

Online Appendix

Figure A1. Example Call for Applicants

POLICE OFFICER

JOB ANNOUNCEMENT

CHICAGO POLICE DEPARTMENT

The City of Chicago is currently seeking qualified Police Officer candidates for the Chicago Police Department's (CPD) upcoming 2021/2022 academy classes. Chicago has the second-largest Police Department in the nation, with over 12,000 officers dedicated to protecting the lives, property, and rights of all people. We accomplish this through professionalism, innovation, and a progressive approach to community relational policing.

Officers receive a competitive starting salary of \$48,078 that increases to \$72,510 annually after just 18 months. Benefits include regularly scheduled salary increases, city-subsidized medical and dental insurance, holidays, tuition reimbursement, and retirement savings and pension plans.

Officers have lateral and promotional opportunities in numerous divisions within the department in the areas of investigations, technology, forensics, community relations, youth investigations, bomb, SWAT, Marine and Helicopter, and many more. Regardless of the assignment, you will work in an environment that fosters leadership, teamwork, and service to the community. You will have the freedom to shape your career as well as the camaraderie of being part of a world class team of law enforcement professionals. CPD is a Department that prides itself on professionalism, community-oriented policing, technology, and intelligence-led crime reduction efforts. You will have access to continuous opportunities for training and advancement throughout your career.

No prior law enforcement experience is required to join. Upon employment, you will attend our 6-month paid police academy which will prepare you for a challenging and rewarding career.

The Chicago Police Department is an equal opportunity employer that values diversity and looks for candidates that reflect our communities' broad cross-sections. We are seeking effective problem-solvers, critical thinkers, and good communicators with the ability to interact with all members of the community and perform the role safely, effectively, and following local, state, and federal law as well as CPD policy and procedures.

APPLICATION PERIOD: Friday, April 30, 2021 at 12:01 AM (00:01) Central Standard Time (CST) through Friday, October 8, 2021 at 11:59 PM (23:59) Central Standard Time (CST) With options to test either in August of 2021 or November of 2021. (Note: If you applied after July 1st you will only have the option to test in November)

NOTE: If you applied for the June 2021 exam you DO NOT need to apply for either of these administrations. You may take one exam in a 12 month period. See FAQ for additional details.

ESSENTIAL DUTIES

Police officers are responsible for collaborating closely with the community to preserve peace and promote public safety. Police officers work for citizens' benefit by protecting the life and property from harm and maintaining order. The police officer accomplishes this mission through his or her presence and the enforcement of Federal, State, and Municipal laws as necessary.

Essential duties of the position include:

- Builds community trust and confidence through day-to-day interactions with members of the community.
- Works to resolve conflicts through effective communication.
- Communicates effectively with people from various social and cultural backgrounds in a wide range of situations.
- Monitors environment and crime conditions of an assigned geographic area using routine patrol methods.
- Responds to incidents either assigned or observed as required.
- Gathers relevant information at an incident to conduct a preliminary investigation.
- Ensures any personal property taken into custody is documented correctly and secured.
- Seeks to apprehend suspected law violators through the use of arrest procedures or citation procedures.
- Actively pursues suspected law violators using search and containment methods.
- Processes suspected law violators using arrest and booking procedures.
- Enforces state and municipal traffic laws using arrest procedures and citation procedures.
- Gathers information at traffic crash scenes to conduct preliminary investigations.
- Uses hand signals to direct traffic as necessary around accidents, objects on the road, or intersections when traffic signals are not working.
- Complies with Department rules, regulations, policies, and all Federal, State, and Municipal laws that govern police officers' activities.
- Appears in court and present testimony.
- Performs the role safely, effectively, and following local, state, and federal law as well as CPD policy and procedures.
- Perform other duties as required.

NOTE: The list of essential duties is not intended to be inclusive, there may be other duties that are essential to this position.

