ONLINE APPENDIX:
Peer Effects in Police Use of Force

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Contents

1 Data Appendix

To construct our treatment and outcome variables, we link administrative unit assignments from the Chicago Police Department to (i) tactical response reports created after a police officer uses force, (ii) arrest data generated after an officer arrests a suspect, and (iii) formal complaints against an officer.

This section describes the linking process and illustrates how we go from the original sample of officers, arrests, instances of force-use, and complaints to the sample we use for analysis. See Holz, Rivera and Ba (2022) for replication data and code.

1.1 Police Academy Cohorts

The administrative district assignments data ranges from before 2002 to December 2016. This data set contains the unit assignment of each officer who served at any point during this period. Officers in the Recruit Training Unit (Unit 44) are part of the police academy for the first six months in that unit and on a probationary period during the following twelve months with some variation. We construct the final sample of 3,491 officers from the full sample of 29,894 officers by doing the following:

1. We dropped 24,533 officers who graduated from the probationary period before January 2002 based on the unit assignment data. The lottery-based system was only introduced in the early 1990s, and records of test dates (used to impute cohort test groups) began in January 2002.

2. We impute the start month for 196 officers who graduate from the police academy within a year of January 2002 but begin the police academy before January 2002.

3. We drop 973 officers who never leave the Recruit Training Unit during the sample period. The dropped officers include 645 officers who begin at the academy in May 2015 or later and 328 officers who start before May 2015.

4. We drop 23 officers who start in the same month with three or fewer other officers because we believe these to be errors.

We restrict the sample to officers who enter one of 25 geographic districts after graduating from their probationary period. Therefore, we dropped non-standard units such as the canine unit or S.W.A.T. team, who move between geographic districts from day to day. We also drop officers who leave the police academy before six months or individuals who never

are registered as leaving the police academy in our sample. We cannot link these data to academy cohorts or the use of force data.

1.2 Unit Assignments

We then match officers to police districts using a monthly unit-assignment panel based on unit assignment data obtained from the Chicago Police Department. These assignments tell us the unit assignment of each officer throughout the sample period.

The geographic unit assignments begin roughly eighteen months after a police officer enrolls at the academy. We throw out any months where an officer works in a unit that does not have geographic boundaries. These units include the SWAT team, bomb squad, canine units, detectives, etc. Out of the remaining officers in the data set, 3,461 spend at least one month in a geographic unit, and ninety-one percent of days are spent in geographic units.

1.3 Tactical Response Reports

The primary data source is the Chicago Police Department's Tactical Response Reports (TRR). The CPD requires that officers fill out a TRR after instances of force-use under circumstances that appear in the CPD's use-of-force model. We use data from TRRs filed between January 8th, 2004 to October 31st, 2016. For every week in the data set, we use this data to measure whether officers use any force in a given week. We also use this data to measure the highest level of force the officers choose to use in that week if any. Finally, this data is used to measure whether officers or suspects sustain any injuries during their encounters.

A TRR must be filed after using force incidents involving subjects classified as active resisters or assailants. However, some exceptions apply when actively resisting suspects are fleeing, and the members are restricted to verbal commands and/or control holds in conjunction with handcuffing and searching techniques that do not result in the allegation of an injury. For subjects classified as cooperative or passive resisters, police must fill out a TRR if the subject is injured or alleges an injury. A TRR must also be filed for all incidents where a subject obstructs a police officer (Chicago Police Department 2016).

All TRRs require a supervisor's approval. The supervisor must notify the external oversight agency for incidents involving the use of deadly force or the discharge of a firearm,

Taser, pepper spray, or other chemical weapons. An external oversight agency must also be notified after an allegation of excessive force.

The variables in the dataset include the date of the incident, number of involved officers, injured officers, suspects' race and ethnicity, injured suspects, and the type of force used against the suspect. One limitation of our dataset is that it includes no records for incidents involving juvenile suspects or suspects of unknown ages.

We classify use of force incidents into six categories according to the highest type of force used in the incident. Our type of force hierarchy comes from the CPD use of force model. No force and minor force are the only types of force that are authorized for compliant or passively resistant subjects. As mentioned above, TRRs are not required for such incidents unless the subject is injured. We suspect that many incidents involving minor force or less that do not result in injuries are unreported. Police report injuries to police officers or suspects; the TRR asks explicitly whether the police officer injured the subject. The observed injury rates may reflect both reporting requirements and voluntary reporting.

1.4 Arrest Data

Next, we merge this data set with data on arrests made by every officer during this sample period. For every officer, this data set includes every arrest that the officer makes of suspects who are 18 years of age or older. The City of Chicago prevents the disclosure of information on the arrests of juvenile suspects. These suspects are, therefore, excluded from the analysis.

We restrict the sample of arrests to the same period as the TRRs (January 8th, 2004 to October 31st, 2016). Arrest dates are only available from 2010 to 2017. For all years in this study before 2010, we impute the arrest date as the earlier of the bond and release date. Between 2010 and 2017, the median number of days between the arrest date and the earliest of the bond and release date is one day (the average is 0.71 days).

For all of the sample's arrests, the arrest data contains a crime code that describes the reason for the arrest. These codes can designate an arrest for a violent crime, property crime, traffic violation, outstanding warrant, drug crime, municipal code violation, or other violation.

1.5 Complaint Data

The complaint data contains all recorded allegations of misconduct filed against officers from 2000 to 2016. The allegations can come from either another officer or a civilian. Each complaint contains information on the officer, complainant demographics, and the date of the incident.

We merge this data to the unit assignment data to measure whether an officer received a complaint about any incident during a given week. We are also able to measure the nature of the complaint. For more information about the complaint data, see Ba (2017).

