Do Public Art Murals Reduce Street Crime?

Assessing the Hyperlocal Impact of Murals on Urban Crime

Gaspard Tissandier[1]
Aayush Chitransh[2]
Roni Barak-Ventura[2]
Alejandro Gimenez-Santana[3]

[1]Stanford University
[2]New Jersey Institute of Technology (NJIT)
[3]Rutgers University

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Treat Place, Downtown Newark

A street fully commissioned to promote local artists.









"Four Corners Public Arts is a collaboration that will include sidewalk murals and the installation of murals on 10 building facades on Beaver Street and Treat Place in Downtown Newark. **The goal of this project is to revitalize blighted areas at these sites and create a public space that everyone can frequent and enjoy.** Local artists are invited to propose concepts based on Newark history."

Source: `https://downtownnewark.com/program/public-art/`

Photos: Reddit user u/charlesdv10

Introduction

Introduction

- **Definition:** a mural is a work of art painted or applied directly onto a wall, ceiling, or other permanent surface.
- **Interest:** street art went from underground artistic expression to urban development tool, but ambiguous effect of public art depending on the form it takes (Austin and Sanders, 2007; James and O'Boyle, 2019; Mao et al., 2026).
- **Study:** using a dataset of murals developed by Newark Arts, we study the effect of the recorded pieces on local crime.
- **Development:** murals are developed through collaborations between local government, companies, arts organizations, local artists, and communities.
- **Scope:** a mural enters the Newark Arts records if (1) it was organized, commissioned or facilitated (85%), or (2) it was made by a prominent artists collective in Newark ($\sim$ 15 %)

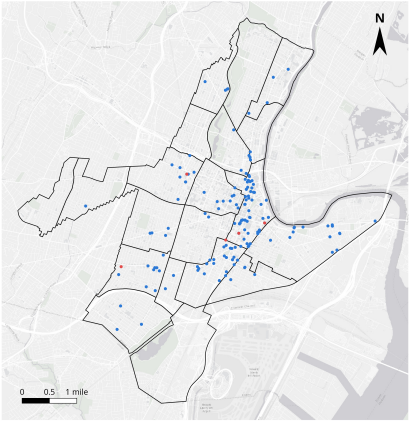


Hill Hall, 360 Dr Martin Luther King Jr Blvd, Newark, NJ 07103.

Source: `https://www.newarkarts.org/publicartmap/?mural=6334b726d082357f9ebe3426`

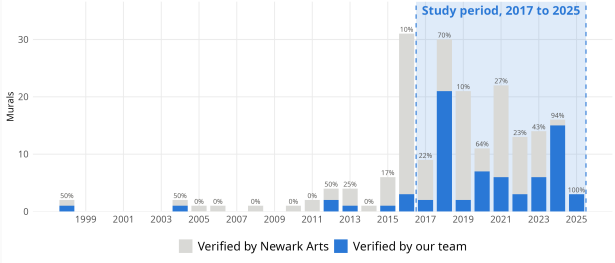
Introduction: Murals' Spatial and Temporal Distribution

Newark murals and neighbourhoods
203 murals, of which 6 undated



- **Dataset:** 203 murals, 197 included, 130 within the identification window (2018 to 2025).
- **Verification:** 121 murals already had a date; we verified 76 additional murals using various sources (news articles, social media posts, Google Maps).

Dated Newark murals by installation year
Murals installed up to 2025; labels: share verified by our team



Literature: Murals Related Work

Study	Setting, design & findings
Moritz (2026)	Similar study, set in Philadelphia, 424 street segments with murals. Staggered binary DiD, ETWFE (Wooldridge, 2025). **Decrease of 23% in nighttime property crime.**
Barton et al. (2024)	Effect of 111 murals in Baton Rouge, LA. Random intercept (block group level) Poisson regression. **Inconclusive.**
Jeong and Hu (2025)	Binary indicator of murals on a given block in Cincinnati, OH. Cross-sectional OLS regression. **Murals associated with more foot traffic.**

