New York City
Department of Investigation

Office of the Inspector General for the NYPD (OIG-NYPD)

Overtime Under Review:
NYPD Overtime and the Increased Risk of Negative Policing Outcomes

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Table of Contents

I. Executive Summary

New York City Charter, Chapter 34, Sections 803 and 808, require the Department of Investigation's ("DOI") Office of the Inspector General for the NYPD ("OIG-NYPD" or "the Office") to develop recommendations relating to the discipline, training, and monitoring of police officers and related operations, policies, programs, and practices of the New York City Police Department ("NYPD" or "the Department") by considering, among other things, "patterns or trends identified by analyzing actions, claims, complaints, and investigations" filed against NYPD.[1] This Report, the fourth issued in connection with that law, examines NYPD's use of overtime hours and how those overtime hours may impact the likelihood that litigation, claims, or complaints will be brought against the Department.

OIG-NYPD examined the relationship between NYPD's overtime hours and certain outcomes that are both measurable and direct sources of liability risk to the City.[2] These outcomes included lawsuits, substantiated Civilian Complaint Review Board ("CCRB") complaints, substantiated NYPD Internal Affairs Bureau ("IAB") complaints, workplace injuries, on-duty vehicle collisions, and uses of force resulting in Threat, Resistance, or Injury Interaction ("T.R.I.") Reports.[3] These outcomes have been referred to as "negative policing outcomes" ("NPOs"), and this Report uses that term.[4] Each NPO poses risks of liability to the City because lawsuits, as well

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[1] N.Y.C. CHARTER CH. 34 §§ 803, 808.

[2] The term overtime describes on-duty time worked in excess of an officer's regularly scheduled tour (*see* N.Y.C. Police Dep't, Admin. Guide Proc. No. 324-15 [2023]).

[3] These outcomes were also chosen, in part, because they are NPOs for which objective data was available to OIG-NYPD. OIG-NYPD used substantiated CCRB complaints and substantiated IAB complaints, recognizing that certain meritorious complaints and investigations may nonetheless not be substantiated. For the purposes of this Report, a substantiated complaint includes cases which are partially substantiated (i.e., some allegations in the case were substantiated) or substantiated (all the allegations in the case were substantiated). In addition, although OIG-NYPD considered lawsuits without regard to whether they were successful and without examining the merits of the claims, all lawsuits cost the City time and money to defend. Furthermore, N.Y.C. CHARTER CH. 34 § 808(a) directs OIG-NYPD to consider lawsuit trends, regardless of outcome.

[4] *See, e.g.,* Jonathan Levinson, *Vancouver City Officials Reach Agreement with Police Union on Body Cameras*, OREGON PUBLIC BROADCASTING (Sept. 30, 2021), https://www.opb.org/article/2021/09/30/vancouver-city-officials-reach-agreement-with-police-union-on-body-cameras/; SMART JUSTICE FOR YOUNG PEOPLE, FIELD CONTACT POLICY & CROSS CULTURAL TRAINING 26 (2013).

as certain events that may lead to lawsuits and complaints, such as vehicle accidents, misconduct, or alleged uses of force, may result in liability to the City. Not only is each NPO a source of potential liability for the City, each NPO potentially costs the City time, money, and resources to address, whether or not the City ultimately is deemed liable for that outcome. Financial payments made by the City to litigants in settlements or as a result of court judgments are one measurement of the costs of these NPOs.

In Fiscal Year 2022, there were 4,580 civil tort claims filed against NYPD.[5] Of those claims, 62% alleged personal injury as a result of police action (which should result in the completion of a T.R.I. Report).[6] Alleged personal injury or property damage due to NYPD motor vehicle accidents accounted for 9% and 13% of claims, respectively.[7] Alleged misconduct, such as officers' actions which may result in a CCRB or IAB complaint, is more difficult to quantify precisely. Lawsuits alleging civil rights violations by NYPD made up 9% of claims.[8] Lawsuits alleging tort claims against NYPD resolved in Fiscal Year 2022 cost the City $237.2 million.[9] Figures in 2021 were similar, though the overall number of tort claims were higher, and the resolution of lawsuits against NYPD cost the city $206.7 million in 2021.[10]

The City can accrue costs from NPOs even when no lawsuit results. For example, workplace injuries or car crashes may require repairs to vehicles or placement of officers on disability leave or administrative duties. Alleged misconduct resulting in CCRB or IAB complaints, or the filing of T.R.I. Reports, costs the City time and resources to investigate and resolve. While one event may give rise to numerous types of NPOs, each type of NPO has a separate cost and thus OIG-NYPD considered each type of NPO separately for purposes of the analysis here.[11] Finally, NPOs can generate intangible costs to the City, because they can negatively impact police-community relationships and undermine public trust in NYPD.

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[5] BRAD LANDER, NYC COMPTROLLER, ANNUAL CLAIMS REPORT: FISCAL YEAR 2022 at 27 (April 2023) [hereinafter 2022 CLAIMS REPORT].

[6] *See id.* at 28. OIG-NYPD calculated the percentages using the Comptroller's numbers in Chart 13 (*id.*).

[7] *Id.*

[8] *Id.*

[9] *Id.* Tort claims against NYPD overwhelmingly allege incidents that qualify as NPOs (personal injury, civil rights violations, car crashes, etc.).

[10] BRAD LANDER, NYC COMPTROLLER, ANNUAL CLAIMS REPORT: FISCAL YEAR 2021 at 28-29 (June 2022) [hereinafter 2021 CLAIMS REPORT].

[11] OIG-NYPD also examined the rate at which officers were involved in multiple NPOs on the same day. There were 304 instances where an officer had two NPOs on the same day, 43 instances where an officer had three NPOs on the same day, five instances where an officer had four NPOs on the same day, and one instance where an individual officer was named in a lawsuit, the subject of both a substantiated IAB complaint and CCRB complaint, received a workplace injury, reported a T.R.I., and was involved in a vehicle collision on the same day. OIG-NYPD did not analyze whether the NPO arose out of a single event vs multiple events, due to limitations in the data received. The overlapping NPOs observed constitute less than 15% of the sample.

To further identify any relationship between NPOs, OIG-NYPD generated a correlation matrix to study associations between NPOs. No two NPOs had a statistically meaningful positive correlation (see Appendix C for more details).

Because NPOs expose the City to potential liability and increased costs, and because other police departments have examined the impact of overtime on, among other things, negative outcomes, OIG-NYPD studied the relationship between overtime and these NPOs.[12] To do so, OIG-NYPD selected a random sample of 993 NYPD officers ("the sample"), collected data related to each NPO associated with each of those officers for the three-year period, 2019-2021, and conducted a data analysis of the officers' overtime hours worked and any documented NPOs occurring in specific windows of time following that overtime.[13] OIG-NYPD found a statistically significant relationship between overtime hours worked and all NPOs, except substantiated IAB complaints.[14] That is, the data showed increased risk of NPOs occurring per hour of overtime, and that the increase was likely because of a relationship between NPOs and overtime, as opposed to the increase being due to chance.[15] To be clear, the type of data analysis used by OIG-NYPD cannot consider causation and therefore does not establish whether there is a causal relationship between overtime and NPOs. Furthermore, OIG-NYPD did not study the particular facts with respect to overtime worked and the nature of the NPOs involving the officers in the sample, and this Report does not claim that overtime caused any NPO. Rather, OIG-NYPD's analysis found that overtime hours increase the risk of NPOs.

OIG-NYPD estimated the baseline odds, in a world in which no overtime was worked, that an NPO would occur. Those estimated odds, in the absence of overtime, are relatively low. For example, the odds of an officer being named in a lawsuit on any given day are 1 in 6,717. That means that, Department-wide, we would expect that approximately 3.7 officers would be named in a lawsuit for conduct occurring on any given day. The odds of an officer being the subject of a substantiated IAB complaint for an incident occurring on any given day are 1 in 44,509, or approximately one officer every other day. The odds that an officer is named in a substantiated CCRB complaint for an incident on any given day are 1 in 11,075, or approximately two officers daily. The odds of an officer being involved in an incident that results in a T.R.I. Report are 1 in 683, or 36 officers daily. For Vehicle Collisions, the odds are 1 in 4,372, or approximately six

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[12] *See* OFFICE OF THE CITY AUDITOR, AUDIT OF THE HONOLULU POLICE DEPARTMENT'S OVERTIME POLICIES, PROCEDURES, AND PROTOCOLS, RESOLUTION 21-58 at 33-35 (2022); AYCHA SAWA, MILWAUKEE COMPTROLLER, AUDIT OF MILWAUKEE POLICE DEPARTMENT OVERTIME 8 (2020); KING COUNTY AUDITOR'S OFFICE, KING COUNTY SHERIFF'S OFFICE OVERTIME: BETTER STRATEGY COULD REDUCE HIDDEN COSTS AND SAFETY RISKS 1-3 (2017).