2 Background on Lottery

At the time of our study, Chicago Police officer was a highly sought-after career, with thousands of applicants taking the initial entrance exam. The practice of determining which applicants may enter the police academy based on random lottery number began in the early 1990's as a part of Mayor Daley's attempt to meet racial hiring quotas. This proposal was met with significant uproar and criticism at the time. From one *Chicago Tribune* article at the time: "Daley came under fire again because new police recruits are being chosen by lottery, not by their performances on the department's entrance exam...The computer then blindly arranged [qualified candidates] in a hiring order that had nothing to do with test results, the officials said" Blau and Kass (1991). From this and other available information, the process is straightforward:

1. Applicants take the test.
2. Passing applicants are given a lottery number randomly generated by a computer.
3. Passing applicants, who are eligible to join the academy, are permitted to enter the academy in lottery order after passing psychological, medical, and physical examinations.

The random lottery process is now accepted by applicants and a common feature of CPD's FAQs on applying to the department, as the 2018 FAQs state: "All applicants who pass the exam are placed on an eligibility list, and that list is sorted in lottery order. You will be referred to the Chicago Police Department in lottery order as vacancies become available" (Department, 2018). The City of Chicago also uses lottery numbers for training to become a firefighter and EMT (CFD, 2014).

This practice is also noted in multiple news articles (Pritchard, 2013; NBC, 2013) and by the Chicago Inspector General (OIG, 2016). While the exact conditions for being drawn in have changed in recent years (after the 2013 test, 21 year-old's were eligible, and preference considerations were made for certain groups such as veterans), two features have remained constant for almost 30 years: lottery ordering and significantly more eligible applicants than spots in the CPD.

Unfortunately, which recruits belong to which cohorts cannot be obtained through the FOIA to the CPD. A request made in August of 2020 for: "A file containing the date of the test which each officer appointed between 2000 and 2020 took... A file containing the date at which each entrance exam's eligible officer list was retired." was not fulfilled due to excessive burden and noted that "... the Chicago Police Department simply may not compile or maintain in entirety or with the level of detail or sub-categorization you seek..." (FOIA P589445). Based on all available documentation and data, there is no reason to believe a list of eligible applicants is retired when a new test is issued. Rather, it appears to take many months, if not a year, for the first applicants to have their numbers called following a test. This means identifying which cohorts belong to which test with certainty for the breadth of our data is not feasible.

On average, 85% of test-takers pass the entrance exam and 20% of these enter the police academy, based on proxy test dates discussed in the main text.[1] We evaluate the balance of the lotteries by performing a multinomial logistic regression of start month group on the police officers' age, race, and sex. We then use a chi-squared test to determine whether any of the characteristics can predict entrance to a certain police academy cohort. There appears to be some imbalance in two of the nine test-cohorts. This imbalance would be concerning if we were explicitly looking at the effect of contextual effects in police force. However, since the empirical strategy uses a difference-in-differences design the imbalance in these two cohorts will not bias the treatment estimates.

2.1 Waiting List

Academy cohorts being constructed through a waiting list may raise concerns over identification of treatment effects, as discussed in de Chaisemartin and Behaghel (2020). However, their paper discusses the issues associated with treatment being assigned based on random-

[1]There is substantial heterogeneity in the portion of eligible people who enter the academy, ranging from 3% in 2013 to 64% in the first 2006 exam.

ized waiting lists, where demand for treatment is oversubscribed and treatment effects are estimated by comparing those who received treatment to those who did not. While the CPD academy assignment process is based on lottery numbering waitlists, with far more eligible applicants than spots available, the treatment effect analogous to those discussed in (de Chaisemartin and Behaghel, 2020) is the effect of becoming a Chicago Police Officer (e.g., comparing economic or social outcomes of applicants who entered the academy and those who did not).

In this paper, the population of interest is Chicago Police officers and the randomly assigned academy cohorts are known peer groups with whom injured officers have social ties but do not experience the same local crime shocks. All of our results are conditional on one being a CPD officer and our control group is not applicants to the department who never had their number drawn. While applying (de Chaisemartin and Behaghel, 2020) to a study of the effect of becoming a police officer would be appropriate, it is not applicable in our environment. Furthermore, the CPD does not provide any information on applicants who did not enter the academy, actual lottery numbers, or waitlists, so constructing a corrected estimator would not be possible.

3 Supplementary Tables

Table 1: Police Entrance Lotteries

Exam	Dates of Administration	Attended	Passed	Classes	Officers	P-Value
2002	1/12/2002	3,150	No info	16	268	.002
2003	11/22/2003	No	No info	4	24	.316
2004	11/20/2004	4,163	No info	7	317	.638
2005	2/18/2006; 2/19/2006	4,061	3,338	3	173	.712
2006-1	6/4/2006	1,508	1,255	2	139	.134
2006-2	8/6/2006	1,025	863	3	181	.002
2006-3	11/5/2006	1,795	1,487	14	806	.399
2010	12/11/2010 makeups: 3/12/2011; 6/11/2011; 9/25/2011; 12/3/2011; 6/2/2013; 12/1/2012; 3/9/2013 12/14/2013	8,621	7,689	22	1227	.771
2013	military makeups 6/28/2014; 12/7/2014; 6/13/2015; 12/6/2015	14,788	12,877	1	139	-

Note: The sample includes every officer who started at the police academy between January 2000 and December 2013. Cohorts who joined after December 13, but took the 2013 test are excluded because they do not have TRR data after their probationary period.

Table 2: Characteristics of All Officers Who Start at the Police Academy

	count	mean	sd	min	max
Officer Male	4429	0.77	0.42	0	1
Officer Black	4429	0.17	0.37	0	1
Officer White	4429	0.49	0.50	0	1
Officer Hispanic	4429	0.34	0.47	0	1
Officer Age	4429	28.8	4.39	21	42

Note: This table reports descriptive statistics for all officers who enter the police academy during our sample period. Age at test is proxied by the officer's age at the most recent police exam.

Table 3: Characteristics of Officers Who Enter Geographic Police Units

	count	mean	sd	min	max
Officer Male	3461	0.78	0.41	0	1
Officer Black	3461	0.17	0.37	0	1
Officer White	3461	0.49	0.50	0	1
Officer Hispanic	3461	0.34	0.47	0	1
Officer Age	3461	28.8	4.34	21	42

Note: Age is measured at the age of taking the entrance exam. Age at test is proxied by the officer's age at the most recent police exam.

