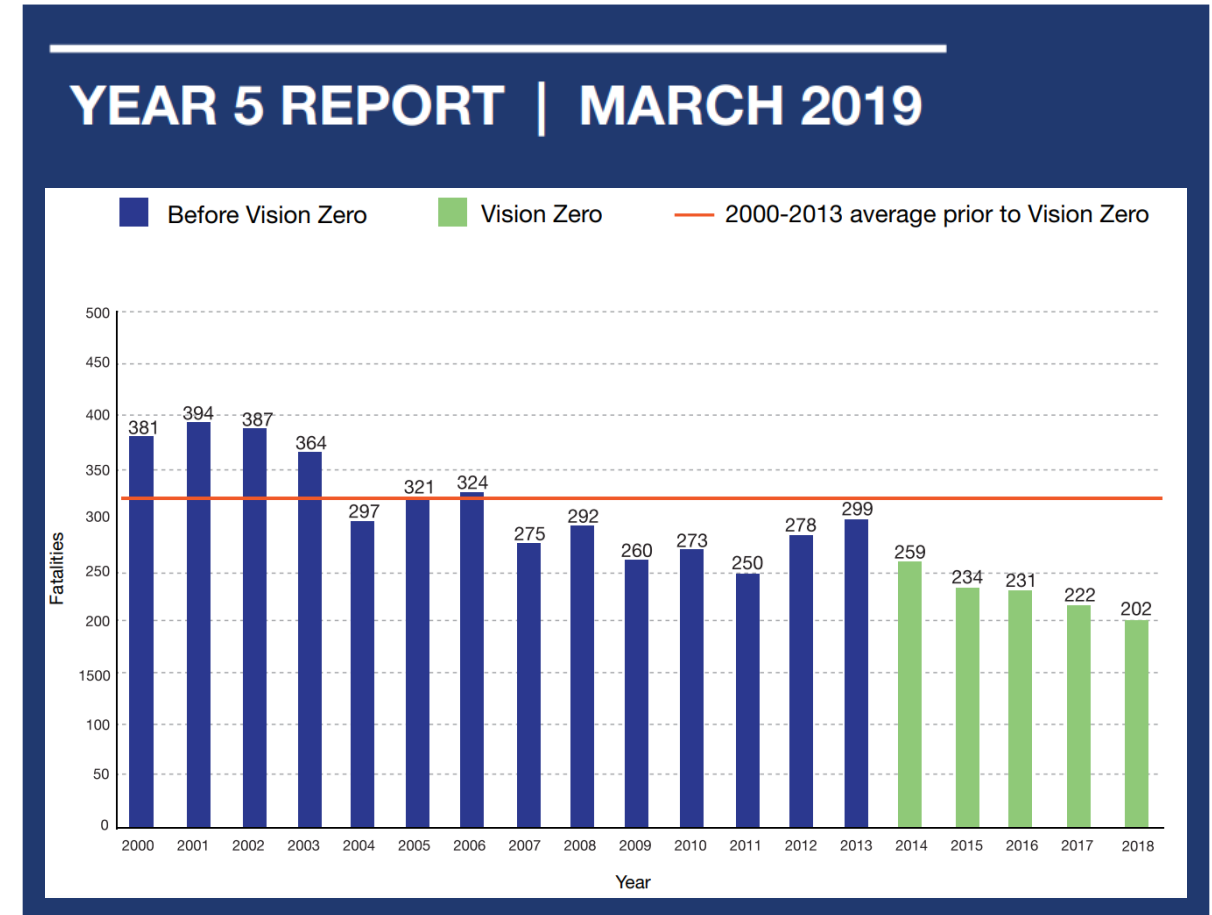
February 18, 2014

EN ESPAÑOL

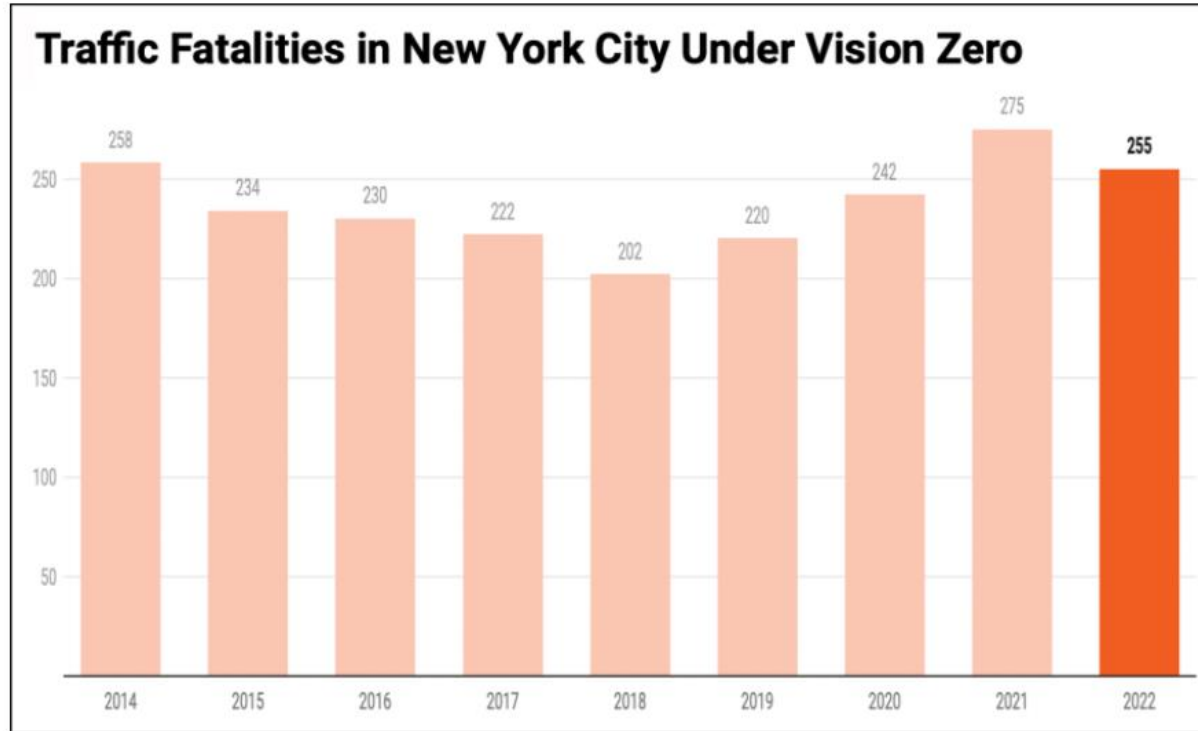


IMPACT ON POPULATION HEALTH WAS UNCLEAR

- Using simple time series data, fatalities were down by 30% in first 5 years (*NYC DOT*)
- Speeding in school zones was reduced by 50% (*NYC DOT*)
- Evaluation comparing streets exempted from speed limit policy to those subjected to it found 35% reduction in crashes (*Mammen et al., 2020*)



IMPACT ON POPULATION HEALTH WAS UNCLEAR



Click to enlarge. Chart: Transportation Alternatives

Bloomberg

Why 'Vision Zero' Hit a Wall

The traffic safety movement has saved lives across the European countries that adopted its principles. But in the U.S., deaths in participating cities have continued to rise.

By [David Zipper](#)

April 11, 2022 at 8:00 AM

FASTCOMPANY

PREMIUM CO.DESIGN TECH WORK LIFE NEWS IMPACT PODCASTS VIDEO INNOVATION

08-23-2016 | IMPACT

U.S. Cities Want To Totally End Traffic Deaths—But There Have Been A Few Speed Bumps

U.S. cities have eagerly embraced the Vision Zero plan for a safety-focused redesign of city streets. But reaching the final goal will require overcoming a host of issues, from NIMBYism and racial tensions to tight city budgets.

The New York Times

When a Walkable City Becomes a Death Trap

Vision Zero, the initiative to eliminate traffic fatalities, seems to have stalled, if the reoccurring tragedies on a single Brooklyn avenue are any proof.