[13] OIG-NYPD's sample consists of officers, such as patrol officers, detectives, and sergeants working in public-facing roles — that is, those members of service likely to interact regularly with the public. OIG-NYPD did not calculate risk during officers' overtime shifts, but focused on future risk. Therefore, OIG-NYPD's models predict the association between NPOs and overtime worked the previous day, three days, five days, and seven days.

[14] The absence of a statistically significant relationship does not definitively indicate the absence of any connection between IAB complaints and overtime, but rather that there is a lower level of certainty, based on OIG-NYPD's analysis, that such a relationship exists. When the same analysis is performed using all IAB complaints, including, among others, those that were unsubstantiated and those that involved minor procedural violations, the relationship between overtime and IAB complaints is statistically significant.

[15] STEVEN TENNY & IBRAHIM ABDELGAWAD, STATPEARLS [INTERNET], CH. STATISTICAL SIGNIFICANCE, (Nov. 21, 2022), https://www.ncbi.nlm.nih.gov/books/NBK459346/.

collisions on any given day, and the odds an officer suffers a workplace injury are 1 in 1,504, or approximately 17 officers injured daily.

OIG-NYPD then calculated the increased odds that an NPO would occur, and found that even one hour of overtime increases the odds of an officer having an NPO. Those odds continue to increase as an officer works more overtime hours consecutively. For example, if an officer works the average amount of overtime—four hours and twelve minutes consecutively—the odds that they will be the subject of a substantiated CCRB complaint the next day increase by 36.8%, the odds they will be named in a lawsuit for an incident occurring the next day increase by 36.5%, the odds that they will be involved in an incident the next day resulting in a T.R.I. Report increase by 20.5%, and the odds that they will suffer a workplace injury the next day increase by 18.8%. This increased risk, calculated on a per-officer basis, is significant, particularly when applied cumulatively across all of NYPD's approximately 25,000 public-facing officers.[16] Compared to the Department-wide odds where officers worked no overtime, we would expect with these increased odds that, rather than two substantiated CCRB complaints per day, the Department could expect three. Instead of approximately four officers named in lawsuits per day, NYPD could expect five officers named in lawsuits daily. Rather than approximately thirty-six officers being involved in an incident resulting in a T.R.I. Report, NYPD could expect forty-four officers involved in such an incident daily. Rather than 17 workplace injuries daily, NYPD could expect twenty.

In addition to daily estimates, OIG-NYPD also calculated the numbers of NPOs expected over the course of the year using both the baseline odds established above, as well as the increased odds from working the average amount of overtime (4.2 hours) the average amount of times (once every five days).[17] In a Department where the approximately 25,000 public-facing officers worked no overtime, NYPD would generate at least 1,322 lawsuits, 81 substantiated CCRB complaints, 10,340 T.R.I. Reports, and 5,385 workplace injuries per year. If every public-facing officer instead worked the average length of overtime (4.2 hours) the average amount of times in a week (once every five days), instead of 1,322 lawsuits, NYPD would be expected to generate approximately 1,424, or 102 more lawsuits. Instead of 810 substantiated CCRB complaints, NYPD would be expected to generate 870, or 61 more. Instead of 10,340 T.R.I. Reports, NYPD would be expected to generate 11,622, or 1,282 more. Finally, instead of 5,385 workplace injuries, NYPD officers would be expected to suffer 5,788, or 403 more. These numbers were calculated assuming that officers are working the average amount of overtime (four hours and twelve minutes), however, OIG-NYPD noted 31,583 instances in the sample of officers working approximately twice that much, an eight-hour overtime shift or greater. At that length of overtime, the odds of an NPO increase dramatically.[18]

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[16] OIG-NYPD filtered out those officers not in public-facing positions from the overall NYPD roster of officers to arrive at approximately 25,000 (see Appendix B).

[17] More precisely, OIG-NYPD calculated the odds an officer generated at least one NPO over the course of a year.

[18] NYPD refers to shifts as "tours." OIG-NYPD will use the term "shift" throughout this Report.

Finally, OIG-NYPD also categorized the NPOs and the days on which they occurred, in order to examine the NPOs' distribution across those days. This analysis determined whether there is a statistically significant (that is, likely not due to chance) observed relationship between NPOs and the days on which they occur. The number of NPOs was most concentrated on days after which 4+ hours of overtime were worked, indicating longer overtime shifts are associated with a disproportionate risk of an NPO occurring the following day.

To help explain the observed relationship between overtime and the increased risk of NPOs, OIG-NYPD considered the impact of fatigue, which can be defined as, "the effects of working too long, or following too little rest, and being unable to sustain a certain level of performance on a task."[19] Extended daily and weekly work hours, which may result in extended periods of being awake, can cause fatigue and negatively impact quality of sleep, further contributing to fatigue.[20] Medical and scholarly research have generally established that fatigue can lead to a variety of negative effects, including administrative errors, falling asleep while driving, committing safety violations, experiencing uncontrolled anger toward a member of the public or a suspect, and experiencing higher rates of emotional exhaustion.[21]

While the Department has recently rolled out a computerized overtime system that will allow officers City-wide to volunteer to work extra hours, NYPD does not have policies to limit or control overtime or mitigate fatigue caused by long working hours. NYPD does cap off-duty work, in that it permits a maximum of twenty hours of off-duty work per week, but it does not require officers to report off-duty hours worked and does not monitor them.[22] Although NYPD has an extensive health and wellness program, with offerings including licensed clinicians that provide therapeutic and critical incident support, wellness strategies, and stress management, the program

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[19] David F. Dinges, *An Overview of Sleepiness and Accidents*, 4 J. SLEEP RES. 4 (1995).

[20] P. Afonso et al., *Impact of Working Hours on Sleep and Mental Health*, OCCUPATIONAL MEDICINE 380 (2017); J.M. Harrington, *Health Effects of Shift Work and Extended Hours of Work*, Occup. Environ. Med 69 (2001); Jungsun Park et al., *Long Working Hours and Subjective Fatigue Symptoms*, INDUSTRIAL HEALTH 253 (2001); Kapo Wong et al., The Effect of Long Working Hours and Overtime on Occupational Health, INTL. J. OF ENVIRON. RESEARCH AND PUBLIC HEALTH 3 (2019); A. Dahlgren et al., *Overtime Work and Its Effects on Stress and Sleep*, SCAND. J. WORK ENVRION. HEALTH 324 (2006); Mirianna Virtanene et al., *Long Working Hours and Sleep Disturbances: The Whitehall II Prospective Cohort Study*, 32 SLEEP 737, 739-740 (2009).

[21] *See generally* Shantha M.W. Rajaratnam et al., *Sleep Disorders, Health, and Safety in Police Officers*, 306 *JAMA* 2567, 5274 (2011); Scott A. Peterson et al., *Associations Between Shift Work Characteristics, Shift Work Schedules, Sleep and Burnout in North American Police Officers*, BMJ OPEN, Aug. 2019, at 1; Paula Alhola et al., *Sleep Deprivation: Impact on Cognitive Performance*, 3 NEUROPSYCHIATRIC DISEASE TREATMENT 553, 560 (2007); Drew Dawson et al., *Modelling Fatigue and the Use of Fatigue Models in Work Settings*, 43 ACCIDENT ANALYSIS AND PREVENTION 549, 551 (2011) [hereinafter Dawson, *Modelling Fatigue*]; Yvonne Harrison et al., *Impact of Sleep Deprivation on Decision Making – A Review*, 6 J. OF EXPERIMENTAL PSYCHOLOGY 236-249 (2000); Paul Whitney et al., *Feedback Blunting: Total Sleep Deprivation Impairs Decision Making that Requires Updating Based on Feedback*, 38 SLEEP 745, 750-753 (2015); Drew Dawson & K. Reid, *Fatigue, Alcohol and Performance Impairment*, 388 NATURE 235 (1997) [hereinafter Dawson, *Fatigue, Alcohol, and Performance Impairment*].

[22] NYPD officers are permitted to have secondary employment (N.Y.C. Police Dep't, Admin. Guide Proc. No. 332-04 [2023]).

does not include policies and proactive strategies specifically designed to address fatigue that arises from extended work hours, and its impacts.