Table 4: Covariance of Events/Outcomes and Characteristics

	(1) Officer Injured	(2) Force	(3) Injures Suspect	(4) Arrest	(5) Complaint
Any Officer Injured in Previous Week	0.00014	0.00235	0.00065	-0.08277	-0.00124
	(0.00028)	(0.00074)	(0.00041)	(0.00519)	(0.00075)
Member of Same Unit Injured in Previous Week	0.00009	0.00114	0.00018	-0.00005	-0.00050
	(0.00013)	(0.00038)	(0.00021)	(0.00212)	(0.00032)
Member of Same Cohort Officer Injured in Previous Week	-0.00013	0.00165	0.00047	0.00519	0.00094
	(0.00016)	(0.00047)	(0.00025)	(0.00241)	(0.00040)
Officer is Female	-0.00060	-0.01018	-0.00374	-0.11010	-0.00422
	(0.00013)	(0.00054)	(0.00020)	(0.00877)	(0.00050)
Officer is Black	-0.00113	-0.00522	-0.00145	-0.06434	-0.00032
	(0.00018)	(0.00080)	(0.00031)	(0.01101)	(0.00068)
Officer is Hispanic or Other	-0.00037	-0.00245	-0.00064	-0.00435	-0.00085
	(0.00016)	(0.00068)	(0.00028)	(0.00866)	(0.00052)
Officer Age at Test	-0.00008	-0.00055	-0.00019	-0.00811	-0.00040
	(0.00001)	(0.00006)	(0.00002)	(0.00087)	(0.00005)
Officer Tenure	-0.00001	-0.00008	-0.00003	-0.00154	-0.00005
	(0.00000)	(0.00001)	(0.00000)	(0.00010)	(0.00001)
Portion of Cohort that is Male	-0.00102	0.00062	-0.00053	-0.16737	-0.00939
	(0.00089)	(0.00378)	(0.00154)	(0.05524)	(0.00336)
Portion of Cohort that is Black	-0.00002	0.00368	-0.00082	0.01120	0.00132
	(0.00094)	(0.00405)	(0.00156)	(0.05385)	(0.00323)
Portion of Cohort that is Hispanic or Other	-0.00081	0.00072	-0.00003	-0.08618	-0.00468
	(0.00080)	(0.00356)	(0.00139)	(0.04873)	(0.00287)
Average Age of Cohort	0.00006	-0.00023	0.00001	0.00856	0.00054
	(0.00005)	(0.00023)	(0.00009)	(0.00306)	(0.00017)
Portion of Unit that is Male	0.00407	0.04753	0.01375	0.40126	0.01330
	(0.00180)	(0.00724)	(0.00285)	(0.10251)	(0.00536)
Portion of Unit that is Black	0.00215	0.01320	0.00423	0.16204	0.02058
	(0.00078)	(0.00303)	(0.00127)	(0.03798)	(0.00252)
Portion of Unit that is Hispanic or Other	0.00082	-0.00721	0.00018	-0.01956	0.01158
	(0.00105)	(0.00458)	(0.00183)	(0.05875)	(0.00348)
Average Age of Unit	-0.00007	-0.00032	-0.00013	-0.00223	-0.00141
	(0.00007)	(0.00032)	(0.00013)	(0.00464)	(0.00024)
Constant	0.00435	0.02371	0.00848	0.55632	0.05775
	(0.00361)	(0.01544)	(0.00617)	(0.22962)	(0.01165)
R-squared	0.000	0.004	0.002	0.057	0.002
Observations	986,111	986,111	986,111	953,567	986,111

Note: This table displays regression coefficient estimates from regressions of various outcomes on officer injuries and characteristics at the officer-week level. Lagged any officer, unit-member, and cohort-member injured are indicators representing whether any other officer in the police force, same unit, or same academy cohort were injured in the previous week. Characteristics of cohorts and units are calculated as leave-out means. Standard errors are clustered on the individual level.

Table 5: Main Results OLS Specification

Former Peer Injury × Relative Time	(1) Force	(2) Injure Suspect	(3) Arrest	(4) Complaint	(5) Officer Injured	(6) Force
-6 or earlier	0.00047	0.00024	0.00267	-0.00069	0.00023	0.00098
	(0.00047)	(0.00026)	(0.00156)	(0.00041)	(0.00015)	(0.00078)
-5	0.00040	0.00039	0.00134	0.00052	0.00046	0.00049
	(0.00050)	(0.00034)	(0.00221)	(0.00038)	(0.00017)	(0.00068)
-4	0.00004	-0.00054	0.00256	-0.00003	-0.00019	0.00080
	(0.00037)	(0.00027)	(0.00145)	(0.00034)	(0.00014)	(0.00057)
-3	0.00015	0.00010	0.00218	-0.00009	-0.00010	0.00005
	(0.00051)	(0.00030)	(0.00190)	(0.00033)	(0.00020)	(0.00068)
-2	-0.00027	-0.00006	0.00090	0.00059	0.00019	-0.00016
	(0.00045)	(0.00024)	(0.00150)	(0.00046)	(0.00021)	(0.00076)
-1	-	-	-	-	-	-
0	0.00069	0.00058	0.00497	0.00011	0.00009	0.00047
	(0.00049)	(0.00026)	(0.00144)	(0.00047)	(0.00021)	(0.00084)
+1	0.00116	0.00050	0.00259	0.00082	-0.00019	0.00265
	(0.00057)	(0.00032)	(0.00219)	(0.00038)	(0.00017)	(0.00090)
+2	0.00026	0.00041	0.00295	-0.00037	0.00000	0.00130
	(0.00037)	(0.00027)	(0.00180)	(0.00047)	(0.00019)	(0.00070)
+3	0.00018	0.00024	0.00184	0.00080	0.00003	-0.00036
	(0.00046)	(0.00027)	(0.00164)	(0.00049)	(0.00019)	(0.00053)
+4	0.00016	-0.00014	0.00397	0.00076	-0.00011	0.00022
	(0.00050)	(0.00024)	(0.00204)	(0.00042)	(0.00015)	(0.00065)
+5	0.00101	0.00032	0.00133	0.00083	0.00038	0.00048
	(0.00055)	(0.00039)	(0.00167)	(0.00038)	(0.00016)	(0.00072)
+6 or later	0.00041	0.00101	0.04608	0.00151	0.00071	0.00132
	(0.00121)	(0.00055)	(0.01085)	(0.00096)	(0.00037)	(0.00088)
Constant	0.01683	0.00423	0.33539	0.01157	0.00157	0.01624
	(0.00115)	(0.00053)	(0.01042)	(0.00095)	(0.00035)	(0.00077)
Model	OLS	OLS	OLS	OLS	OLS	OLS
Peer Definition	Former Peer	Former Peer	Former Peer	Former Peer	Former Peer	Same-Race Former Peer
Unit-Week Fixed Effects	YES	YES	YES	YES	YES	YES
Individual Fixed Effects	YES	YES	YES	YES	YES	YES
Pre-trend Test	0.804	0.085	0.423	0.412	0.085	0.363
Observations	944,356	944,356	914,061	944,356	944,356	944,356