HIRING / PRE-EMPLOYMENT PROCESS:

Upon completing an application, the City will invite individuals who meet the minimum qualifications to the entrance exam. The Candidates passing the computer-based entrance exam are placed on the Police Officer referral list in random lottery order. As vacancies become available, Candidates in lottery order by the Office of Public Safety Administration to complete the next steps in the hiring process. We expect to contact Candidates who pass the exam regarding the post-exam steps approximately 3-4 weeks from their exam date. The full hiring process takes between 4-9 months.

The selection process includes the following steps:

- Computer-based entrance exam
- Pre-Police Officer Wellness Evaluation Report Test (Pre-POWER Test)
- Background investigation
- Medical examination
- Psychological examination

Figure A2: Excerpt from the Chicago Police Department Policy on Performance Evaluations (Employee Resource E05-01)

IX. PERFORMANCE EVALUATION SYSTEM (PES) FOR MEMBERS BELOW THE RANK OF SERGEANT

A. Members will be evaluated annually in the quarter prior to the quarter of the anniversary of their date of hire. The evaluations will be completed within thirty days of the conclusion of the **evaluation period**. The annual calendar quarters are as follows:

1 st Quarter	January, February, March
2 nd Quarter	April, May, June
3 rd Quarter	July, August, September
4 th Quarter	October, November, December

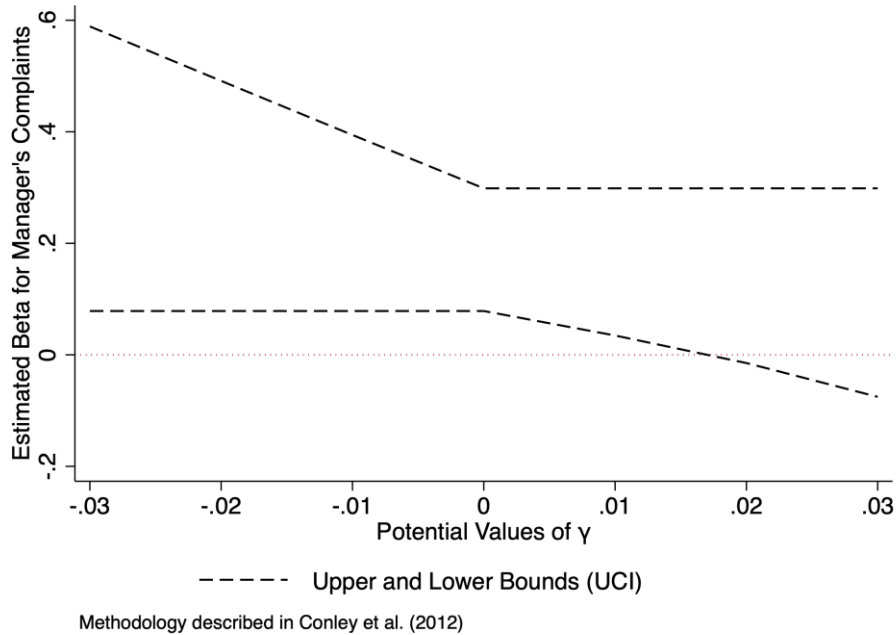
B. The following matrix clarifies when performance evaluations will be completed.

Quarter	Anniversary Date Month of the Member	The Quarter the Member Will Be Evaluated	Due Date of the Evaluation
1 st	January, February, March	4 th	30 January
2 nd	April, May, June	1 st	30 April
3 rd	July, August, September	2 nd	30 July
4 th	October, November, December	3 rd	30 October

If the member's date of hire is:

1. 31 March, the member's performance evaluation will be completed in the **4th Quarter**. The due date for the performance evaluation will be 30 January.
 2. 11 September, the member's performance evaluation will be completed in the **2nd Quarter**. The due date for the performance evaluation will be 30 July.
- C. Supervisors will participate in training and receive a Performance Evaluation System Procedure Manual regarding the purpose, implementation, and use of the Performance Evaluation System.
- D. To effectively evaluate and document job performance of members under their command, supervisors will use the Performance Recognition System to record Early Intervention Activity Events, as delineated in the Department directive "[Performance Recognition System](#)."
- E. The Director, Human Resources Division, has overall authority over the PES and will coordinate the implementation, management, and monitoring of the evaluation process Department-wide.