Literature: Mechanisms

Channel	Mechanism & Key References
Routine activity	Aesthetically pleasant neighborhoods attract more foot traffic, thus better informal social control. (Cohen and Felson, 1979; Jacobs, 1961)
CPTED	Murals signal maintenance and place ownership, essential elements of Crime Prevention Through Environmental Design. (Jeffery, 1971; Newman, 1972)
Collective efficacy	Murals, especially when created with residents, foster a shared positive image of the neighborhood, social trust, and willingness to intervene, which reduce violence. (Sampson et al., 1997; Tebes et al., 2015; Knoblauch, 2015)
Neuroaesthetics	Scenery complexity and aesthetic environment evoke implicit naturalness, reduces environmental stress, and can lowers violent behavior. (Chatterjee and Vartanian, 2014; Kravitz et al., 2011; Coburn et al., 2019; Agnew, 1992)
Legitimacy	Artistic investment signals fairly allocated resources; perceived institutional legitimacy lowers crime. (Sunshine and Tyler, 2003; McLean, 2020; Rawls, 1958)

Research Questions

Research question 1

Do new murals reduce crime in their direct vicinity?

Research question 2

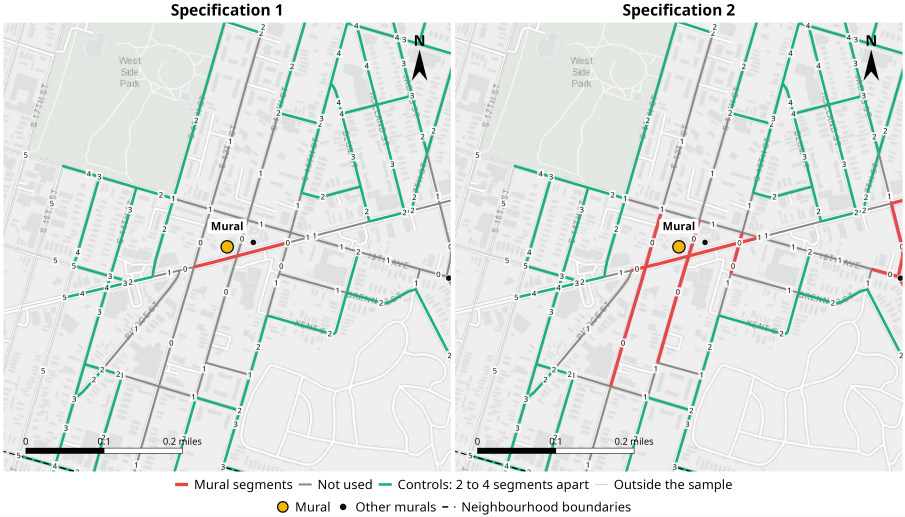
Do new murals reduce crime in their surrounding areas?

Setup and Data

Study Design: Local and Hyperlocal Effect of Murals

Treatment and control around one mural

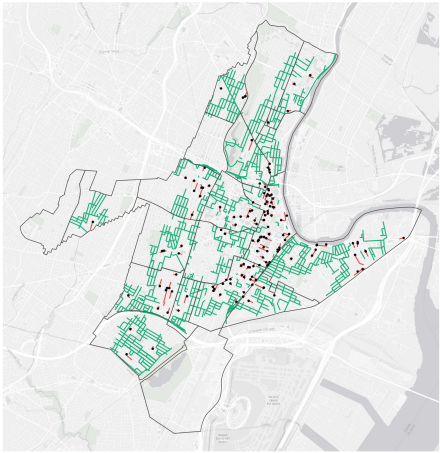
Control: 2 to 4 segments apart; numbers: segments apart