Note: Columns (1) through (6) display coefficients from estimates of Equation 3 where the outcome variable is an indicator representing whether the officer used a specific type of force. We cluster standard errors on the police academy cohort level (G = 81). The pre-trend test row presents the p-value from an F-test for which the null hypothesis is that the coefficients of the lead periods (-6 or earlier to -2) in the event-study specification are simultaneously equal to zero.

Table 6: Main Results Poisson Specification

Former Peer Injury × Relative Time	(1) Force	(2) Injure Suspect	(3) Arrest	(4) Complaint	(5) Officer Injured	(6) Force
-6 or earlier	0.01103	0.02600	0.00363	-0.04630	0.08210	0.03019
	(0.02240)	(0.04210)	(0.00382)	(0.02833)	(0.05863)	(0.03215)
-5	0.00665	0.05046	0.00081	0.02757	0.15662	0.00946
	(0.02443)	(0.04724)	(0.00545)	(0.02547)	(0.06044)	(0.02880)
-4	-0.00508	-0.09331	0.00317	-0.00408	-0.08041	0.02503
	(0.01937)	(0.04516)	(0.00360)	(0.02274)	(0.05082)	(0.02686)
-3	0.00337	0.00420	0.00146	-0.00868	-0.04439	-0.00769
	(0.02445)	(0.04645)	(0.00466)	(0.02119)	(0.07918)	(0.03072)
-2	-0.02234	-0.02775	-0.00089	0.03692	0.08421	-0.02097
	(0.02460)	(0.04123)	(0.00383)	(0.03002)	(0.08349)	(0.03459)
-1	-	-	-	-	-	-
0	0.02787	0.07892	0.00888	0.00270	0.04087	0.01220
	(0.02252)	(0.03823)	(0.00349)	(0.03131)	(0.07575)	(0.03470)
+1	0.05315	0.09058	0.00229	0.05128	-0.07105	0.11209
	(0.02635)	(0.04609)	(0.00529)	(0.02535)	(0.07194)	(0.03621)
+2	0.00823	0.06416	0.00289	-0.02958	-0.01143	0.04974
	(0.01869)	(0.03968)	(0.00439)	(0.02990)	(0.07361)	(0.03178)
+3	0.00002	0.02829	0.00126	0.04180	0.00414	-0.02150
	(0.02399)	(0.04428)	(0.00395)	(0.03174)	(0.08026)	(0.02454)
+4	0.01056	-0.02535	0.00624	0.04858	-0.07655	0.00685
	(0.02646)	(0.04249)	(0.00470)	(0.02759)	(0.06125)	(0.03077)
+5	0.04251	0.05445	0.00025	0.05479	0.14261	0.00642
	(0.02620)	(0.05475)	(0.00403)	(0.02623)	(0.05426)	(0.03297)
+6 or later	0.10659	0.25887	0.13277	0.11366	0.28429	0.12059
	(0.05147)	(0.08216)	(0.02525)	(0.06128)	(0.12612)	(0.03688)
Constant	-3.11795	-3.45868	-0.86579	-3.23269	-3.42101	-3.11464
	(0.04880)	(0.07898)	(0.02422)	(0.06018)	(0.12313)	(0.03199)
Model	Poisson	Poisson	Poisson	Poisson	Poisson	Poisson
Peer Definition	Former Peer	Former Peer	Former Peer	Former Peer	Former Peer	Same-Race Former Peer
Unit-Week Fixed Effects	YES	YES	YES	YES	YES	YES
Individual Fixed Effects	YES	YES	YES	YES	YES	YES
Pre-trend Test	0.915	0.097	0.898	0.499	0.085	0.587
Observations	576,943	218,500	899,596	463,227	82,545	576,943

Note: Columns (1) through (6) display coefficients from estimates of Equation 3 where the outcome variable is an indicator representing whether the officer used a specific type of force. We cluster standard errors on the police academy cohort level (G = 81). The pre-trend test row presents the p-value from an F-test for which the null hypothesis is that the coefficients of the lead periods (-6 or earlier to -2) in the event-study specification are simultaneously equal to zero.