Figure A3. Sensitivity Analysis for Violations of Exclusion Restriction in 2SLS



We apply the Union of Confidence Intervals (UCI) method from Conley et al. (2012). The x-axis, potential values of γ , represents the strength of the violation of the exclusion restriction. Specifically, it represents the correlation between the instrument, Manager’s Cohort Complaints, and the second-stage error term. Figure A3 displays the results of the UCI approach proposed by Conley et al. (2012). The Figure shows that if γ is negative, then our point estimate would be underestimated. The point estimate of γ must be greater than 0.017 (the point where the lower bound crosses zero on the y-axis) to make the estimate of Manager’s Complaints statistically insignificant at the 5% level. This is approximately 12% of the first-stage effect (.017/.14).

To assess whether this is large or small requires a “story” about how the exclusion restriction could be violated. Our best story is as follows:¹ In the police academy, officers form social connections with their cohort members that last for the rest of their careers. Thus, when the officers are promoted to managers, they bring their cohort members around their subordinates. In doing so, the manager’s academy cohort members have a direct effect on the manager’s subordinates, influencing them to increase their misconduct.² With this in mind, our sensitivity analysis suggests that the direct effect of the manager’s cohort members would (in aggregate) need to be 12% as strong as the direct effect of the manager on the subordinate’s misconduct. Given that only about 4% of a manager’s cohort members even reside in the same unit (cohorts are divided into 25 different geographic units after graduating), this seems implausible.

¹ We thank the Associate Editor for pointing this out as a potential violation.

² We find this implausible, given that the manager’s cohort members can only have informal influence on the manager’s subordinates and we don’t find any evidence of social influence by the managers themselves (see Section 5.2, Table 4, Models 3 and 4). Instead, we only find evidence of formal managerial influence (through the annual review mechanism; Section 5.2, Table 4, Models 5 and 6).

Table A1. Data Description

The table below describes the raw data used for the analysis. All data, except the annual review data, were obtained from the Invisible Institute and are available for download at https://github.com/invinst/chicago-police-data/tree/master/data/unified_data. Annual review data were obtained by the authors through a Freedom of Information Act request.

Data Source	Description	Files Used	Period Covered and exclusions made	Variables Used	Variable Definition
Complaints	Contains complaints regarding Chicago Police. Includes complaints made by civilians as well as other officers. During the period, there were a variety of agencies responsible for investigating complaints, including CPD's Bureau of Internal Affairs, Office of Professional Standards (OPS), Independent Police Review Authority (IPRA), and Civilian Office of Police Accountability (COPA). The names of the officers accused are included.	complaints/complaints-complaints.csv,	1919-2018 (less than 1 percent of complaints are from before 1980). Our analysis only uses complaints about incidents occurring after Jan. 1, 1980.	Complaints	Count of complaints filed against the focal officer for incidents occurring in the focal month.
		complaints/complaints-accused.csv,		Cohort Complaints	Count of complaints filed against the focal officer's cohort (excluding focal officer complaints) during the training period (police academy and field training). The variable is standardized to have a mean of zero and a standard deviation of one.
		complaints/officer-filed-complaints__2017-09.csv		Manager's Cohort Complaints	Measured the same as Cohort Complaints, but for the focal officer's assigned manager.
		Manager's Prior Complaints (5 years)		Count of complaints an officer's assigned manager received in the five years before becoming the focal officer's manager.	
Demographics	Contains name, gender race, date of birth, appointed date (hire dates), resignation date, and rank as of about April 2017, or the officer's retirement date (whichever is earlier). The file contains all known current sworn personnel (as of April 2017) and sworn personnel who retired from CPD. Sworn personnel who later assumed civilian positions within CPD, officers who work in a covert capacity (e.g., undercover), or	/profiles/final-profiles.csv	All data were extracted in April 2017. Appointment dates range from 1936-2018 (appointment dates in 2018 are presumably planned appointment dates). Our analysis only includes officers who were	Female	Dichotomous variable equal to one if the officer's gender is equal to "female," zero otherwise.
				Race	Categorical variable. Officers self-identify as one of the following: White, Black, Hispanic, Asian/Pacific Islander, Native American/Alaskan Native
				Same Race	Dichotomous variable equal to one if the officer and assigned manager have the same race.