Study Design: Local and Hyperlocal Effect of Murals

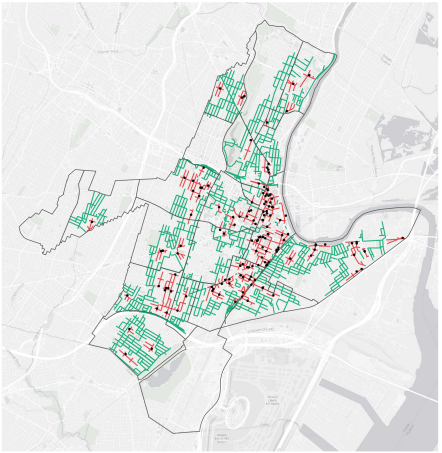
Street segments, Specification 1

Treatment: mural segments; Control: 2 to 4 segments apart



Street segments, Specification 2

Treatment: mural segments + segments 0 apart; Control: 2 to 4 segments apart

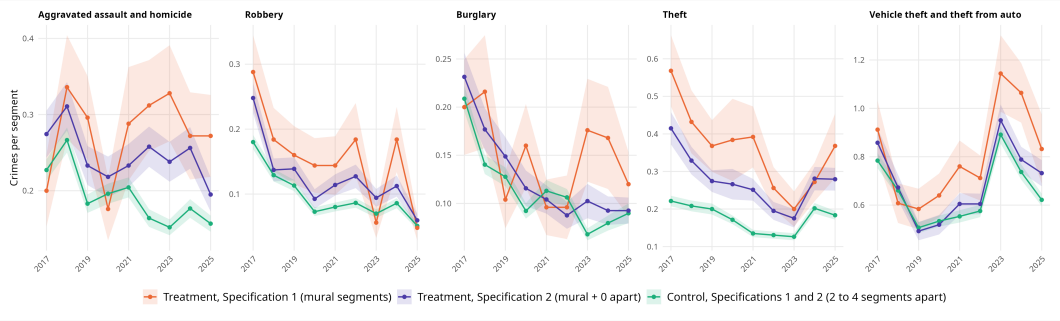


Data: Crime Types

Source: Newark Police Division, consolidated crime dataset 2017-2025

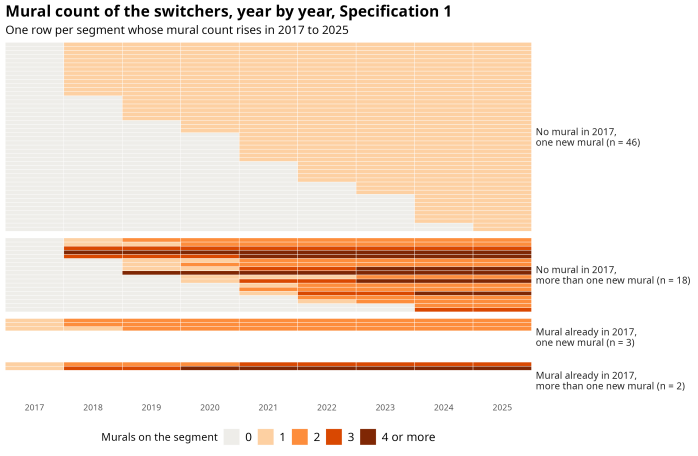
We estimate the marginal effect of murals on disaggregated crime types (FBI UCR categories):

- **Violent crime:** aggravated assault and homicide; robbery.
- **Property crime:** burglary; theft; motor vehicle theft and theft from auto.



Methodology

Identification Strategy: Murals Installation Schedule



Challenges, 2018 to 2025

- New murals on segments with a mural in 2017
- Several new murals on the same segment

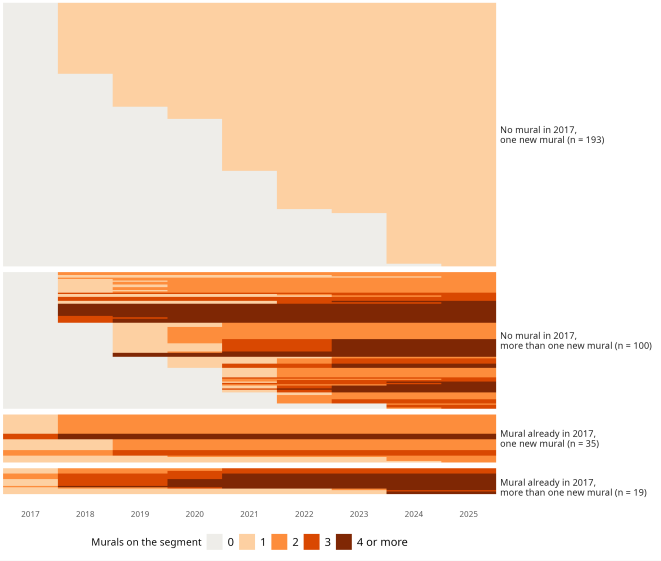
$\Rightarrow$ Not suited: binary staggered estimators (Callaway and Sant'Anna, 2021; Sun and Abraham, 2021; Wooldridge, 2025); continuous staggered estimator (Callaway et al., 2024)