Table 7: Heterogeneous Effects by Tenure

	(1) Force	(2) Injure Suspect	(3) Arrest	(4) Officer Injured	(5) Complaint
Former peer injury in previous week × Tenure (months)	-0.00004	-0.00002	-0.00008	0.00000	-0.00002
	(0.00002)	(0.00001)	(0.00005)	(0.00001)	(0.00001)
Former peer injury in previous week	0.00375	0.00175	0.00866	-0.00025	0.00227
	(0.00136)	(0.00078)	(0.00403)	(0.00038)	(0.00078)
Constant	0.01753	0.00537	0.37588	0.00236	0.01308
	(0.00006)	(0.00003)	(0.00025)	(0.00002)	(0.00004)
Model	OLS	OLS	OLS	OLS	OLS
Unit-Week Fixed Effects	YES	YES	YES	YES	YES
Individual Fixed Effects	YES	YES	YES	YES	YES
Pre-trend Test	0.742	0.159	0.493	0.070	0.491
R-squared	0.040	0.031	0.262	0.026	0.039
Observations	986,088	986,088	953,262	986,088	986,088

Note: Columns (1) through (5) display coefficients from estimates of Equation 2 with various indicators and an interaction term between a lagged injury to a former peer and the officer tenure. Officer tenure is a continuous variable representing the number of months since the officer started at the police academy. We cluster standard errors on the police academy cohort level (G = 81). The pre-trend test row presents the p-value from an F-test for which the null hypothesis is that the coefficients of six lead periods in the event-study specification are simultaneously equal to zero.

Table 8: Heterogeneous Effects by Number of Past Events

	(1) Force	(2) Injure Suspect	(3) Arrest	(4) Officer Injured	(5) Complaint
Former peer injury in previous week × Number of Previous (months)	-0.00006	-0.00003	-0.00005	-0.00000	-0.00002
	(0.00002)	(0.00001)	(0.00008)	(0.00001)	(0.00002)
Former peer injury in previous week	0.00272	0.00142	0.00521	-0.00010	0.00132
	(0.00091)	(0.00055)	(0.00297)	(0.00025)	(0.00058)
Constant	0.01755	0.00537	0.37589	0.00236	0.01309
	(0.00006)	(0.00003)	(0.00025)	(0.00002)	(0.00004)
Model	OLS	OLS	OLS	OLS	OLS
Unit-Week Fixed Effects	YES	YES	YES	YES	YES
Individual Fixed Effects	YES	YES	YES	YES	YES
Pre-trend Test	0.742	0.159	0.493	0.070	0.491
R-squared	0.040	0.031	0.262	0.026	0.039
Observations	986,088	986,088	953,262	986,088	986,088

Note: Columns (1) through (5) display coefficients from estimates of Equation 2 with various indicators and an interaction term between a lagged injury to a former peer and the number of previous events. Number of previous events is a continuous variable representing the number of times the officer has experienced an injury to a former peer. We cluster standard errors on the police academy cohort level (G = 81). The pre-trend test row presents the p-value from an F-test for which the null hypothesis is that the coefficients of six lead periods in the event-study specification are simultaneously equal to zero.

Table 9: Effect of Former Peer Injuries on Officer Arrests (2010-2016)

	(1) Any Arrest	(2) Non-Index Crime	(3) Property Crime	(4) Violent Crime
Former peer injury in previous week	0.00421	0.00391	0.00065	0.00015
	(0.00236)	(0.00191)	(0.00119)	(0.00120)
Constant	0.34797	0.20460	0.05572	0.08938
	(0.00026)	(0.00021)	(0.00013)	(0.00013)
Model	OLS	OLS	OLS	OLS
Percent Increase	1.228	1.941	1.180	0.015
Unit-Week Fixed Effects	YES	YES	YES	YES
Individual Fixed Effects	YES	YES	YES	YES
Pre-trend Test	0.366	0.597	0.467	0.058
R-squared	0.252	0.253	0.064	0.067
Observations	783,809	783,809	783,809	783,809

Note: Columns (1) through (4) display coefficients from estimates of Equation 2 where the outcome variable is an indicator representing arrests for various types of crime, replicating the results in Table 11 in the main text except only including observations after the 9th week of 2010 to avoid mismeasurement of the arrest date as discussed in the Online Appendix. We calculate the percent increase by dividing the column's coefficient by the mean of the outcome variable for untreated officers, the constant term from a regression without fixed effects. We cluster standard errors on the police academy cohort level (G = 81).

Table 10: Force-Use and Injuries

	Did not use Force	Used Force	Total
Not Injured	972306	15291	987597
Injured	125	2186	2311
Total	972431	17477	989908

Note: This table displays the frequency of force-use and injuries for every officer-week observation in our sample.

Table 11: Predictive Power of Lagged Outcomes on Treatment

	(1) Former Peer Injured	(2) Former Peer Injured	(3) Former Peer Injured	(4) Former Peer Injured	(5) Former Peer Injured
Outcome in $t-1$	-0.0102	-0.00130	-0.00722*	0.00138*	0.00397
	(0.00753)	(0.00217)	(0.00407)	(0.000802)	(0.00261)
Outcome in $t-2$	0.00902	-0.00159	-0.00171	0.0000115	0.00500
	(0.00832)	(0.00238)	(0.00383)	(0.000760)	(0.00307)
Outcome in $t-3$	-0.00354	0.00111	0.00243	0.000516	-0.000107
	(0.00801)	(0.00268)	(0.00477)	(0.000933)	(0.00235)
Outcome in $t-4$	-0.00614	0.000827	-0.00750	0.00106	-0.000278
	(0.00512)	(0.00202)	(0.00455)	(0.000669)	(0.00221)
Outcome in $t-5$	0.0175**	0.00271	0.00846	0.000367	0.00338
	(0.00695)	(0.00254)	(0.00560)	(0.00112)	(0.00247)
Outcome in $t-6$	0.00669	0.00300	0.00436	0.00160*	-0.00454*
	(0.00574)	(0.00239)	(0.00440)	(0.000820)	(0.00272)
Constant	0.113***	0.113***	0.113***	0.113***	0.113***
	(0.0000390)	(0.000121)	(0.0000630)	(0.000685)	(0.0000717)
Lagged Outcome	Officer Injured	Force	Suspect Injury	Arrest	Complaint
Unit-Week Fixed Effects	YES	YES	YES	YES	YES
Individual Fixed Effects	YES	YES	YES	YES	YES
R-squared	0.121	0.121	0.121	0.119	0.121
Observations	967104	967104	967104	918649	967104

Note: Each column displays the results of a linear regression regressing six lags of the specified outcome on whether the officer has a former peer injured. We cluster standard errors on the police academy cohort level (G = 81). $^{*}p < 0.10,^{**}p < 0.05,^{***}p < 0.01$.