In light of the relationship between overtime and NPOs, the likely relationship between fatigue and overtime discussed further herein, and the Department's demonstrated concern for its members' well-being, OIG-NYPD recommends that NYPD conduct a full assessment of the risks and benefits of overtime and shift-work, and other risk factors unique to law enforcement. Depending on the results of that assessment, and NYPD's overtime needs, the Department should develop effective risk management strategies to mitigate the risk of NPOs due to overtime. That full assessment is beyond the scope of this Report. In light of the size of NYPD, the scope and likely complexity of the analysis required, and the limited resources of OIG-NYPD, NYPD would be best served by engaging a private firm with the resources and expertise to perform such an analysis. OIG-NYPD recommends that the analysis consider factors including the time of day of a shift, how often shifts are rotated, the number of additional hours worked outside of NYPD employment, justifications for overtime shifts, and overtime distribution. And pending that full assessment, OIG-NYPD recommends that NYPD implement policy changes designed to limit overtime and mitigate the risks of fatigue in the short-term.

OIG-NYPD's findings include:

1. OIG-NYPD's analysis of overtime hours and negative outcomes relevant to NYPD revealed a statistically significant association between overtime hours and the risk of lawsuits filed against the Department, substantiated CCRB complaints, workplace injuries, vehicle collisions, and Threat, Resistance, or Injury Reports, which are tied to uses of force.

2. Lengthier overtime shifts (8-, 12-, 16-, 20-, and 24-hour shifts) were associated with a substantially increased risk of lawsuits, substantiated CCRB complaints, workplace injuries, vehicle collisions, and Threat, Resistance, or Injury Reports.

3. NYPD has no written policies in place to limit or evenly distribute overtime assignments.

4. NYPD limits officer off-duty employment hours to twenty hours per week, but does not monitor off-duty hours actually worked.

5. A wide range of experts have concluded that long working hours can lead to fatigue, and fatigue can lead to decreased alertness, impaired performance, impaired decision making, and mood changes, and that law enforcement officers are particularly prone to workplace fatigue.

6. NYPD has no written policies in place to mitigate fatigue caused by extended work hours, but is considering implementing fatigue mitigation and awareness into some of its practices.

7. The support services NYPD provides that could mitigate fatigue, among other issues, such as support groups for stressful personal life events, are not focused on overtime-driven fatigue, and require officers to self-report a need for those services.

8. NYPD does not currently consider extended overtime shifts to be objective indicators of potential fatigue requiring intervention by the Department.

Based on these findings, OIG-NYPD's recommendations are the following:

1. NYPD should develop and incorporate policies related to fatigue in its written overtime procedures.

2. NYPD should develop a system to track off-duty employment hours worked by its officers.

3. NYPD should develop and implement training for officers concerning how to recognize and to mitigate the effects of fatigue due to long work hours, as NYPD currently provides to supervisors.

4. To further inform its development of overtime and fatigue-related policies, NYPD should utilize a consulting firm that specializes in, among other things, risk assessments, to calculate the risks and benefits of overtime and to identify solutions to mitigate those risks while meeting the Department's overtime needs. This assessment should include an analysis of fatigue-associated risks and overtime shift justifications, and the assessment should identify solutions to control overtime shift length and distribution. Depending on the results of this assessment, NYPD should develop appropriate risk mitigation strategies.

5. NYPD should make the results of the risk assessment recommended in number 4, above, and any recommendations, available on its public website in an area that is readily accessible.

6. NYPD should codify in its Patrol Guide and/or Administrative Guide any changes made as a result of the risk assessment and recommendations. If no changes are made, NYPD should issue a statement explaining its decision-making on its public website in an area that is readily accessible.

II. Introduction

To satisfy the requirements of New York City Charter, Chapter 34, Sections 803 and 808, the Office of the Inspector General for the NYPD ("OIG-NYPD" or "the Office") examined the New York City Police Department's ("NYPD" or "the Department") use of overtime hours and how those overtime hours may impact the likelihood that the Department will face litigation or other claims and complaints. Overtime hours extend a police officer's regular shift; particularly as the number of overtime hours rises, overtime also may increase the length of time an officer remains awake.[23]

NYPD relies on overtime hours and has exceeded its overtime budget every fiscal year since at least 2016.[24] As of February 2023, NYPD had exceeded its Fiscal Year 2023 budget by almost $100 million and is on track to spend $740 million on overtime this fiscal year, nearly twice the budgeted amount.[25] The Department's use of overtime arises from a variety of law enforcement needs. For example, in October 2022, New York City Mayor Eric Adams and New York Governor Kathy Hochul announced an initiative to increase police presence on the New York City subway system, which required approximately 10,000 additional overtime hours each day.[26] Overtime hours can be either voluntary or mandatory, depending on the Department's needs.[27] According to former NYPD Chief of Department Kenneth Corey, overtime hours are both a positive for officers, because they substantially increase pay, but also a negative, particularly for younger officers required to work substantial overtime.[28] Chief Corey opined that long hours, among other factors, have led many NYPD officers to leave the force.[29] Police Commissioner Keechant Sewell recently noted her concern about officer morale and fatigue in light of the City's need to mandate overtime to further its anti-crime initiatives.[30]

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[23] Secondary employment, which NYPD permits, also can extend the length of time an officer remains awake. (N.Y.C. Police Dep't, Admin. Guide Proc. No. 332-04 [2023]). NYPD does not track secondary, or off-duty, employment. The impact of off-duty work therefore is not included in OIG-NYPD's analysis here.

[24] INDEPENDENT BUDGET OFFICE, POLICE OVERTIME SPENDING IS DOWN THIS YEAR. HOW FAR DOWN, AND IS IT EXPECTED TO STAY BELOW PAST YEARS (June 2021), https://ibo.nyc.ny.us/iboreports/police-overtime-spending-is-down-this-year-how-far-down-and-is-it-expected-to-stay-below-past-years-nycbtn-june-2021.pdf; Greg. B Smith, *NYPD's Track Record on Overtime Spending Casts Doubt on Budget Claims*, THE CITY (Jan. 12, 2023, 9:00 p.m.) https://www.thecity.nyc/2023/1/12/23552970/nypd-overtime-pay-increasing-nyc-budget-fiscal-2024; BRAD LANDER, NYC COMPTROLLER, OVERTIME OVERVIEW (March 2023) [hereinafter OVERTIME OVERVIEW].

[25] *See* OVERTIME OVERVIEW, *supra* note 24 at 8. According to NYPD, New York State will reimburse the City for at least $62 million of those overtime hours.

[26] Anthony M. DeStefanotonoy, *NYPD Commissioner Keechant Sewell Says Department is Rolling Out New Computerized OT System*, NEWSDAY (Mar. 29, 2023, 11:38 a.m.), https://www.nyc.gov/office-of-the-mayor/news/773-22/mayor-adams-governor-hochul-major-actions-keep-subways-safe-address-transit

[27] N.Y.C. Police Dep't, Patrol Guide. No. 324-15 (2023).

[28] Kenneth E. Corey, *NYPD Losing Cops Due To Low Pay And Too Much OT: The Former Chief Of Department Explains What Must Be Done*, NY DAILY NEWS (Mar. 13, 2023), https://www.nydailynews.com/opinion/ny-oped-nypd-losing-cops-due-to-low-pay-and-too-much-ot-20230313-n4very3ehngavhstgnnocbyezu-story.html.

[29] *Id.*

[30] DeStefanotonoy, *supra* note 26.

In addition to the fiscal costs of overtime and its potential effects on officer morale, studies and audits of law enforcement agencies have shown that overtime is linked to increased rates of accidents, injuries, on-the-job errors, and a reduction in cognitive functioning and decision-making skills.[31] These negative outcomes can have many causes, including workplace fatigue.[32] Accidents, injuries, errors and reduced cognitive functioning can lead to lawsuits, complaints from members of the public, and internal affairs investigations of alleged misconduct. These negative policing outcomes ("NPOs") increase the risk of liability to law enforcement agencies and cities where they work, and can negatively impact officer safety and wellness, decrease public safety, and undermine public confidence in law enforcement. In New York City, these NPOs can be costly, as they can cause damage to vehicles, injuries to officers, and can require the City to defend and, in some cases to settle litigation involving NYPD officers.[33] While some of the largest law enforcement agencies in the country have taken steps to control overtime and shift scheduling practices—factors which can impact an officer's level of fatigue—many others, including NYPD, have not.[34]

Using litigation data to help drive better-informed decision making is a central purpose of NYC Charter, Chapter 34, Section 808.[35] This Report seeks to measure the relationship between overtime hours and NPOs, which increase the City's exposure to liability, and recommends that NYPD take steps to assess the potential costs and benefits of overtime, and to develop strategies to mitigate the potential risks.