	officers with highly public roles do not appear in the dataset.		appointed after Jan. 1, 1980.	Same Gender	Dichotomous variable equal to one if the officer and assigned manager have the same gender.
Annual Reviews	Contains officer and manager names as well as the date the annual review was completed. The second generation sample is based on officer-manager matches from this file.	P604800-Emp_Supervising-Sergeant.xlsx	2009-2020. Data before 2009 were not available from the CPD. We exclude annual reviews for officer-manager pairs that appeared previously in the data.	Before Annual Review	Dichotomous variable equal to one if the focal month falls after the manager's annual review of the officer was filed, zero otherwise.
Unit History	Contains the unit assignments of Chicago police officers. The file includes an officer's name, the date they were appointed to a specific unit, the date they left the unit, and the unit number.	/unit-history/unit-history.csv	1932-2016 (fewer than 1 percent of observations come before 1957). Our analysis only includes unit appointments after Jan. 1, 1980.	Unit	Categorical variable equal to the unit an officer was assigned to in the focal month.
Use of Force (Tactical Response Reports)	Contains data on Tactical Response Reports filed by CPD officers. Data include the officer's name, date and time of the incident, location of the incident, whether a weapon was used, whether a taser was used, as well as other details about the use of force.	/TRR/TRR-main_2004-2016_2016-09.csv, /TRR/TRR-charges_2004-2016_2016-09.csv, /TRR/TRR-weapon-discharges_2004-2016_2016-09.csv, /TRR/TRR-officers_2004-2016_2016-09.csv	2004-2016	Use of Force	Count of Tactical Response Reports (TRRs) filed for the focal officer in the focal month.
				Weapon Discharged	Count of TRRs for incidents in the focal month that involved the use of a firearm, impact munitions, taser, OC spray, or other chemical weapons.
				Taser	Count of TRRs for incidents in the focal month that involved the use of a taser.

Table A2. Second Generation Selection Tests

	(1)	(2)	(3)	(4)	(5)	(6)
	Second Generation (2009-2017)					
	Manager's Prior Complaints (5 Years, Standardized)					
Subordinate's Complaints (1 year lag)	0.0231 (0.0352)	0.0233 (0.0346)	0.00711 (0.0352)	0.0231 (0.0340)	0.0233 (0.0323)	0.00711 (0.0328)
Model	OLS	OLS	OLS	OLS	OLS	OLS
Officer FE	Y	Y	Y	Y	Y	Y
Cohort Year FE	N	Y	Y	N	Y	Y
Year FE	Y	Y	N	Y	Y	N
Unit FE	Y	Y	N	Y	Y	N
Unit-Year FE	N	N	Y	N	N	Y
Standard Error Estimation	Robust	Robust	Robust	Manager, Officer, Year	Manager, Officer, Year	Manager, Officer, Year

*** p<0.001, ** p<0.01, * p<0.05 (two-tailed). The unit of analysis is the officer-year. The dependent variable in all models is equal to the standardized number of complaints that the focal officer's manager received in the focal period. The independent variable is equal to the sum of misconduct complaints that the subordinate officer received in the year before they were assigned to the focal manager.