EMPIRICAL PROBLEMS

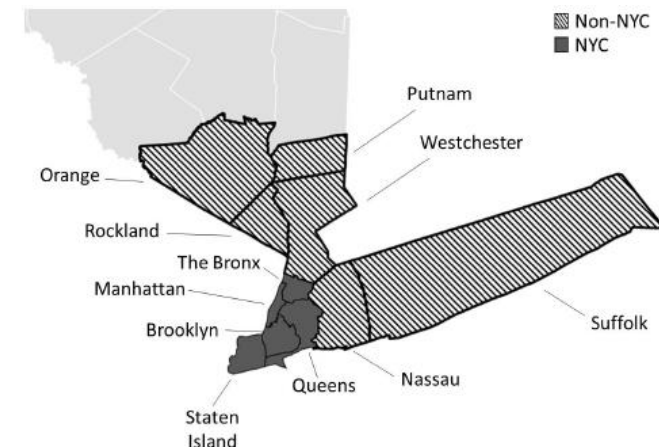
- No **comparison group** in prior evaluations
 - Are changes specific to NYC?
- **Concurrent changes** to transportation policy landscape
 - Citibike in 2013
 - Uber/Lyft in 2011-2014
 - Increase in share of larger cars/SUVs, but also more cars with integrated safety features
- Most data sets were unable to comment on outcomes **other than fatalities or crashes**
 - Even minor injuries can have long-run, expensive sequelae
- Would a **non-targeted policy** improve outcomes for those most at risk?
- What happened during the **pandemic**?

DATA & METHODS

- Individual-level Medicaid claims from 2009-2021 in NYS
- Data aggregated at the person-year level
- Difference in Differences model (Poisson distribution, offset for months enrolled (n_{it}), SEs clustered at ZIP level)

$$y_{it} = \exp(\alpha_0 + \alpha_1 NYC_{it} + \alpha_2 Post_t + \alpha_3 NYC_{it} * Post_t + \beta X_{it} + \log(n_{it}))$$

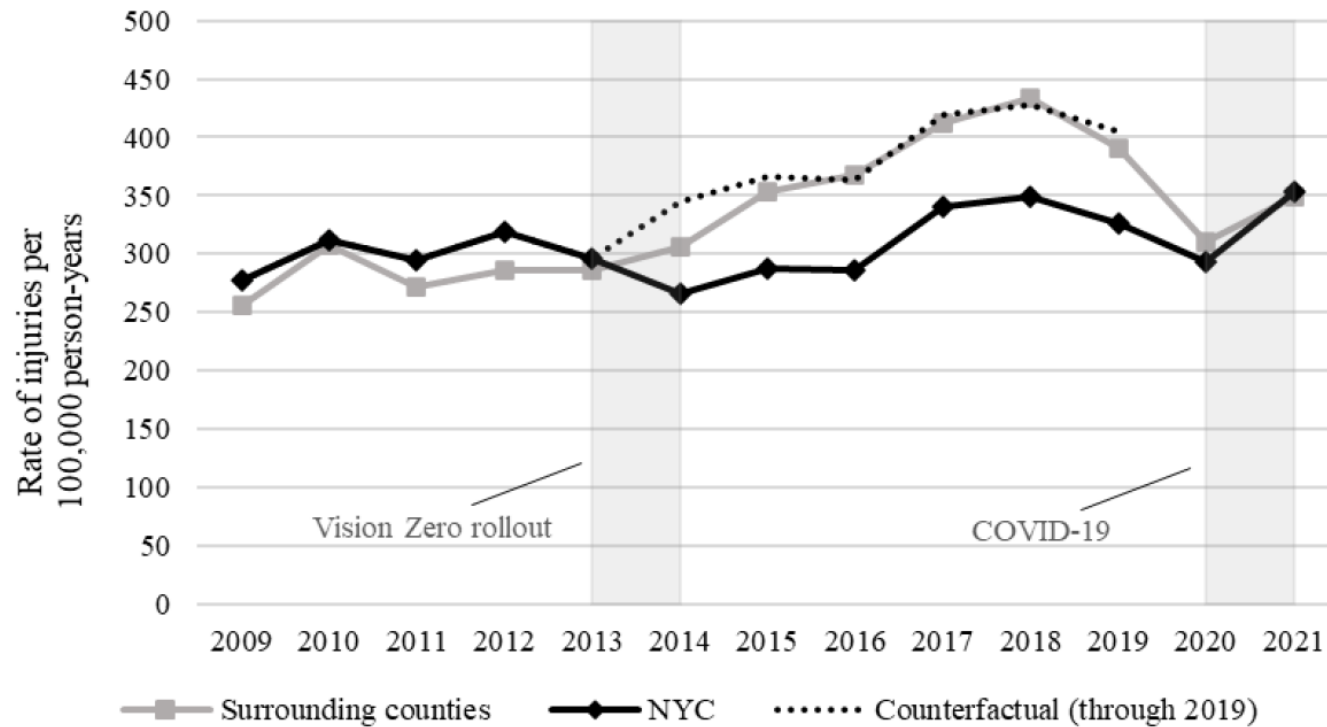
- Primary outcome: any Medicaid claim with a traffic-related injury diagnosis
 - Inpatient, Outpatient
 - 45-day washout period
- Secondary outcomes:
 - Traumatic brain injuries
 - Hospitalizations
 - Total spending in 12 months after event