Our approach

de Chaisemartin and D'Haultfœuille (2024):

- non-binary, staggered treatment
- positive start value, $D_{i,2017} > 0$
- several changes in treatment
- marginal effect of an additional mural, vs. units with the same number of murals in 2017

Identification Strategy: Murals Installation Schedule (Specification 2)



	Mural segments	Controls
Specification 1		
Switchers	69	
Stayers	56	
Total	125	2,060
Specification 2		
Switchers	347	
Stayers	258	
Total	605	2,060

Specification 2: mural segments and adjacent segments. Switchers: mural count rises in 2018 to 2025; stayers: unchanged.

Estimation Strategy: dCDH 2024

1. Target: actual vs. status quo effect

$F_i = \min\{t : D_{i,t} \neq D_{i,1}\}$: first period in which unit i's treatment changes.

$$\delta_{i,\ell} = E\left[Y_{i,F_i-1+\ell} - Y_{i,F_i-1+\ell}(\mathbf{D}_{i,1})\right]$$

Effect of the actual treatments vs. the status quo $\mathbf{D}_{i,1} = (D_{i,1}, \ldots, D_{i,1})$, ℓ periods after the first switch. Treatment may be non-binary and non-absorbing.

2. Design requirement

Monotonicity: $D_{i,t} \geq D_{i,1}\ \forall t$ **or** $D_{i,t} \leq D_{i,1}\ \forall t$. The treatment path never crosses its period one value. Each switcher needs not yet switchers with the same baseline treatment.

4. Key identifying assumptions

No anticipation: $Y_{i,t}(d_1, \ldots, d_T) = Y_{i,t}(d_1, \ldots, d_t)$; potential outcomes only depend on past and current treatments.

Parallel trends in the status quo outcome:
$E[\Delta Y_{i,t}(\mathbf{D}_{i,1})] = E[\Delta Y_{i',t}(\mathbf{D}_{i',1})]$ for all $t \geq 2$ and units i, i' with the same baseline $D_{i,1} = D_{i',1}$.

3. Estimator: switchers vs. not yet switchers

Unit-specific DID:

$$\text{DID}_{i,\ell} = Y_{i,F_i-1+\ell} - Y_{i,F_i-1} - \frac{1}{|C_{i,\ell}|}\sum_{i' \in C_{i,\ell}} \left(Y_{i',F_i-1+\ell} - Y_{i',F_i-1}\right)$$

$C_{i,\ell} = \{i' : D_{i',1} = D_{i,1},\ F_{i'} > F_i - 1 + \ell\}$: control group with the same baseline, not yet switched.

Aggregated DID:

$$\text{DID}_\ell = \frac{1}{N_\ell}\sum_{i:\, F_i-1+\ell \leq T_i} \text{DID}_{i,\ell}$$

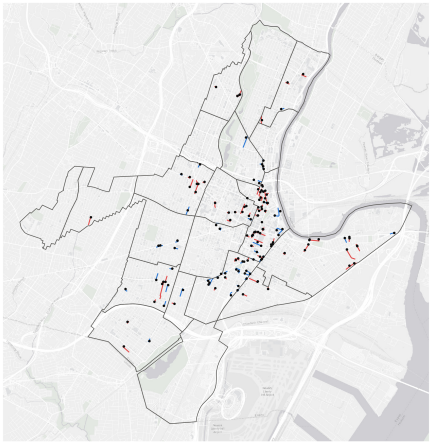
T_i is the last period in which some unit with the same baseline has not switched. Under the assumptions, $E[\text{DID}_\ell] = \frac{1}{N_\ell}\sum_i \delta_{i,\ell}$ (mural counts only rise, so every switch is upward).

de Chaisemartin and D'Haultfœuille (2024), Difference-in-Differences Estimators of Intertemporal Treatment Effects, *Review of Economics and Statistics*.