Table 12: Predictive Power of Characteristics on Treatment

	(1) Former Peer Injured	(2) Former Peer Injured	(3) Former Peer Injured	(4) Former Peer Injured	(5) Former Peer Injured
Officer is Female	-0.000839	0.000116	0.000128	0.000415	0.000844
	(0.00314)	(0.00300)	(0.00275)	(0.00194)	(0.000951)
Officer is Black	0.0107***	0.00462	0.00341	-0.00202	0.000254
	(0.00260)	(0.00322)	(0.00326)	(0.00204)	(0.00106)
Officer is Hispanic or Other	0.00337	0.00317	0.00278	-0.00296*	0.0000591
	(0.00273)	(0.00250)	(0.00238)	(0.00152)	(0.000878)
Officer Age at Test	-0.00463***	-0.00439***	-0.00392***	-0.000111	-0.0000217
	(0.000386)	(0.000367)	(0.000502)	(0.000137)	(0.0000653)
Portion of Cohort that is Male	0.0947	0.0898	0.0865	0.00813	0.0164
	(0.0913)	(0.0876)	(0.0800)	(0.0609)	(0.0270)
Portion of Cohort that is Black	0.0418	0.0375	0.0169	-0.0181	0.00319
	(0.0773)	(0.0741)	(0.0707)	(0.0653)	(0.0271)
Portion of Cohort that is Hispanic or Other	-0.0482	-0.0503	-0.0550	-0.123**	-0.0307
	(0.0802)	(0.0760)	(0.0697)	(0.0530)	(0.0232)
Average Age of Cohort	-0.00771	-0.00731	-0.00731	-0.00511	-0.00418**
	(0.00517)	(0.00506)	(0.00486)	(0.00421)	(0.00171)
Constant	0.415**	0.402**	0.394**	0.294**	0.224***
	(0.184)	(0.179)	(0.163)	(0.130)	(0.0534)
Unit Fixed Effects	NO	YES	NO	NO	NO
Unit-Week Fixed Effects	NO	NO	YES	YES	YES
Test Fixed Effects	NO	NO	NO	YES	YES
Number of Past Peers Fixed Effects	NO	NO	NO	NO	YES
R-squared	0.009	0.010	0.083	0.098	0.117
Observations	989908	989908	989885	989885	989885

Note: Each column displays the results of a linear regression regressing officer and cohort characteristics on whether the officer has a former peer injured. We cluster standard errors on the police academy cohort level (G = 81). $^{*}p < 0.10,^{**}p < 0.05,^{***}p < 0.01$.

Table 13: Heterogeneous Effects by Type of Force

Former Peer Injury × Relative Time	(1) Control	(2) No Weapon	(3) Non-Lethal	(4) Baton	(5) Taser	(6) Firearm	(7) Other
-6 or earlier	-0.000315	0.000538	0.0000821	0.0000349	0.000114	-0.0000389	-0.0000860
	(0.000340)	(0.000414)	(0.0000949)	(0.0000772)	(0.000141)	(0.0000584)	(0.000130)
-5	0.000533	-0.0000164	-0.00000433	0.0000878	-0.000116	0.0000537	0.000207
	(0.000426)	(0.000459)	(0.0000873)	(0.0000693)	(0.000115)	(0.0000791)	(0.000133)
-4	0.000232	0.000225	0.000142	0.0000364	-0.0000464	-0.00000922	-0.000109
	(0.000367)	(0.000315)	(0.0000952)	(0.0000925)	(0.000133)	(0.0000562)	(0.000130)
-3	0.000235	-0.0000989	0.0000507	0.0000802	0.0000231	-0.0000183	0.0000515
	(0.000458)	(0.000434)	(0.0000741)	(0.0000821)	(0.000160)	(0.0000715)	(0.000101)
-2	-0.0000634	-0.000273	-0.000214**	-0.0000262	0.000166	0.0000134	0.0000463
	(0.000348)	(0.000401)	(0.0000856)	(0.0000734)	(0.000126)	(0.0000616)	(0.000143)
-1	-	-	-	-	-	-	-
0	0.000362	0.000665	-0.000101	0.0000985	0.000127	-0.0000511	0.0000839
	(0.000394)	(0.000504)	(0.000100)	(0.0000796)	(0.000140)	(0.0000686)	(0.000102)
+1	0.000699*	0.000925*	-0.0000229	-0.0000346	0.0000405	0.000118*	0.0000832
	(0.000382)	(0.000498)	(0.0000827)	(0.0000685)	(0.000139)	(0.0000681)	(0.000152)
+2	0.0000782	0.000101	-0.0000325	0.0000809	-0.000336***	0.0000434	-0.0000741
	(0.000341)	(0.000371)	(0.000109)	(0.0000715)	(0.000122)	(0.0000615)	(0.000139)
+3	0.000101	0.000319	0.0000331	-0.000129*	0.000000514	-0.0000653	0.0000519
	(0.000340)	(0.000422)	(0.000123)	(0.0000770)	(0.000125)	(0.0000448)	(0.000141)
+4	0.000135	0.0000922	0.000158*	0.0000224	0.0000544	-0.000126***	-0.00000883
	(0.000381)	(0.000435)	(0.0000943)	(0.0000713)	(0.000151)	(0.0000401)	(0.000107)
+5	0.000714	0.000882	0.0000587	0.0000113	0.000300	0.0000329	0.00000370
	(0.000438)	(0.000541)	(0.000102)	(0.0000894)	(0.000187)	(0.0000706)	(0.0000943)
+6 or later	-0.000412	0.00126	0.000337	-0.000223	0.000428	0.0000294	-0.000296
	(0.000978)	(0.00104)	(0.000236)	(0.000204)	(0.000280)	(0.000143)	(0.000287)
Constant	0.0105***	0.0129***	0.000537**	0.000682***	0.00126***	0.000264*	0.00134***
	(0.000941)	(0.000998)	(0.000224)	(0.000192)	(0.000276)	(0.000139)	(0.000267)
Unit-Week Fixed Effects	YES	YES	YES	YES	YES	YES	YES
Individual Fixed Effects	YES	YES	YES	YES	YES	YES	YES
Pre-trend Test	0.684	0.742	0.01	0.407	0.495	0.923	0.545
R-squared	0.035	0.039	0.030	0.022	0.025	0.022	0.023
Observations	944,356	944,356	944,356	944,356	944,356	944,356	944,356

Note: Columns (1) through (7) display coefficients from estimates of Equation 3 in the main text where the outcome variable is an indicator representing whether the officer used a specific type of force. We cluster standard errors on the police academy cohort level (G = 81). The pre-trend test row presents the p-value from an F-test for which the null hypothesis is that the coefficients of the lead periods in the event-study specification are simultaneously equal to zero.