[Descriptive stats](#)

RESULTS: ALL INJURIES

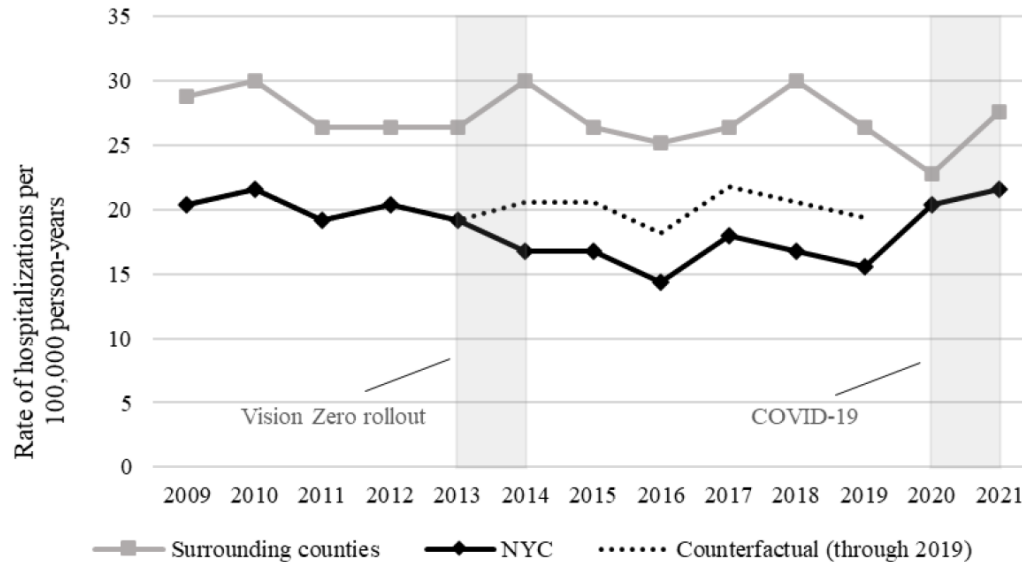
Figure 1: Adjusted traffic-related injury rate among Medicaid enrollees in NYC vs surrounding counties, 2009-2021



[Race subgroup results](#)