Table A3. Alternative Explanations

Sample:	(A) First Generation (1980-2017)					
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable:	Arrests		Salary		Awards	
Cohort Complaints (Standardized)	0.00183 -0.00289	0.00095 -0.00289	-93.55 -263.6	-195.6 -255.6	0.00306 -0.00326	0.000535 -0.00304
Observations	228,467	228,467	228,467	228,467	228,467	228,467
Adj. R-squared	0.175	0.178	0.552	0.574	0.513	0.524
Mean of DV	0.050	0.050	38750.000	38749.000	0.310	0.310
Percent Change	3.7%	1.9%	-0.2%	-0.5%	1.0%	0.2%
Cohort Year FE	Y	Y	Y	Y	Y	Y
Year FE	Y	N	Y	N	Y	N
Unit FE	Y	N	Y	N	Y	N
Unit-Year FE	Y	Y	Y	Y	Y	Y

Sample:	(B) Second Generation (2009-2017)					
	(7)	(8)	(9)	(10)	(11)	(12)
Dependent Variable:	Arrests		Salary		Awards	
Manager's Complaints (Standardized)	-0.00457 (0.00638)	-0.00590 (0.00525)	53.47 (36.91)	59.78 (39.77)	0.000238 (0.00354)	0.00406 (0.00351)
Observations	20,829	20,829	20,829	20,829	20,829	20,829
Adj. R-squared	0.493	0.530	0.877	0.892	0.550	0.580
Mean of DV	0.146	0.147	80697.000	80887.000	0.809	0.812
Percent Change	-3.1%	-4.0%	0.1%	0.1%	0.0%	0.5%
Officer FE	Y	Y	Y	Y	Y	Y
Cohort Year FE	Y	Y	Y	Y	Y	Y
Year FE	Y	N	Y	N	Y	N
Unit FE	Y	N	Y	N	Y	N
Unit-Year FE	N	Y	N	Y	N	Y

*** p<0.001, ** p<0.01, * p<0.05 (two-tailed). Robust standard errors are clustered by cohort and year in Models 1-6 and by manager, year, and subordinate officer in Models 7-12. All regressions use OLS fixed effects estimators. The unit of analysis in the first generation is the officer-year. The unit of analysis in the second generation is the subordinate officer-year. The first generation sample includes the full career history in the CPD (1980-2017) for all officers that attended the police academy. The second generation sample includes the subordinates of all first generation officers that eventually became managers.

Table A4. Alternative Dependent Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Sample:	First Generation (1980-2017)						Second Generation (2009-2017)					
Dependent Variable:	External Complaints		Internal Complaints		Use of Force		External Complaints		Internal Complaints		Use of Force	
Cohort Complaints (Standardized)	0.0209** (0.00613)	0.0203* (0.00748)	0.00735* (0.00290)	0.00779* (0.00331)	0.0139+ (0.00755)	0.0142 (0.0105)						
Manager's Complaints (Prior 5 years, Standardized)							0.0166** (0.00471)	0.0147* (0.00506)	0.00988 (0.00535)	0.00631 (0.00549)	0.0239* (0.00883)	0.0150+ (0.00660)
Model	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Observations	228,467	228,467	228,467	228,467	132,758	132,596	20,829	20,829	20,829	20,829	20,829	20,829
Mean of DV	0.373	0.374	0.183	0.183	0.275	0.275	0.218	0.220	0.129	0.130	0.383	0.385
Percent Change	5.6%	5.4%	4.0%	4.3%	5.1%	5.2%	7.6%	6.7%	7.7%	4.9%	6.2%	3.9%
Officer FE	-	-	-	-	-	-	Y	Y	Y	Y	Y	Y
Cohort Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
Unit FE	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
Unit-year	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y

*** p<0.001, ** p<0.01, * p<0.05, + p<0.1 (two-tailed). Robust standard errors are clustered by cohort and year in Models 1-6 and by manager, subordinate officer, and year in Models 7-12. All regressions use OLS fixed effects estimators. The unit of analysis in the first generation is the officer-year. The unit of analysis in the second generation is the subordinate officer-year. The number of observations differs in Models 5 and 6 because we only have use of force data beginning in 2004. The first generation sample includes the full career history in the CPD (1980-2017) for all officers that attended the police academy. The second generation sample includes the subordinates of all first generation officers that eventually became managers. *External Complaints* is equal to the number of complaints the focal officer received from members of the public in the year. *Internal Complaints* is equal to the number of complaints the focal officer received from other members of the Chicago Police Department in the year. *Use of Force* is equal to the number of times the focal officer reported that they used force in the line of duty during in the year.