Estimation Strategy: Switchers and Stayers

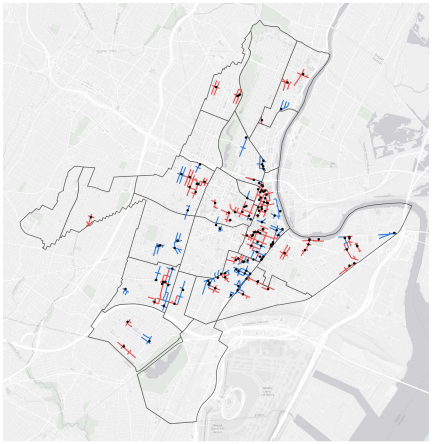
Street segments, Specification 1: switchers and stayers

Mural segments



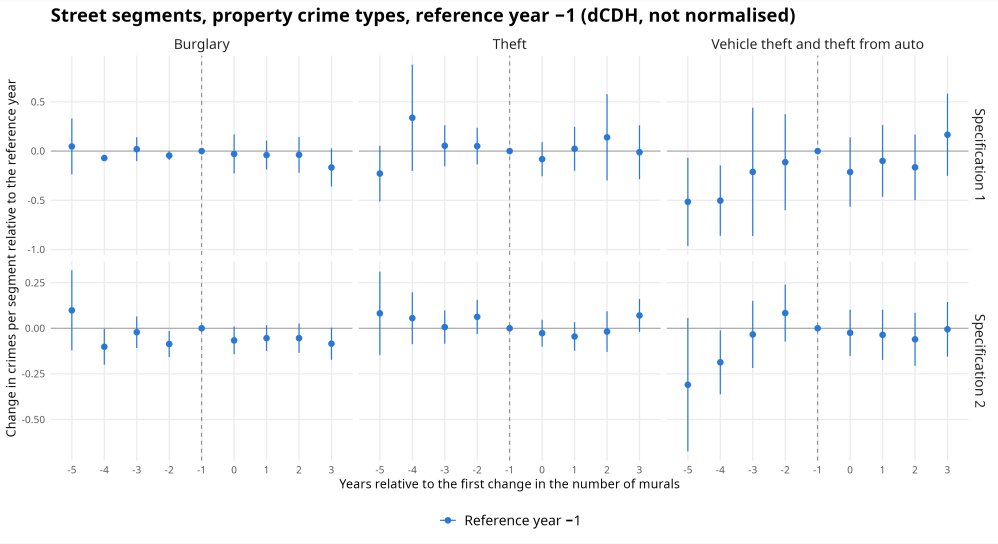
Street segments, Specification 2: switchers and stayers