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[31] *See* Dawson, *Modelling Fatigue*, *supra* note 21 at 550-551; Rajaratnam, *supra* note 21 at 2567, 2574, 2575; SAN JOSE OFFICE OF THE CITY AUDITOR, POLICE STAFFING, EXPENDITURES, AND WORKLOAD: STAFFING REDUCTIONS HAVE IMPACTED RESPONSE TIMES AND LED TO HIGH OVERTIME COSTS (2021) at ii, 27; OFFICE OF THE CITY AUDITOR, AUDIT OF THE HONOLULU POLICE DEPARTMENT'S OVERTIME POLICIES, PROCEDURES, AND PROTOCOLS, *Resolution 21-58* (May 2022), *supra* note 12 at 35-36; AYCHA SAWA, MILWAUKEE COMPTROLLER, *supra* note 12 at 8. *See generally* Alhola, *supra* note 21 at 560.

[32] *See* Alhola, *supra* note 21 at 560; Dawson, *Modelling Fatigue*, *supra* note 21 at 551; Harrison, *supra* note 21; Whitney, *supra* note 21; Drew Dawson, *Fatigue, Alcohol and Performance Impairment*, *supra* note 21.

[33] For example, lawsuits against NYPD cost the City $237.2 million in Fiscal Year 2022. Of that number, motor vehicle accident claims filed against NYPD accounted for 22% of claims (2022 CLAIMS REPORT, *supra* note 5).

[34] *See* section VI.c, *infra*. For example, the Washington D.C. Metropolitan Police Department has crafted policies specifically to address fatigue (DISTRICT OF COLUMBIA, METROPOLITAN POLICE, GENERAL ORDER: LIMITATIONS ON WORK HOURS (Jan. 6, 2005), available at https://go.mpdconline.com/GO/GO_201_21.pdf). *See also* Bryan J. Vila et al., *Improving Shift Schedule and Work-Hour Policies and Practices to Increase Police Officer Performance, Health, and Safety*, POLICE QUARTERLY, April 2002 at 7 (2002) [hereinafter Vila, *Improving Shift Schedule and Work-Hour Policies*].
NYPD has recently agreed to a pilot program that includes longer tours–three shifts of twelve-hour tours per week instead of five shifts of eight-hours, as part of its most recent agreement with the Police Benevolent Association. Based on information available to OIG-NYPD, this pilot program does not limit overtime, and it is unclear how the twelve-hour tour will impact officer fatigue or how it will impact overtime hours worked.

[35] NYC COUNCIL COMMITTEE ON OVERSIGHT AND INVESTIGATIONS, COMMITTEE REPORT OF THE GOVERNMENTAL AFFAIRS DIVISION August 22, 2017.

III. Methodology

To examine the connection between overtime and NPOs, OIG-NYPD selected a random sample of NYPD officers to study, for the period 2019–2021.[36] OIG-NYPD collected data on NPOs involving those officers from NYPD, the Civilian Complaint Review Board ("CCRB"), the NYC Comptroller, and the NYC Law Department, as well as related overtime hours from City databases.[37] OIG-NYPD then used that data to run a series of logistic regressions.[38] OIG-NYPD used these logistic regressions to predict the increased risk that an NPO will occur after every hour of overtime worked, in certain windows of time (e.g., overtime worked the day before an NPO or in the three days before).[39] OIG-NYPD also reviewed scientific papers and research studies related to fatigue, sleep deprivation, extended shifts, and overtime, both generally and specifically with respect to police officers and policing outcomes. OIG-NYPD reviewed best practice research on how to combat fatigue, including efforts made by other law enforcement agencies and industries requiring dangerous or stressful work, as well as broader fatigue mitigation best practices. In addition, OIG-NYPD reviewed overtime and shift scheduling policies of other police departments. Next, the Office reviewed monitoring mechanisms for early detection of fatigue as well as technological methods of tracking sleep deprivation and fatigue, which are utilized within and

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[36] OIG-NYPD selected this timeframe based on the availability of relevant data and in order to include periods before and after the height of the Covid-19 pandemic. In addition, although 2020 had larger protests than other years, the data from 2020 did not have a distortionary impact on the analysis. The number of NPOs that occurred in 2020 were not disproportionately higher than other years and in fact some categories of NPOs were lower in 2020 than other years. Even if 2020 had disproportionate higher or lower number of data points, logistic regressions, described further in section V, infra, are capable of tolerating so-called 'distortionary effects' given they are not bound to the same assumptions as linear regressions (i.e., normality, heteroskedasticity) and do not prescribe a relationship to a set of datapoints, but rather use historic data to build predictive models.

[37] OIG-NYPD collected data concerning every documented instance of an IAB investigation for alleged misconduct which occurred from the beginning of 2019 through the end of 2021, from NYPD. A single IAB complaint may sometimes contain several different allegations, but OIG-NYPD considered a substantiated or partially substantiated complaint against an officer, regardless of the number of substantiated allegations within that complaint, to be one NPO against that officer, occurring on the date of the alleged misconduct. If one complaint was made against multiple officers in the sample (regardless of the number of underlying allegations), OIG-NYPD considered each officer to have had one IAB NPO that day. NYPD also provided OIG-NYPD with every documented instance of a workplace injury or vehicle collision which occurred during the time period referenced above, and every T.R.I. Report for incidents which occurred in that timeframe. From CCRB, OIG-NYPD collected data of every documented CCRB complaint for alleged misconduct which occurred during the time period. CCRB complaints may contain several different allegations, but OIG-NYPD considered a substantiated or partially substantiated complaint against an officer, regardless of the number of allegations, to be one CCRB NPO against that officer, occurring on the date of the misconduct alleged. If a substantiated or partially substantiated complaint was made against multiple officers in the sample (regardless of the number of underlying allegations), OIG-NYPD considered each officer to have had one CCRB NPO on the day of the alleged misconduct. Finally, from the Law Department, OIG-NYPD collected every lawsuit filed alleging an incident that occurred during the timeframe, regardless of when the lawsuit was filed. The Comptroller provided OIG-NYPD with a list of Notices of Claim (an initial, procedural step prior to filing a lawsuit) alleging an incident that occurred during the timeframe, regardless of when the Notice of Claim was filed. OIG-NYPD filtered that list against the Law Department data to include in the sample Notices of Claim which may have been resolved prior to litigation from the sample.

[38] Logistic regression is a predictive analysis that estimates the probability that an event will occur.

[39] The details of the logistic regression analysis are discussed in section V, *infra*.

outside of law enforcement. The Office also reviewed NYPD's policies and procedures with respect to officer fatigue, overtime, shift scheduling, and off-duty work. Finally, OIG-NYPD met with senior NYPD officials and other staff, and consulted with representatives from NYPD unions, specifically the Police Benevolent Association and the Lieutenants Benevolent Association.[40]

IV. Overview and Background of Data Analysis

OIG-NYPD examined overtime and its relationship to certain NPOs, such as lawsuits, CCRB complaints, IAB complaints, workplace injuries, on-duty vehicle collisions, and T.R.I. Reports, that can be quantified and that pose risks of liability to the City. Each NPO may generate varying levels of potential risk to the City. OIG-NYPD collected data concerning each NPO, and analyzed each type of NPO to determine whether there was any relationship between the NPO and overtime hours. By measuring the nature of the relationship between these NPOs and overtime hours, OIG-NYPD can estimate certain risks overtime poses with respect to these specific negative outcomes, which impact officers, the public, and the City.[41] As an initial matter, to understand the increased risk of NPOs posed by overtime, it is important to have a full understanding of each NPO.

Each NPO may have a number of causes, and an assessment of the underlying causes is beyond the scope of this Report. Moreover, OIG-NYPD's data analysis cannot consider causation and does not establish whether there is a causal relationship between overtime and NPOs. In addition to the limitations of the data analysis itself, OIG-NYPD did not study the particular facts of each NPO or the associated overtime hours. Furthermore, NPOs involving officers in OIG-NYPD's sample may have occurred but not been reported–and thus were not included in the analysis–potentially due to procedural barriers to lawsuits and to the filing of complaints. OIG-NYPD limited its data analysis to CCRB complaints and IAB complaints that were substantiated or partially substantiated, in order to limit the possibility of false or frivolous allegations.

a. Lawsuits

The Office examined lawsuits involving NYPD officers filed in New York State court or the federal district courts in New York State, where the allegations involved incidents that occurred from 2019 through 2021. In Fiscal Year 2022, the most recent year for which annual data is available, 4,580 tort claims were filed against NYPD.[42] In Fiscal Year 2021, there were 5,166 tort claims filed against NYPD.[43] In 2022, settlements related specifically to police misconduct hit a

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[40] OIG-NYPD requested meetings with the Sergeants Benevolent Association, Detectives Endowment Association, and Captains Endowment Association; those entities did not respond.