Table 14: Effect of Low-Resistance Injuries to Former Peers on Force-Use

Former Peer Injured During a Low-Resistance Encounter × Relative Time	(1) Force	(2) Force
-6 or earlier	-0.00036	-0.02876
	(0.00060)	(0.03076)
-5	0.00003	-0.00153
	(0.00075)	(0.03838)
-4	0.00036	0.02300
	(0.00057)	(0.02807)
-3	-0.00086	-0.04163
	(0.00071)	(0.03578)
-2	0.00108	0.05010
	(0.00061)	(0.02761)
-1	-	-
0	0.00039	0.02203
	(0.00066)	(0.03289)
+1	0.00034	0.01880
	(0.00054)	(0.02754)
+2	0.00019	0.01413
	(0.00058)	(0.02765)
+3	0.00003	0.00655
	(0.00057)	(0.02831)
+4	0.00062	0.03103
	(0.00053)	(0.02413)
+5	-0.00013	-0.00265
	(0.00090)	(0.04425)
+6 or later	0.00133	0.12552
	(0.00097)	(0.04581)
Constant	0.01636	-3.12012
	(0.00088)	(0.04241)
Model	OLS	Poisson
Unit-Week Fixed Effects	YES	YES
Individual Fixed Effects	YES	YES
Pre-trend Test	0.079	0.101
R-squared	0.000	
Observations	944,356	576,943

Note: Column (1) displays coefficients from estimates of Equation 3 in the main text where the outcome variable is an indicator representing whether the officer used force and the event is whether the officer's former peer used force but was not injured in the previous week. Column (2) displays the same but using Poisson maximum likelihood estimation. We calculate the percent increase by dividing the column's coefficient by the baseline in a regression without fixed effects. We cluster standard errors on the police academy cohort level (G = 81). The pre-trend test row presents the p-value from an F-test for which the null hypothesis is that the coefficients of the lead periods in the event-study specification are simultaneously equal to zero.

Table 15: Effect of Former Peer Injuries on Complaints Against Officers

Former Peer Injury × Relative Time	(1) All Complaints	(2) Force and Verbal	(3) Arrest and Search	(4) Failure to Provide Service	(5) Unbecoming Conduct
-6 or earlier	-0.00069	-0.00024	-0.00061	0.00032	0.00000
	(0.00041)	(0.00024)	(0.00024)	(0.00019)	(0.00005)
-5	0.00052	0.00007	0.00026	0.00016	0.00000
	(0.00038)	(0.00025)	(0.00020)	(0.00020)	(0.00006)
-4	-0.00003	-0.00013	0.00021	0.00000	-0.00004
	(0.00034)	(0.00018)	(0.00027)	(0.00014)	(0.00005)
-3	-0.00009	0.00003	0.00005	-0.00016	0.00005
	(0.00033)	(0.00022)	(0.00028)	(0.00016)	(0.00005)
-2	0.00059	0.00022	0.00015	0.00010	-0.00007
	(0.00046)	(0.00019)	(0.00034)	(0.00014)	(0.00005)
-1	-	-	-	-	-
0	0.00011	0.00019	-0.00012	-0.00006	-0.00002
	(0.00047)	(0.00021)	(0.00029)	(0.00017)	(0.00005)
+1	0.00082	-0.00016	0.00044	0.00038	0.00002
	(0.00038)	(0.00020)	(0.00020)	(0.00018)	(0.00006)
+2	-0.00037	-0.00021	-0.00026	-0.00023	0.00015
	(0.00047)	(0.00022)	(0.00022)	(0.00017)	(0.00006)
+3	0.00080	0.00034	0.00040	0.00009	-0.00004
	(0.00049)	(0.00024)	(0.00019)	(0.00017)	(0.00005)
+4	0.00076	0.00034	0.00031	0.00002	-0.00004
	(0.00042)	(0.00017)	(0.00023)	(0.00015)	(0.00006)
+5	0.00083	0.00027	0.00020	0.00012	0.00001
	(0.00038)	(0.00016)	(0.00030)	(0.00018)	(0.00006)
+6 or later	0.00151	0.00071	0.00132	-0.00076	-0.00012
	(0.00096)	(0.00047)	(0.00049)	(0.00053)	(0.00015)
Constant	0.01157	0.00265	0.00374	0.00321	0.00038
	(0.00095)	(0.00044)	(0.00049)	(0.00050)	(0.00015)
Unit-Week Fixed Effects	YES	YES	YES	YES	YES
Individual Fixed Effects	YES	YES	YES	YES	YES
Pre-trend Test	0.412	0.516	0.117	0.468	0.550
R-squared	0.040	0.034	0.038	0.028	0.027
Observations	944,356	944,356	944,356	944,356	944,356

Note: Columns (1) through (5) display coefficients from estimates of Equation 3 in the main text where the outcome variable is an indicator representing types of complaints against the officer. We cluster standard errors on the police academy cohort level (G = 81). The pre-trend test row presents the p-value from an F-test for which the null hypothesis is that the coefficients of the lead periods in the event-study specification are simultaneously equal to zero.