Mural and adjacent segments

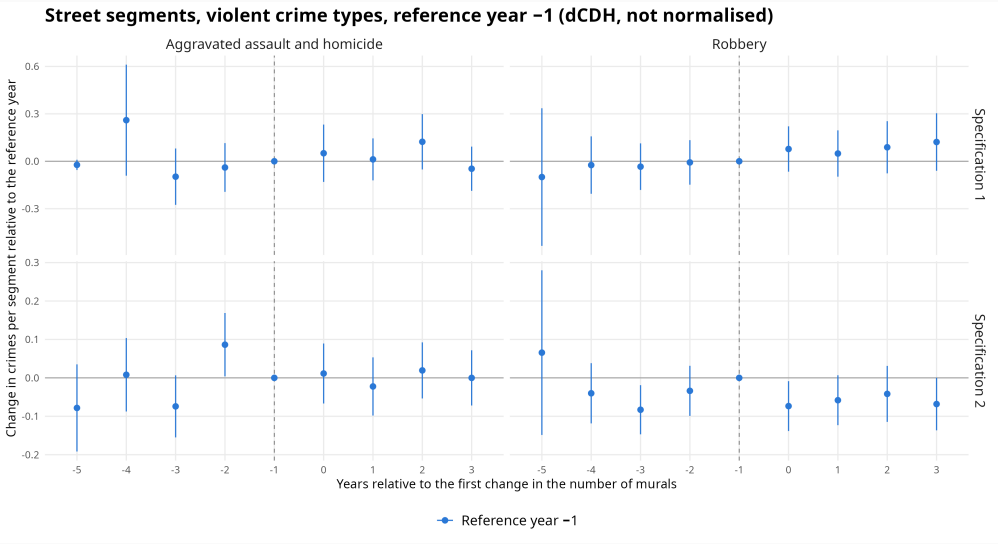


Results

Results: Property Crime Event Studies



Results: Violent Crime Event Studies



Results: Average Total Effect per Additional Mural

	Specification 1			Specification 2		
Crime type	ATT	Baseline	%	ATT	Baseline	%
Aggravated assault and homicide	0.023 (0.034)	0.152	+15%	0.001 (0.017)	0.215	0%
Robbery	0.053 (0.046)	0.117	+45%	−0.036** (0.018)	0.146	−24%**
Burglary	−0.041 (0.052)	0.095	−43%	−0.038* (0.021)	0.140	−27%*
Theft	0.009 (0.068)	0.416	+2%	−0.005 (0.021)	0.279	−2%
Vehicle theft and theft from auto	−0.056 (0.097)	0.610	−9%	−0.019 (0.033)	0.566	−3%
Switchers		69			347	

ATT: average total effect per additional mural, reference year −1; standard errors clustered by unit in parentheses. Baseline: switchers' mean crimes per segment over all their years before the first new mural. %: ATE divided by the baseline. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Conclusion

Conclusion

Main findings

- **Hyperlocal** (Specification 1): no significant effect of an additional mural on any crime type, with only 69 switchers and wide confidence intervals.
- **Local** (Specification 2): each additional mural is associated with 24% fewer robberies ($p = 0.047$) and 27% fewer burglaries ($p = 0.070$), relative to the switchers' pre-treatment levels; no effect on assault, theft or vehicle crime.

Limits

- Placement is not random: murals are more likely in urban development areas (partially addressed through the identification strategy).
- About 50 of the 130 new murals are dated from Google Maps: the installation date is an upper bound.

Next steps

- Ambient population as the denominator
- Longer post-installation period (end of 2026)
- Sensitivity of the Specification 2 results to violations of parallel trends
- Heterogeneous effects by the artworks' statements and the artists' bios

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Appendix

Who commissions Newark's murals?

	All dated murals		2018–2025	
Commissioner	*N*	%	*N*	%
Named in the Newark Arts data	124	63	87	67
Found by our review (confirmed)	20	10	6	5
Found by our review (probable)	11	6	7	5
Found online (map records, descriptions)	13	7	11	8
Commissioned	**168**	**85**	**111**	**85**
Independent street work	**21**	**11**	**16**	**12**
Unknown, unclear	8	4	3	2
Total	197	100	130	100

- About 1 mural in 9 is independent street work, mostly by a few graffiti artists (Getlostalot, RORSHACH, Fermin Mendoza).
- Independent works are painted directly on walls, more often outside downtown, and poorly documented.

Percentages rounded.

Who commissions and paints Newark's murals?