[41] Although the logistic regression predicts the risk of each NPO, assessing the costs of particular NPOs vs others, or considering when the risk of an NPO is outweighed by the benefits of overtime in certain circumstances, or other related analysis of the costs and benefits of overtime are beyond the scope of this Report.

[42] 2022 CLAIMS REPORT *supra* note 5.

[43] 2021 CLAIMS REPORT *supra* note 10 at 28.

five-year peak, with a \$121 million payout in 2022, compared to \$85 million paid in settlements in 2021.[44] Legal claims against the City involving NYPD officers generally have involved allegations of excessive force, civil rights violations, personal injury or property damage as a result of police action, and motor vehicle accidents involving police vehicles.[45]

As compared to other NPOs, there are moderately difficult procedural barriers associated with lawsuits. Lawsuits generally require the assistance of an attorney or a significant amount of individual effort.[46] A litigant also must have sufficient evidence to support their claim to prevail. It is reasonable to assume that in many instances, meritorious claims are not filed due to these procedural barriers. It is also reasonable to assume that many lawsuits that are filed lack merit– and indeed many lawsuits against the City involving NYPD officers are ultimately dismissed on that basis.[47]

b. CCRB Complaints

CCRB complaints are typically filed by members of the public alleging that an NYPD officer used excessive or unnecessary force, abused their authority, acted discourteously, used offensive language based on protected status, or made untruthful statements during an investigation ("FADO&U" complaints).[48] In 2022, CCRB received 3,699 complaints.[49] The majority of complaints filed with CCRB allege abuses of authority by NYPD officers, including unlawful entry into premises, threats of arrest, and unlawful searches of a person or vehicle; the next most common allegations are uses of unnecessary or excessive physical force or pointing a

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[44] Emily Saul, *NYC Payments to Settle Police Misconduct Cases Hit 5-Year Peak*, LAW.COM (Feb. 2, 2023, 3:15 p.m.), https://www.law.com/newyorklawjournal/2023/02/02/nyc-payments-to-settle-police-misconduct-cases-hit-5-year-peak/?slreturn=20230327114548; Jake Pearson, *As New York Pays Out Millions In Police Misconduct Settlements, Lawmakers Ask Why They Keep Happening*, PROPUBLICA (Mar. 21, 2023, 5:00 a.m.), https://www.propublica.org/article/nyc-nypd-police-misconduct-settlements-protests#:~:text=Settlements%20and%20payouts%20for%20police,provider%20of%20indigent%20legal%20services.

[45] 2022 CLAIMS REPORT *supra* note 5.

[46] In New York City, lawsuits against NYPD are initiated by filing a Notice of Claim with the New York City Comptroller. From there, the Comptroller's office may settle the claim or it may proceed to court, where the New York City Law Department defends or settles the case (*see generally* Civil Court of the City of New York, *Instructions for Filing Actions Against the City of New York, The State of New York, The United States of America*, NYCOURTS.GOV, https://www.nycourts.gov/COURTS/nyc/civil/forms/civ-sc-25.pdf. (last visited April 27, 2023).

[47] The Law Department publishes data on civil lawsuits alleging misconduct by NYPD officers, many of which are closed without the City making a payout to the petitioner (N.Y.C. Law Dep't., *NYC Administrative Code § 7-114: Civil Actions Regarding the Police Department*, NYC.GOV, https://www.nyc.gov/site/law/public-resources/nyc-administrative-code-7-114.page) [last visited April 27, 2023]).

[48] Civilian Complaint Review Board, *About the CCRB*, NYC.GOV, https://www.nyc.gov/site/ccrb/about/about.page (last visited April 27, 2023) CCRB complaints can be filed by anyone, regardless of immigration status, in a variety of ways including online and in person at various offices (Civilian Complaint Review Board, *How to File a Complaint With the CCRB*, NYC.GOV, https://www.nyc.gov/site/ccrb/complaints/file-a-complaint/file-complaint.page [last visited April 27, 2023]).

[49] Civilian Complaint Review Board, *Data Transparency Initiative: Complaints*, NYC.GOV, https://www.nyc.gov/site/ccrb/policy/data-transparency-initiative-complaints.page#complaints (last visited April 27, 2023).

weapon at a member of the public; the third most common are discourteous actions or words; and the fourth most common allegation is offensive language based on someone's protected status such as race or gender.[50] The least common allegation is an officer making a knowingly false statement to an investigator during an investigation.[51]

CCRB complaints can be filed in various ways, including online, via an interactive form, over the phone, and at a variety of in-person locations.[52] A complaint requires only very basic information as an initial matter, and CCRB conducts the investigation and evidence gathering thereafter.[53] For this reason, the procedural barriers to filing a CCRB complaint are significantly lower than those to a lawsuit. OIG-NYPD analyzed only those CCRB complaints which were substantiated or partially substantiated, meaning that some of the allegations in the complaint were substantiated. Allegations are substantiated when CCRB determined that there was "sufficient credible evidence to believe that the subject officer committed the alleged act without legal justification."[54] There are a variety of reasons why a complaint, or certain allegations within a complaint, may not be substantiated, including, among other reasons, that the available evidence was insufficient to determine whether or not the officer engaged in misconduct or because the officer acted lawfully.[55]

c. IAB Complaints

NYPD's Internal Affairs Bureau ("IAB") investigates allegations of corruption or criminal behavior within the Department.[56] IAB receives complaints from members of the public and NYPD members of service.[57] According to the most recent data available from the Commission to Combat Police Corruption ("CCPC"), IAB investigations, broadly speaking, involve allegations about stolen property, associating with criminals, possession of narcotics, driving while under the influence, domestic incidents, and other unlawful conduct.[58] Also, according to the most recent CCPC data, IAB substantiated at least one allegation against officers in approximately 42% of cases in 2019 and 52% of cases in 2020.[59]

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[50]CIVILIAN COMPLAINT REVIEW BOARD, SEMI-ANNUAL REPORT 2022 at 12-13.
[51] *Id.*
[52] Civilian Complaint Review Board, *How to File a Complaint With the CCRB*, *supra* note 48.
[53] Civilian Complaint Review Board, *Investigations*, NYC.GOV,
https://www.nyc.gov/site/ccrb/investigations/investigations.page (last visited April 27, 2023).
[54] Civilian Complaint Review Board, *Case Outcomes*, NYC.GOV, https://www.nyc.gov/site/ccrb/investigations/case-outcomes.page (last visited April 27, 2023).
[55] *Id.*
[56] N.Y.C. Police Dep't., *Internal Affairs*, NYC.GOV, https://www.nyc.gov/site/nypd/bureaus/investigative/internal-affairs.page (last visited April 27, 2023).
[57] *Id.*
[58] N.Y.C. COMM'N TO COMBAT POLICE CORRUPTION, TWENTIETH ANNUAL REPORT OF THE COMMISSION (June 2022) at 14.
[59] *Id.* at 22.

IAB complaints can be made via telephone, email, mail, or in person at an NYPD facility.[60] Unlike CCRB, NYPD does not have a user-friendly form that can be filled out on its website, nor does NYPD's website specify what information should be included in an IAB complaint. Despite the variety of ways in which an IAB complaint may be made, the prospect of filing a complaint about the police with the police, is likely a disincentive to many individuals. OIG-NYPD analyzed only those IAB complaints which were substantiated or partially substantiated, meaning IAB "determined that the subject committed some of the acts of misconduct alleged."[61] Similar to CCRB complaints, there are a variety of reasons why IAB may not substantiate some or all of the allegations in a complaint against the officer, including, among other reasons, that IAB was unable to determine whether the misconduct occurred or because IAB concluded that the officer acted lawfully.[62]

d. T.R.I. Reports

Improper use of force is one of the more common NPOs associated with increased liability to the City.[63] NYPD's policy is to use verbal commands alone, where possible, to achieve compliance with law enforcement demands.[64] Officers may use a range of force options where necessary to compel an individual to submit to lawful authority.[65] Even when the use of force is appropriate or necessary, it is inherently dangerous both for the officer and the subject.[66] Officers can also be subjected to force or physical resistance.[67]

Tracking uses of force—both by and against officers—is relatively straightforward. In response to prior OIG-NYPD recommendations, NYPD has made numerous updates to the recording of uses of force by officers and against officers.[68] Central to NYPD's force reporting system is the "Threat, Resistance and Injury ("T.R.I.") Report".[69] A T.R.I. Report is created when an officer uses force or is subjected to force, when an injury occurs during a police action, or while

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[60] N.Y.C. Police Dep't., *Internal Affairs*, *supra* note 56.