RESULTS: HOSPITALIZATIONS AND TBI

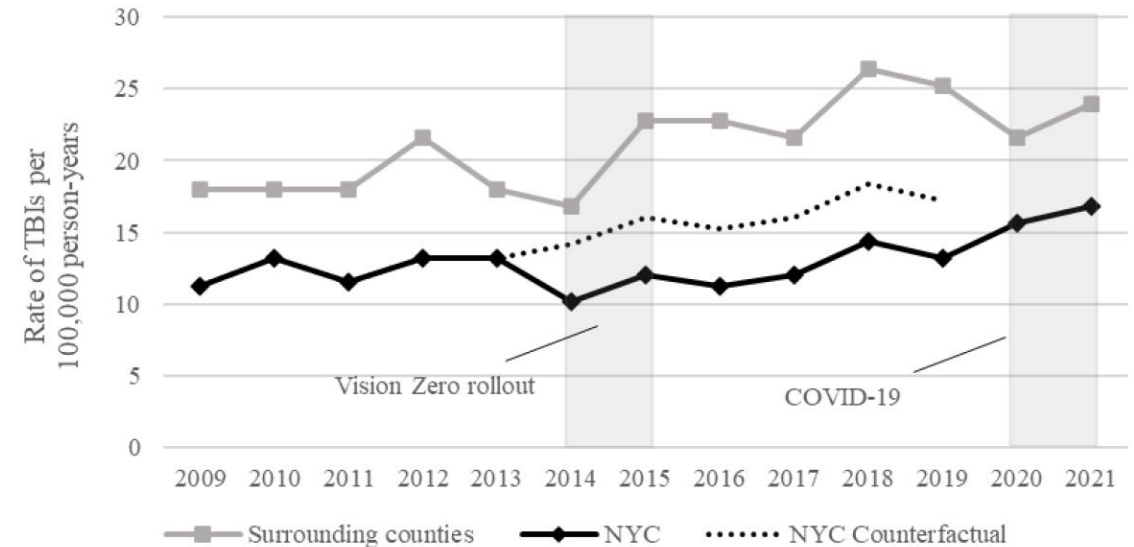
Figure 2: Adjusted traffic-related hospitalization rate among Medicaid enrollees in NYC vs surrounding counties, 2009-2021



↓ 3.8 hosps / 100K pys
(-6.1, -1.3)

~20% reduction

Adjusted traffic-related traumatic brain injury (TBI) rate among Medicaid enrollees in NYC vs surrounding counties, 2009-2021



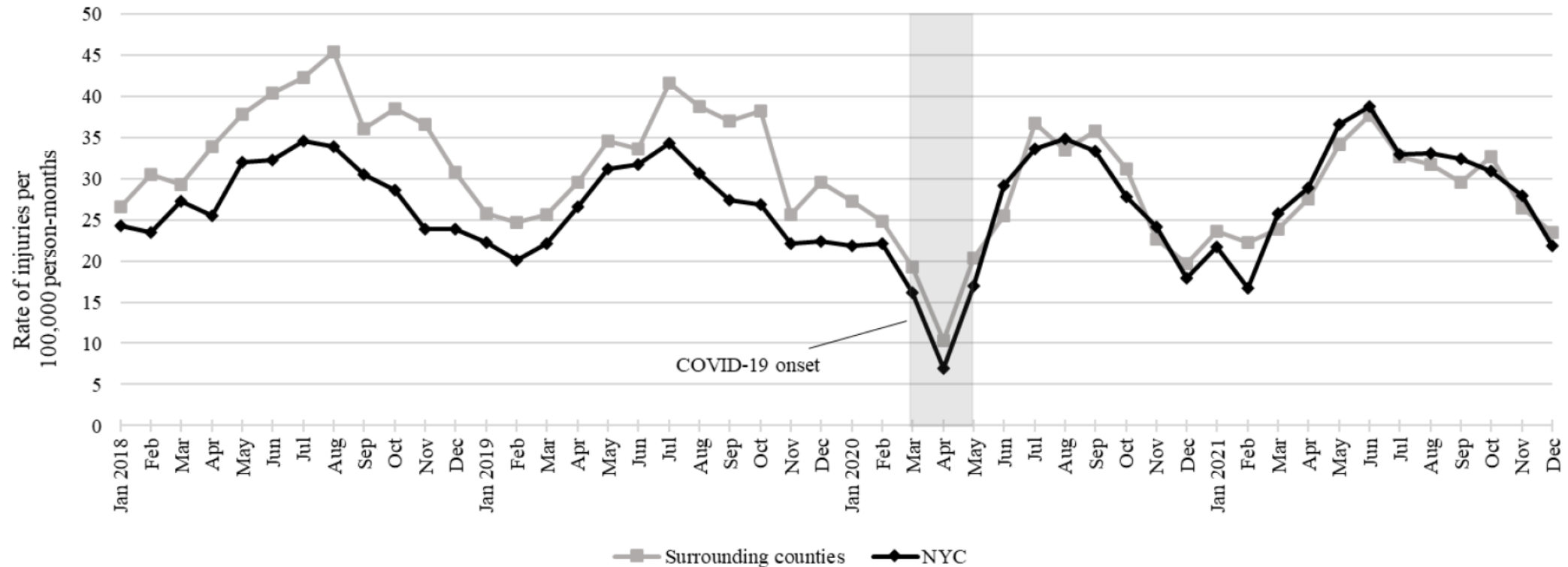
↓ 4.0 TBIs / 100K pys
(-6.3, -1.7)