Commissioners

	All	2018–25
City of Newark	38	23
Four Corners Public Arts	28	28
Audible	20	20
Newark Downtown District	18	3
NJ Transit	7	0
Abington Walls	5	5
Rutgers–Newark	5	4
Clinton Hill Community Action	5	3
Project for Empty Space	4	4
Other organizations (25)	38	21
Independent street work	21	16
Unknown	8	3
Total	197	130

Artists

	All	2018–25
Layqa Nuna Yawar	15	7
RORSHACH	12	12
Getlostalot	9	7
GERALUZ	8	5
Eirini Linardaki	8	6
Malcolm Rolling	7	7
Hans Lundy	5	5
Noelle Lorraine Williams	5	5
Gaia	5	3
WERC	5	2

- Four programs (Four Corners, Audible, City of Newark, Abington Walls) account for about 58% of murals installed in 2018–2025.
- A small group of artists is behind many works; RORSHACH paints both commissioned and independent pieces.

Murals with several commissioners counted under the first named; works by several artists counted for each artist. Commissioners include our review (confirmed and probable) and online sources.

Appendix: Effect by Commissioning Body, Specification 1

Average total effect per additional mural, by commissioning body of the first new mural, reference year −1

	Corporate	Not corporate	Unknown
Aggravated assault and homicide	0.032	−0.027	0.079
	(0.052)	(0.047)	(0.079)
Robbery	−0.024	0.107	0.034
	(0.045)	(0.094)	(0.045)
Burglary	−0.019	−0.011	−0.055
	(0.087)	(0.095)	(0.085)
Theft	−0.083	0.122	−0.062
	(0.119)	(0.113)	(0.136)
Vehicle theft and theft from auto	0.052	0.012	−0.173
	(0.206)	(0.128)	(0.186)
Switcher segments	20	27	21

Each column compares switchers whose first new mural has this commissioning body with the same comparison units. The 1 switcher segment whose first new murals mix bodies is not shown. Standard errors clustered by unit in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Appendix: Effect by Commissioning Body, Specification 2

Average total effect per additional mural, by commissioning body of the first new mural, reference year −1

	Corporate	Not corporate	Unknown
Aggravated assault and homicide	0.011	0.020	−0.036
	(0.028)	(0.026)	(0.050)
Robbery	−0.044	−0.045	−0.065
	(0.031)	(0.028)	(0.041)
Burglary	−0.045	−0.024	−0.025
	(0.033)	(0.036)	(0.045)
Theft	−0.006	−0.012	−0.024
	(0.031)	(0.042)	(0.045)
Vehicle theft and theft from auto	−0.093	0.034	−0.056
	(0.065)	(0.055)	(0.080)
Switcher segments	96	128	110

Each column compares switchers whose first new mural has this commissioning body with the same comparison units. The 14 switcher segments whose first new murals mix bodies are not shown. Standard errors clustered by unit in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Appendix: Reverse Causality, First Mural

Logit of a segment's first mural in year t on past crime (coefficients)

	Specification 1				Specification 2			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Property crime, $t-1$	0.044	0.099	0.053	0.103	−0.051	0.008	−0.032	0.010
	(0.320)	(0.322)	(0.294)	(0.314)	(0.150)	(0.142)	(0.139)	(0.143)
Property crime, $t-2$	−0.044	0.003	−0.034	0.017	−0.168	−0.110	−0.154	−0.100
	(0.305)	(0.304)	(0.309)	(0.308)	(0.144)	(0.157)	(0.143)	(0.151)
Property crime, $t-3$	−0.008	−0.018	0.001	−0.013	−0.046	−0.095	−0.034	−0.084
	(0.200)	(0.201)	(0.207)	(0.203)	(0.167)	(0.148)	(0.165)	(0.138)
Violent crime, $t-1$	0.035	0.104	0.050	0.103	0.076	0.141**	0.084	0.142**
	(0.115)	(0.118)	(0.105)	(0.124)	(0.063)	(0.065)	(0.060)	(0.069)
Violent crime, $t-2$	0.060	0.112	0.086	0.118	0.213**	0.241***	0.229***	0.251***
	(0.191)	(0.147)	(0.172)	(0.153)	(0.086)	(0.075)	(0.078)	(0.073)
Violent crime, $t-3$	−0.268	−0.194	−0.238	−0.188	−0.298**	−0.262**	−0.280**	−0.263*
	(0.234)	(0.213)	(0.235)	(0.223)	(0.140)	(0.127)	(0.136)	(0.137)
Opportunity Zone			1.476**	1.227***			1.121**	1.032***
			(0.593)	(0.454)			(0.496)	(0.281)
Year and neighbourhood FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	12,511	7,147	12,511	7,147	12,904	9,424	12,904	9,424
Segment-years with a new mural	36	36	36	36	155	155	155	155