[61] N.Y.C. COMM'N TO COMBAT POLICE CORRUPTION, *supra* note 58 at 20.

[62] *Id.* at 20-21.

[63] 2022 CLAIMS REPORT *supra* note 5.

[64] N.Y.C. POLICE DEP'T., 2021 USE OF FORCE REPORT at 7, https://www.nyc.gov/assets/nypd/downloads/pdf/use-of-force/use-of-force-2021.pdf (last visited May 2, 2023).

[65] *Id.*

[66] Even the lowest level of force reported on a T.R.I., a Level 1 use of force, can include "the use of hand strikes, foot strikes, forcible takedowns, wrestling/grappling . . ." and other interactions with members of the public involving close physical contact between officers and subjects (*id. at* 9).

[67] N.Y.C. Police Dep't, Patrol Guide. No. 221-06 (2023).

[68] *See generally* N.Y.C. DEP'T OF INVESTIGATION, OFF. OF THE INSPECTOR GENERAL FOR THE NYPD, POLICE USE OF FORCE IN NEW YORK CITY: FINDINGS AND RECOMMENDATIONS ON NYPD'S POLICIES AND PRACTICES; (October 2015); N.Y.C. DEP'T OF INVESTIGATION, OFF. OF THE INSPECTOR GENERAL FOR THE NYPD, AN INVESTIGATION OF NYPD'S NEW FORCE REPORTING SYSTEM (Feb. 2018); and N.Y.C. DEP'T OF INVESTIGATION, OFF. OF THE INSPECTOR GENERAL FOR THE NYPD, NINTH ANNUAL REPORT: OFFICE OF THE INSPECTOR GENERAL FOR THE NYPD (April 2023).

[69] N.Y.C. DEP'T OF INVESTIGATION, OFF. OF THE INSPECTOR GENERAL FOR THE NYPD, AN INVESTIGATION OF NYPD'S NEW FORCE REPORTING SYSTEM, *supra* note 68 at 1.

an individual is in police custody.[70] NYPD's Patrol Guide specifies that a T.R.I. Report must be created when an officer "uses any level of reportable force, excessive force is suspected or alleged, and/or a subject, civilian, non-member of the service or bystander sustains an injury . . . in connection with police action . . ." or when an officer "is subjected to force while performing lawful duty, or sustains an injury that results from attempting to apprehend a subject or control an individual or individuals, or encounters active resistance from a subject, either on or off-duty . . ."[71] In 2021, the most recent year for which annual data is available, there were 6,440 reportable force incidents.[72]

There are relatively few procedural barriers to T.R.I. reporting, which is mandated by NYPD policy and supported by a robust electronic T.R.I. reporting/tracking system. However, OIG-NYPD has previously examined the Department's T.R.I. program and found that T.R.I. Reports are not always completed as required by NYPD policy.[73] Although NYPD has made significant reforms to its T.R.I. process in the past few years, it has rejected certain OIG-NYPD recommendations intended to increase the accountability of officers in completing the T.R.I. process.[74] Thus, the T.R.I. Reports reviewed by OIG-NYPD in this investigation may not reflect each instance of use of force by or against an NYPD officer in the relevant time period. However, T.R.I. Reports remain a reliable indicator of potential liability because most legal claims against NYPD allege personal injury as a result of police action.[75] When an officer is subjected to force there is also potential liability, due to officer injury, which can lead to time away from work or even disability retirement.[76]

e. Workplace Injuries

According to the Mayoral Management Report, 13,931 uniform and non-uniformed members of NYPD were injured on the job in Fiscal Year 2022, a 38.6% increase over Fiscal Year 2021.[77] Some may be minor injuries that do not pose a liability risk.[78] The data OIG-NYPD received for NYPD workplace injuries captured only reported work-related illnesses or injuries; some injuries may not be reported.

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[70] N.Y.C. Police Dep't, Patrol Guide. Nos. 221-03, 221-06; N.Y.C. DEP'T OF INVESTIGATION, OFF. OF THE INSPECTOR GENERAL FOR THE NYPD, AN INVESTIGATION OF NYPD'S NEW FORCE REPORTING SYSTEM, *supra* note 68 at 1.

[71] N.Y.C. Police Dep't, Patrol Guide. Nos. 221-03, 221-06 (2023).

[72] N.Y.C. POLICE DEP'T., 2021 USE OF FORCE REPORT, *supra* note 64 at 4.

[73] OIG-NYPD, AN INVESTIGATION OF NYPD'S NEW FORCE REPORTING SYSTEM, *supra* note 68 at 2-3.

[74] N.Y.C. DEP'T OF INVESTIGATION, OFF. OF THE INSPECTOR GENERAL FOR THE NYPD, NINTH ANNUAL REPORT *supra* note 68.

[75] 2022 CLAIMS REPORT, *supra* note 5 at 28.

[76] N.Y.C. POLICE PENSION FUND, SUMMARY PLAN DESCRIPTION: TIER 2 MEMBERS (Jan. 2022) at 24; N.Y.C. POLICE PENSION FUND, SUMMARY PLAN DESCRIPTION: TIER 3 MEMBERS (Jan. 2022) at 16.

[77] N.Y.C. MAYOR ERIC. L ADAMS, MAYOR'S MANAGEMENT REPORT (Sept. 2022) at 61; Rich Calder, *NYPD Reported Workplace Injuries Skyrocketing*, N.Y. POST (Sept. 24, 2022, 9:21 a.m.), https://nypost.com/2022/09/24/nypd-reported-workplace-injuries-skyrocketing/.

[78] Dennis Lindsey, POLICE FATIGUE: AN ACCIDENT WAITING TO HAPPEN, F.B.I. LAW ENFORCEMENT BULLETIN (Aug. 2007) at 5.

f. Vehicle Collisions

OIG-NYPD analyzed NYPD data concerning vehicle collisions that occurred while the officer was on duty. Vehicle collisions are self-reported by officers to the Department; some accidents may not be reported.[79] In addition, this NPO is only relevant to those officers who were driving while on-duty – the sample OIG-NYPD reviewed may include officers who were not driving.[80]

V. Analysis and Findings—Overtime and NPOs

To determine whether increased overtime increases potential liability for the City, OIG-NYPD tested the hypothesis that overtime worked by NYPD officers may increase the risk of various NPOs.

a. Background of Analysis of Overtime Hours Worked and Negative Policing Outcomes

OIG-NYPD's data analysis focused on an examination of overtime hours worked by a random sample of 993 NYPD officers over a three-year period: 2019, 2020, and 2021.[81] OIG-NYPD collected data from NYPD, CCRB, the NYC Comptroller's Office, and the NYC Law Department, for all NPOs described earlier in this Report, that occurred from 2019 – 2021, involving the officers in the sample, and all overtime hours worked by each officer in the sample during the same three-year period.[82]

OIG-NYPD did not include in its analysis secondary or off-duty work by those officers, as NYPD does not track or require reporting of those hours.[83] In order to determine the relationship between NPOs and the number of overtime hours worked, OIG-NYPD performed a series of logistic regressions.[84] The goal of the logistic regression was to gauge how, if at all, hours of

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[79] NYPD maintains that all vehicle collisions, even minor ones, are reported every time they occur.

[80] For example, when two patrol officers are assigned to an NYPD patrol car (known as a Radio Motor Patrol or RMP), one officer is the operator of the vehicle and one is the recorder of the activity of the RMP (N.Y.C. Police Dep't, Patrol Guide. Nos. 202-02, 202-03). The assignments of operator and recorder can change by shift and by day, thus officers in our sample who operate an RMP may not always be the officer driving.

[81] OIG-NYPD initially pulled a sample of 1,000 MOS and studied 993 MOS, after excluding what appeared to be duplicate MOS from the sample. OIG-NYPD's sample consists of patrol officers, detectives, and sergeants working in public-facing roles — that is, those members of service likely to interact regularly with the public and thus more likely to be subject to claims, complaints, or investigations, as mandated by Charter 808.

[82] Each officer in the sample had a total of 1,096 days they could have potentially worked in the three-year period (365 days in a year + 1 additional day in February 2020 [leap year] x 3 years), for a total of 1,088,328 days in the three-year period (1,096 days x 993 officers). Of those 1,088,328 days, overtime was recorded on 196,955 days, or approximately once every five days on average.

[83] NYPD requires officers to seek authorization for most off-duty employment and the paperwork requires the officer to estimate how many hours they expect to work each week. Sixty-nine officers in the sample had authorization to perform off-duty work, but OIG-NYPD was unable to ascertain how much off-duty work those officers actually performed in the time period, because NYPD does not track off-duty work hours.