~30% reduction

EXPLORING THE COVID-19 REVERSAL

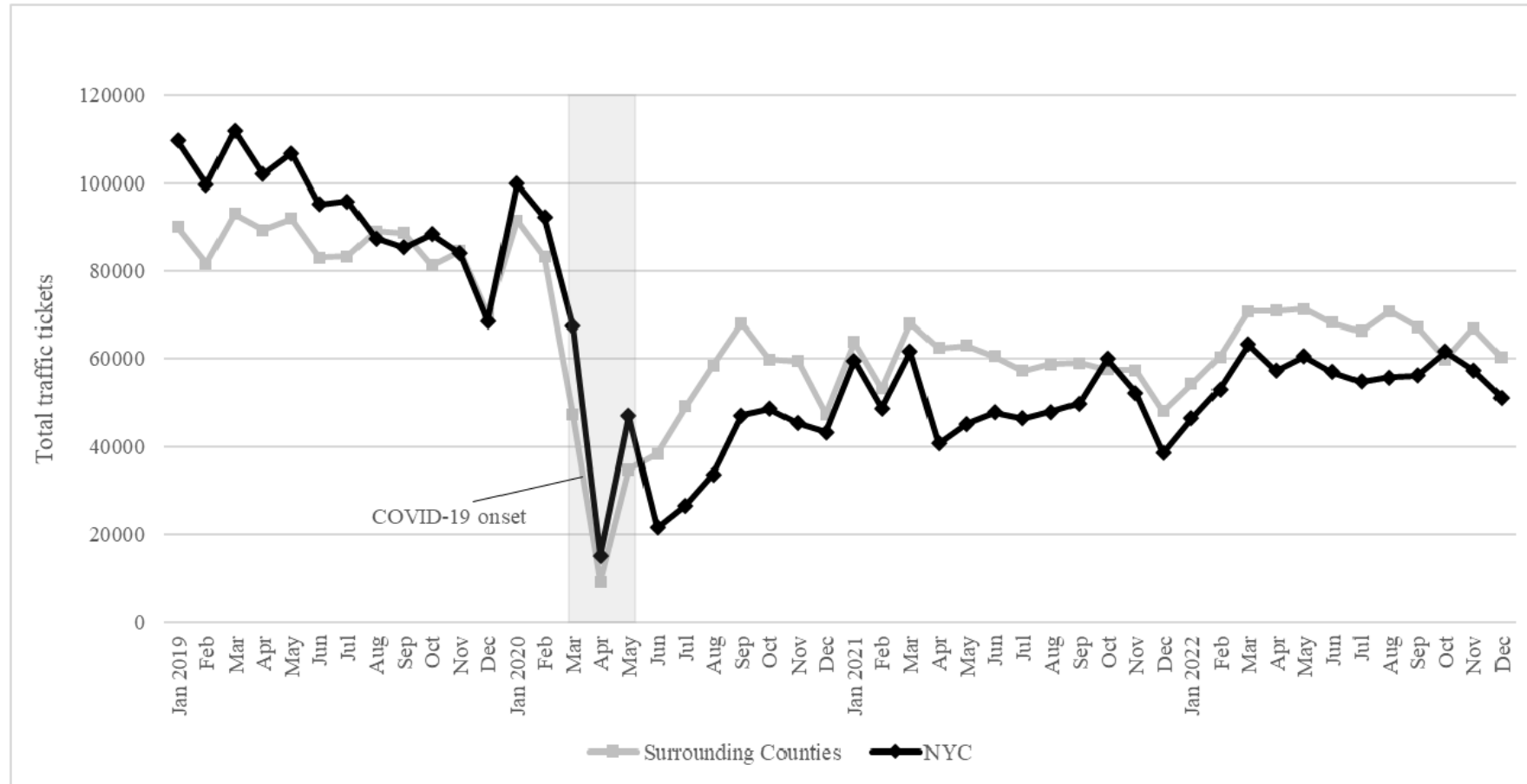
- Was the impact declining prior to COVID, or did the reversal happen exactly as COVID hit?