Table 16: Heterogeneous Effects by Suspect Characteristics

Former Peer Injury × Relative Time	(1) White Suspect	(2) Minority Suspect
-6 or earlier	-0.00001	0.00041
	(0.00012)	(0.00043)
-5	0.00006	0.00033
	(0.00012)	(0.00049)
-4	0.00006	-0.00010
	(0.00012)	(0.00037)
-3	0.00010	0.00011
	(0.00010)	(0.00047)
-2	-0.00007	-0.00024
	(0.00008)	(0.00047)
-1	-	-
0	0.00015	0.00053
	(0.00009)	(0.00046)
+1	0.00009	0.00105
	(0.00012)	(0.00051)
+2	0.00005	0.00021
	(0.00012)	(0.00034)
+3	-0.00013	0.00038
	(0.00008)	(0.00045)
+4	-0.00013	0.00020
	(0.00014)	(0.00044)
+5	0.00012	0.00081
	(0.00014)	(0.00056)
+6 or later	0.00006	0.00057
	(0.00022)	(0.00120)
Constant	0.00103	0.01538
	(0.00021)	(0.00113)
Unit-Week Fixed Effects	YES	YES
Individual Fixed Effects	YES	YES
Pre-trend Test	0.697	0.835
R-squared	0.036	0.040
Observations	944,356	944,356

Note: Columns (1) through (3) display coefficients from estimates of Equation 3 in the main text where the outcome variable is an indicator representing whether the officer used a specific type of force against a white or minority suspect. We cluster standard errors on the police academy cohort level (G = 81). The pre-trend test row presents the p-value from an F-test for which the null hypothesis is that the coefficients of the lead periods in the event-study specification are simultaneously equal to zero.

Table 17: Effect of Former Peer Force-Use on Officer Force-Use

Former Peer Force × Relative Time	(1) Force	(2) Force
-6 or earlier	0.00027	0.00895
	(0.00033)	(0.01873)
-5	-0.00002	-0.00766
	(0.00030)	(0.01586)
-4	0.00039	0.01835
	(0.00033)	(0.02016)
-3	-0.00042	-0.02283
	(0.00030)	(0.01630)
-2	-0.00008	-0.00342
	(0.00031)	(0.01757)
-1	-	-
0	0.00029	0.00855
	(0.00040)	(0.02121)
+1	0.00032	0.02013
	(0.00032)	(0.01743)
+2	0.00022	0.01174
	(0.00031)	(0.01748)
+3	0.00001	-0.00353
	(0.00032)	(0.01696)
+4	0.00053	0.02889
	(0.00031)	(0.01714)
+5	0.00011	0.00705
	(0.00029)	(0.01561)
+6 or later	0.00165	0.12656
	(0.00205)	(0.09700)
Constant	0.01526	-3.16130
	(0.00211)	(0.10323)
Unit-Week Fixed Effects	YES	YES
Individual Fixed Effects	YES	YES
Pre-trend Test	0.657	0.733
R-squared	0.041	
Observations	944,356	576,943

Note: Column (1) displays coefficients from estimates of Equation 3 in the main text where the outcome variable is an indicator representing whether the officer used force and the event is whether the officer's former peer used force but was not injured in the previous week. Column (2) displays the same but using Poisson maximum likelihood estimation. We calculate the percent increase by dividing the column's coefficient by the baseline in a regression without fixed effects. We cluster standard errors on the police academy cohort level (G = 81). The pre-trend test row presents the p-value from an F-test for which the null hypothesis is that the coefficients of the lead periods in the event-study specification are simultaneously equal to zero.

Table 18: Effect of Former Peer Injuries on Officer Arrests

Former Peer Injury × Relative Time	(1) Any Arrest	(2) Non-Index Crime	(3) Property Crime	(4) Violent Crime
-6 or earlier	0.00267	0.00162	-0.00032	0.00189
	(0.00156)	(0.00150)	(0.00082)	(0.00128)
-5	0.00134	0.00047	0.00073	0.00139
	(0.00221)	(0.00149)	(0.00094)	(0.00092)
-4	0.00256	-0.00023	0.00154	0.00116
	(0.00145)	(0.00112)	(0.00100)	(0.00098)
-3	0.00218	0.00151	-0.00042	-0.00125
	(0.00190)	(0.00142)	(0.00074)	(0.00118)
-2	0.00090	-0.00058	0.00219	0.00102
	(0.00150)	(0.00135)	(0.00076)	(0.00136)
-1	-	-	-	-
0	0.00497	0.00258	0.00257	0.00177
	(0.00144)	(0.00124)	(0.00081)	(0.00099)
+1	0.00259	0.00297	0.00090	-0.00040
	(0.00219)	(0.00181)	(0.00104)	(0.00123)
+2	0.00295	0.00134	0.00117	0.00174
	(0.00180)	(0.00160)	(0.00105)	(0.00106)
+3	0.00184	0.00159	-0.00080	0.00023
	(0.00164)	(0.00159)	(0.00099)	(0.00093)
+4	0.00397	0.00396	0.00038	0.00263
	(0.00204)	(0.00134)	(0.00109)	(0.00134)
+5	0.00133	0.00097	0.00260	0.00035
	(0.00167)	(0.00163)	(0.00077)	(0.00127)
+6 or later	0.04608	0.06160	0.00033	-0.01181
	(0.01085)	(0.00595)	(0.00397)	(0.00623)
Constant	0.33539	0.16232	0.06322	0.11042
	(0.01042)	(0.00575)	(0.00384)	(0.00605)
Unit-Week Fixed Effects	YES	YES	YES	YES
Individual Fixed Effects	YES	YES	YES	YES
Pre-trend Test	0.423	0.675	0.052	0.106
R-squared	0.259	0.253	0.077	0.077
Observations	914,061	914,061	914,061	914,061

Note: Columns (1) through (4) display coefficients from estimates of Equation 3 in the main text where the outcome variable is an indicator representing arrests for various types of crime. We cluster standard errors on the police academy cohort level (G = 81). The pre-trend test row presents the p-value from an F-test for which the null hypothesis is that the coefficients of the lead periods in the event-study specification are simultaneously equal to zero.

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