Years 2020 to 2025 (three lags). Crime levels standardised. Standard errors clustered by neighbourhood in parentheses. With fixed effects, neighbourhoods and years without any new mural drop out. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Appendix: Reverse Causality, Any New Mural

Logit of any new mural on a segment in year t on past crime (coefficients)

	Specification 1				Specification 2			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Property crime, $t-1$	0.047	0.103	0.040	0.104	0.000	0.050	0.007	0.054
	(0.167)	(0.197)	(0.145)	(0.193)	(0.060)	(0.074)	(0.045)	(0.072)
Property crime, $t-2$	−0.021	0.014	−0.020	0.029	−0.051	0.006	−0.049	0.009
	(0.147)	(0.157)	(0.154)	(0.163)	(0.069)	(0.065)	(0.068)	(0.063)
Property crime, $t-3$	0.156	0.148	0.154	0.147	0.112	0.065	0.114	0.068
	(0.098)	(0.111)	(0.108)	(0.114)	(0.077)	(0.083)	(0.075)	(0.080)
Violent crime, $t-1$	0.011	0.085	0.040	0.088	−0.033	0.025	−0.018	0.023
	(0.076)	(0.087)	(0.070)	(0.090)	(0.038)	(0.048)	(0.034)	(0.049)
Violent crime, $t-2$	0.001	0.069	0.054	0.077	0.081	0.133***	0.120**	0.144***
	(0.071)	(0.057)	(0.063)	(0.063)	(0.053)	(0.047)	(0.054)	(0.049)
Violent crime, $t-3$	−0.325**	−0.230	−0.275*	−0.225	−0.100*	−0.042	−0.057	−0.035
	(0.151)	(0.145)	(0.155)	(0.151)	(0.056)	(0.061)	(0.070)	(0.060)
Opportunity Zone			1.901***	1.410***			1.675***	1.234***
			(0.677)	(0.247)			(0.613)	(0.204)
Year and neighbourhood FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	13,134	7,644	13,134	7,644	16,014	11,946	16,014	11,946
Segment-years with a new mural	60	60	60	60	332	332	332	332

Years 2020 to 2025 (three lags). Crime levels standardised. Standard errors clustered by neighbourhood in parentheses. With fixed effects, neighbourhoods and years without any new mural drop out. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Appendix: Reverse Causality, Commissioning Body

Logit of the commissioning body on the crime of the mural's segment before installation (coefficients)

	Yearly panel		Quarterly panel	
	Body known (1)	Corporate (2)	Body known (1)	Corporate (2)
Property crime, $t-1$	0.164	0.023	0.584^{***}	-0.451
	(0.333)	(0.423)	(0.136)	(0.366)
Property crime, $t-2$	0.779^{***}	-0.435	-0.195	-0.269
	(0.284)	(0.285)	(0.260)	(0.286)
Property crime, $t-3$	-0.298	-0.773^{*}	-0.507^{**}	-0.360
	(0.332)	(0.401)	(0.223)	(0.471)
Violent crime, $t-1$	0.442	-0.042	-0.353	-0.176
	(0.578)	(0.287)	(0.221)	(0.476)
Violent crime, $t-2$	1.352^{***}	-0.073	0.337	0.639^{***}
	(0.467)	(0.172)	(0.347)	(0.197)
Violent crime, $t-3$	-1.095^{**}	0.589^{**}	-0.040	-0.547
	(0.522)	(0.267)	(0.262)	(0.334)
Sample	all murals	known body	all murals	known body
Observations	79	66	132	95
Outcome = 1	66	28	95	36

One row per dated mural; t is the installation year (yearly) or quarter (quarterly). Crime levels standardised within each sample. Standard errors clustered by neighbourhood in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.