[84] A logistic regression is a statistical technique which allowed OIG-NYPD to predict the increased risk of a negative policing outcome occurring for every hour of overtime worked. In this Report, logistic regressions were able to compare the presence of an NPO (coded as a '1' if an NPO occurred on that day and a '0' if not) to the net hours of

overtime increased the risk of an NPO, and if so, forecast the increased risk of an NPO as hours of overtime increased.

OIG-NYPD considered whether overtime was worked, when, and the number of overtime hours. Because research demonstrates that fatigue and sleep deprivation can also have a cumulative effect over time, OIG-NYPD examined whether the odds of an NPO increased in relation to overtime worked during specific windows of time: the day before the NPO, the three days before the NPO, the five days before the NPO, and the seven days before the NPO.[85] All overtime hours worked within each window of time were aggregated, that is, all overtime hours worked during the relevant window of time were considered in total for that time period.[86] OIG-NYPD also looked specifically at different lengths of overtime shifts. OIG-NYPD found that the average number of consecutive overtime hours worked by an officer was 4.2 (roughly 4 hours and 12 minutes), and also found numerous examples of lengthier periods of overtime. In the 196,587 occurrences of overtime recorded in the relevant time period, on 31,810 occasions an officer worked an overtime shift of 8 hours or greater, on 6,115 occasions an officer worked an overtime shift of 12 hours or greater, and on 1,313 occasions an officer worked an overtime shift of 16 hours or greater (less frequently there were 20- and 24-hour shifts of overtime).[87]

OIG-NYPD used data pertaining to the sample and relevant years to determine the odds, on any given day, of a negative policing outcome occurring in the absence of overtime hours. OIG-NYPD then determined how those odds increased, if at all, when an officer worked: (1) one hour of overtime; (2) the average length of an overtime shift (4.2 hours); or (3) a period of overtime of 8 hours or more (8-, 12-, 16-, 20-, and 24-hour shifts of overtime).

Increased overtime may in some circumstances also involve extended periods of being awake. To explore one of the potential reasons that overtime can increase the risks of NPOs, OIG-NYPD considered publicly available data concerning the impact of extended periods of being awake on cognitive and motor functioning (which did not consider law enforcement officers specifically). The Centers for Disease Control ("CDC") includes on its public website information concerning the impact of extended periods of wakefulness, which states that being awake for extended periods of time negatively affects cognitive and physiological performance, with effects

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overtime worked over the previous day, three-, five-, and seven-day windows, and create generalized models which estimate the probability of the NPO at each hour of overtime worked.

[85] This analysis also shows how the increased liability risk fades as the time period after the overtime increases.

[86] As an example, consider an officer that works one hour of overtime on Friday, two hours on Saturday, and three hours on Sunday. When considering the relationship between NPOs and Previous Day overtime, as of Monday, this officer has three overtime hours – the hours worked on Sunday. When examining Previous Three-Day windows, as of Monday, this officer has six overtime hours (three hours on Sunday, plus two hours on Saturday, plus one hour on Friday). If the officer worked no other overtime earlier in that week, then that officer would have six overtime hours for the Previous Five-Day and Previous Seven-Day windows.

[87] The odds calculations were completed based on the length of each shift, such that the increase in odds after working a 12-hour shift of overtime are calculated based solely on a shift of 12 hours of overtime, not a shift of 12 hours or greater.

similar to moderate alcohol intoxication.[88] The CDC further notes several studies which demonstrate that being awake for 17 hours produces a performance impairment equal to a blood alcohol concentration ("BAC") of 0.05% (in New York State, a BAC of more than .05% is evidence of impairment), and being awake for 24 hours produces a performance impairment equal to a BAC of 0.10% (in New York State, a BAC of .08% is evidence of intoxication).[89] These studies are based on performance *after* being awake for 16 or 17 hours, a point at which individuals who sleep seven or eight hours per night would be going to sleep, not continuing to work, or performance *after* being awake for 24 hours, and continuing to work.[90]

The impact of sleep deprivation-related impairment can include reduced attention vigilance (lapses in focus and attention), decreased reaction time, reduced hand-eye coordination, and reduced response time.[91] Notably, the studies used young, healthy individuals, indicating that even this population is not immune from the negative effects of extended wakefulness.[92] The results of these studies are particularly important when considered in the context of officers who have been on duty for 17 hours or more, and thus are working after they have been awake for 16 or 17 hours. For example, an officer who works an eight-hour shift, and then eight hours of consecutive overtime, is likely to be working at least an hour or two after having been awake for at least 17 hours – allowing some time to get ready for and commute to work. Of those overtime shifts analyzed for this Report, 14,124 or 7% were at least nine hours long. Overtime usually followed an officer's regular shift, often of eight-hours, however in some instances, overtime worked was separated from a normal shift by hours or even days.[93]

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[88] Nat'l Inst. for Occupational Safety and Health, *Risks from Not Getting Enough Sleep: Impaired Performance,* CENTERS FOR DISEASE CONTROL AND PREVENTION, https://www.cdc.gov/niosh/emres/longhourstraining/impaired.html (last reviewed April 1, 2020); Nat'l Inst. for Occupational Safety and Health, *Impairments Due to Sleep Deprivation are Similar to Impairments Due to Alcohol Intoxication!,* CENTERS FOR DISEASE CONTROL AND PREVENTION, https://www.cdc.gov/niosh/work-hour-training-for-nurses/longhours/mod3/08.html (last reviewed Mar. 31, 2020); Dawson, *Fatigue, Alcohol, and Performance Impairment*, *supra* note 21; A.M. Williamson & Anne-Marie Feyer, *Moderate Sleep Deprivation Produces Impairments in Cognitive and Motor Performance Equivalent to Legally Prescribed Levels of Alcohol Intoxication,* 57 Occupational Env't. Med. 649 (2000); *see also* American Psych. Assoc., *Psychomotor Functioning is the Relationship Between Cognitive Function and Physical Movements*, APA DICTIONARY OF PSYCHOLOGY, https://dictionary.apa.org/psychomotor-skill (last visited April 27, 2023).

[89] Nat'l Inst. for Occupational Safety and Health, *Impairments Due to Sleep Deprivation are Similar to Impairments Due to Alcohol Intoxication!, supra* note 88 (citing J. Todd Arnedt et al., *Neurobehavioral Performance of Residents After Heavy Night Call vs After Alcohol Ingestion*, 294 JAMA 1025 (2005); Dawson, *Fatigue, Alcohol, and Performance Impairment*, *supra* note 21; Williamson, *supra* note 88.

[90] Williamson, *supra* note 88 at 654.

[91] *Id.* at 650, 653. *See also* Mackworth Clock Test, PSYTOOLKIT, https://www.psytoolkit.org/experiment-library/mackworth.html (last visited April 27, 2023).

[92] Arnedt, *supra* note 89; Dawson, *Fatigue, Alcohol, and Performance Impairment*, *supra* note 21; Williamson, *supra* note 88.

[93] The increased risk associated with overtime that OIG-NYPD's analysis identified exists regardless of whether or not the overtime followed a regular shift, or whether the overtime was separated from a regular shift. The increased risk identified is associated with each hour of overtime, independent of other hours worked. However, in the

b. Results of Data Analysis: Risks on a Per-Officer Basis

Overtime hours increase the probability of an NPO.[94]

There is a statistically significant relationship between overtime hours worked and all NPOs, except substantiated IAB complaints.[95] That is, the data showed an increased risk of all other NPOs per hour of overtime, and that increase was statistically significant, meaning that there is likely a relationship between those NPOs and overtime, as opposed to the increase being due to chance.[96] OIG-NYPD found that even one hour of overtime increases the odds of an officer having an NPO, and the odds increase as an officer works the average amount of overtime hours. Moreover, when an officer works a much longer shift of overtime (8-, 12-, 16-, 20-, and 24-hour shifts), the odds of an NPO increase dramatically.

As noted above, the odds of these NPOs occurring, in the absence of overtime, are relatively low. The odds that an officer will be named in a substantiated CCRB complaint are 1 in 11,047, meaning that, Department-wide, we would expect approximately two officers would be named in a substantiated CCRB complaint on any given day.[97] The odds that an officer will be named in a lawsuit are 1 in 6,717, or 3.7 officers named in a lawsuit for conduct occurring on any given day. The odds that an officer will be involved in an incident resulting in the completion of a T.R.I. Report are 1 in 683 or thirty-six officers daily. The odds of a vehicle collision are 1 in 4,372 or approximately six collisions on any given day. The odds of a workplace injury are 1 in 1,492 or approximately 17 officers being injured daily.