Figure 3: Adjusted monthly traffic-related hospitalization rate among Medicaid enrollees in NYC vs surrounding counties, 2018-2021



EXPLORING THE COVID-19 REVERSAL

Appendix Exhibit A7: Traffic Ticketing in NYC versus Surrounding Counties, 2019-2022



SENSITIVITY ANALYSES

Exhibit A8: DID marginal effect for robustness checks for the main (all-injury) outcome (effect through 2019 only – i.e., excluding pandemic period)

		Robustness checks Excluding pandemic period
	Original specification	Queens vs Long Island
DID Marginal Effect (95% CI)	-77.5 (-97.4, -57.6)	-89.8 (-116.9, -62.7)
Person-years	54,252,362	17,001,948

NEWS

Queens Boulevard of Death

SENSITIVITY ANALYSES

Exhibit A8: DID marginal effect for robustness checks for the main (all-injury) outcome (effect through 2019 only – i.e., excluding pandemic period)

		Robustness checks	
		Excluding pandemic period	
	Original specification	Queens vs Long Island	Bronx vs northern suburbs
DID Marginal Effect	-77.5	-89.8	-69.1
(95% CI)	(-97.4, -57.6)	(-116.9, -62.7)	(-99.3, -39.0)
Person-years	54,252,362	17,001,948	14,640,781

NEWS

Queens Boulevard of Death



SENSITIVITY ANALYSES

Exhibit A8: DID marginal effect for robustness checks for the main (all-injury) outcome (effect through 2019 only – i.e., excluding pandemic period)

	Original specification	Robustness checks Excluding pandemic period		
		Queens vs Long Island	Bronx vs northern suburbs	Incl rideshare control var
DID Marginal Effect	-77.5	-89.8	-69.1	-82.2
(95% CI)	(-97.4, -57.6)	(-116.9, -62.7)	(-99.3, -39.0)	(-106.5, -61.3)
Person-years	54,252,362	17,001,948	14,640,781	48,315,393

NEWS

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SENSITIVITY ANALYSES

Exhibit A8: DID marginal effect for robustness checks for the main (all-injury) outcome (effect through 2019 only – i.e., excluding pandemic period)

	Original specification	Robustness checks Excluding pandemic period			
		Queens vs Long Island	Bronx vs northern suburbs	Incl rideshare control var	Excl bikeshare areas
DID Marginal Effect	-77.5	-89.8	-69.1	-82.2	-80.2
(95% CI)	(-97.4, -57.6)	(-116.9, -62.7)	(-99.3, -39.0)	(-106.5, -61.3)	(-100.1, -60.2)
Person-years	54,252,362	17,001,948	14,640,781	48,315,393	51,806,985

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SENSITIVITY ANALYSES

Exhibit A8: DID marginal effect for robustness checks for the main (all-injury) outcome (effect through 2019 only – i.e., excluding pandemic period)

	Original specification	Robustness checks Excluding pandemic period				
		Queens vs Long Island	Bronx vs northern suburbs	Incl rideshare control var	Excl bikeshare areas	Continuously-enrolled for 10+ months
DID Marginal Effect (95% CI)	-77.5 (-97.4, -57.6)	-89.8 (-116.9, -62.7)	-69.1 (-99.3, -39.0)	-82.2 (-106.5, -61.3)	-80.2 (-100.1, -60.2)	-88.2 (-113.2, -63.2)
Person-years	54,252,362	17,001,948	14,640,781	48,315,393	51,806,985	39,990,462

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CONCLUSIONS & POLICY IMPLICATIONS

- Vision Zero was highly effective at reducing injuries among low-income New Yorkers
 - Cities considering Vision Zero policy packages should feel encouraged
 - A policy like this can help achieve health equity
 - Saved \$90M in Medicaid expenditures 2014-2018
 - Comparison group was essential
- The pandemic complicated implementation of some of Vision Zero's most important elements
 - Safer design matters, but it seems like enforcement and “road culture” do too
- Transportation policy is a quintessential example of cross-sector, multi-level collaboration for public health aims



QUESTIONS