These odds increase substantially when an officer works overtime, and OIG-NYPD focused particularly on the average length of overtime, four hours and twelve minutes. For example, if an officer works the average amount of overtime the odds that they will be named in a substantiated CCRB complaint for an incident occurring the next day increase by 36.8%, the odds that they will be named in a lawsuit for an incident occurring the next day increase by 36.5%, the odds that they will be involved in an incident the next day resulting in a T.R.I. Report increase by 17.8%, and the odds that they will suffer a workplace injury the next day increase by 18.5%. As overtime shift increases, the risk increases exponentially.

OIG-NYPD measured the increased risk of NPOs using 'odds ratios,' the chief output of logistic regressions, which reflect the increased odds that an NPO will occur as overtime increases. In Figures 1 through 4 below, the increased odds that an NPO will occur — for those NPOs that have a statistically significant relationship with overtime worked the previous day, within the last three days, five days, and seven days — are plotted against overtime hours. The figures all begin

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assessment that OIG-NYPD recommends, NYPD should consider the risks of overtime worked after a regular shift and whether separating overtime hours from regular shift hours might mitigate those risks.

[94] *See* Appendix D.

[95] *See supra* note 14.

[96] Tenny, *supra* note 15.

[97] These daily numbers, and those that follow, were calculated by converting the baseline odds into probability and multiplying that probability by the roughly 25,000 public-facing officers.

at a y-intercept of 0%, indicating no change in the risk of an NPO compared to the baseline probability of an NPO when no overtime was worked. But as overtime increases incrementally (i.e., from 1 hour to 2 hours to 3 hours…), the odds of an NPO also increase, exponentially.

The y-axis (the vertical line of the chart) represents the increased risk of an NPO occurring. For example, at 10%, officers have a ten percent greater risk of an NPO; at 50%, the risk is one-and-a-half times as great, and at 100%, officers have double the risk of an NPO compared to the risk of an NPO had they worked no overtime.

The first figure below, Figure 1, illustrates the increased odds of each statistically significant NPO—lawsuits, substantiated CCRB complaints, T.R.I. Reports, and workplace injuries—occurring after overtime is worked the day before. Of the windows of time OIG-NYPD examined, overtime worked the previous day has the most pronounced effect on the odds of each NPO. The only NPOs that did not have a statistically significant increase after overtime worked the previous day were vehicle collisions and substantiated IAB complaints. Figure 1 also illustrates that the odds at the four-hour mark (the average overtime shift is 4.2 hours) substantially increase. Finally, the odds, after extended periods of overtime the day before, of a substantiated CCRB complaint or being named in a lawsuit are so dramatic that Figure 1 is unable to fully capture the increase.[98]

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[98] For a complete explanation of the increased odds at each hour mark, see Appendix D.

Figure 1: Increased Odds of an NPO Per Hour of Overtime Worked the Previous Day: Lawsuits, Substantiated CCRB Complaints, T.R.I. Reports, and Workplace Injuries Are Statistically Significant
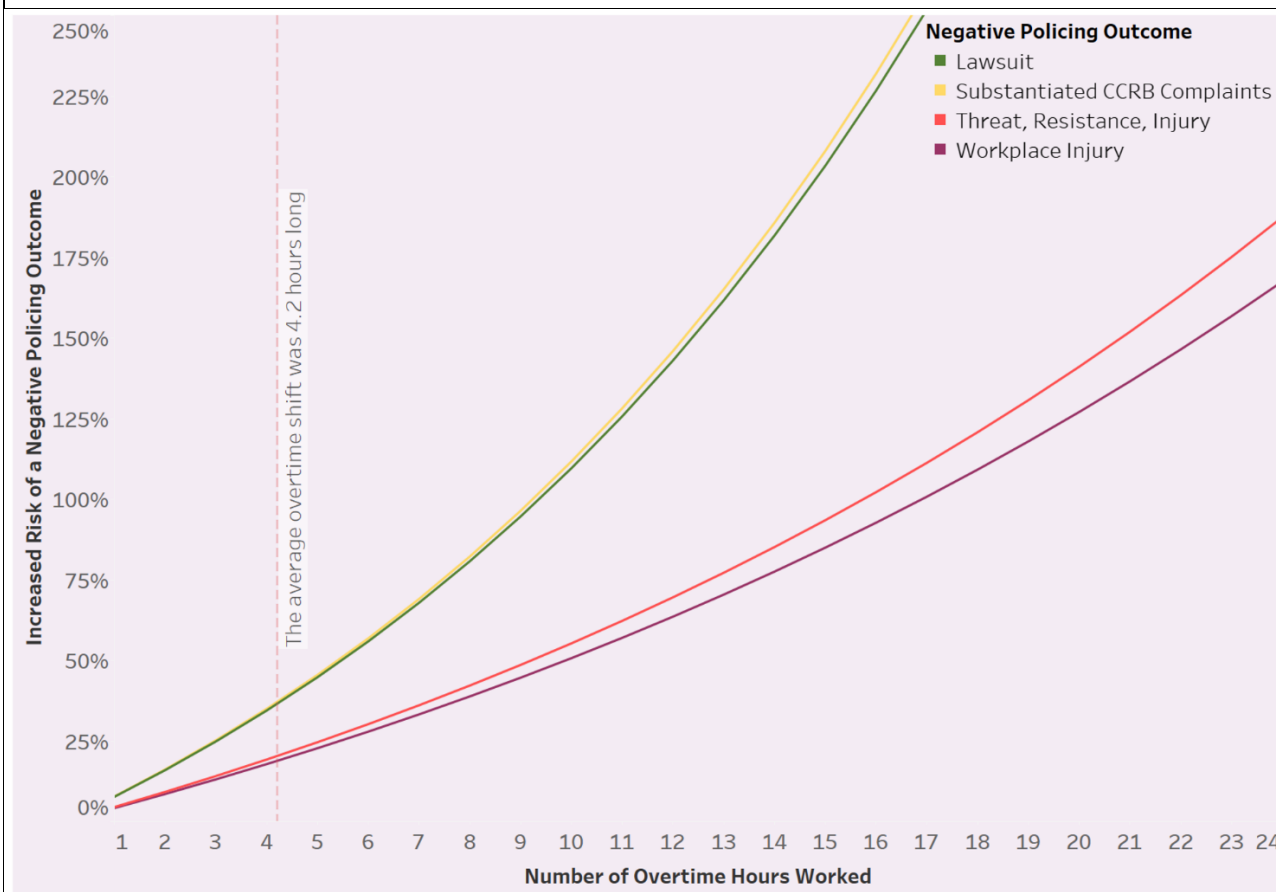
NOTE: 95% of overtime shifts are approximately 10 hours or less. Substantiated CCRB Complaints include partially substantiated CCRB complaints. Vehicle Collisions and substantiated IAB Complaints were not statistically significant in this time interval; therefore, they are not included in this figure.

An officer who works the average number (4.2) of hours in a shift has a 36.5% increased risk of being named in a lawsuit, a 36.8% increased risk of a substantiated CCRB complaint, a 20.5% increased risk of being involved in an incident resulting in a T.R.I. Report, an 18.8% increased risk of suffering a workplace injury the day after working that overtime shift. An officer who has worked nine hours of overtime has nearly double the risk of being involved in a lawsuit or a substantiated CCRB complaint, one-and-a-half times as great a risk of being involved in an incident resulting in a T.R.I. Report, and has a 44.6% increased risk of suffering a workplace injury.

The next figure, Figure 2, illustrates the increased odds of each statistically significant NPO occurring after overtime is worked in the previous three-day window. At this window of time, there was a statistically significant relationship between overtime and lawsuits and T.R.I. Reports. The overtime hours worked within the three days prior to a given day were aggregated, that is,

considered in total. Those overtime hours could be divided over the three-day period in various ways and OIG-NYPD's analysis did not consider the impact, if any, of different distributions of hours over the three-day period. For example, an officer might work one hour of overtime on Friday, two hours on Saturday, and three hours on Sunday, or the officer might work a 6-hour shift on Saturday and no overtime on Friday or Sunday. Figure 2 treats those officers the same, and depicts the increased risk that the officer will have an NPO on Monday, at the six-hour mark, without regard to those distinctions. Unlike the increased risk after overtime worked the previous day, workplace injuries were not statistically significant for this window of time, nor were vehicle collisions, CCRB complaints, or IAB complaints. This could be due to the reduced risk that overtime poses as it is distributed across a lengthier period of time.

Figure 2: Increased Odds of an NPO Per Hour of Overtime Worked in the Previous Three Days: Lawsuits and T.R.I. Reports Are Statistically Significant
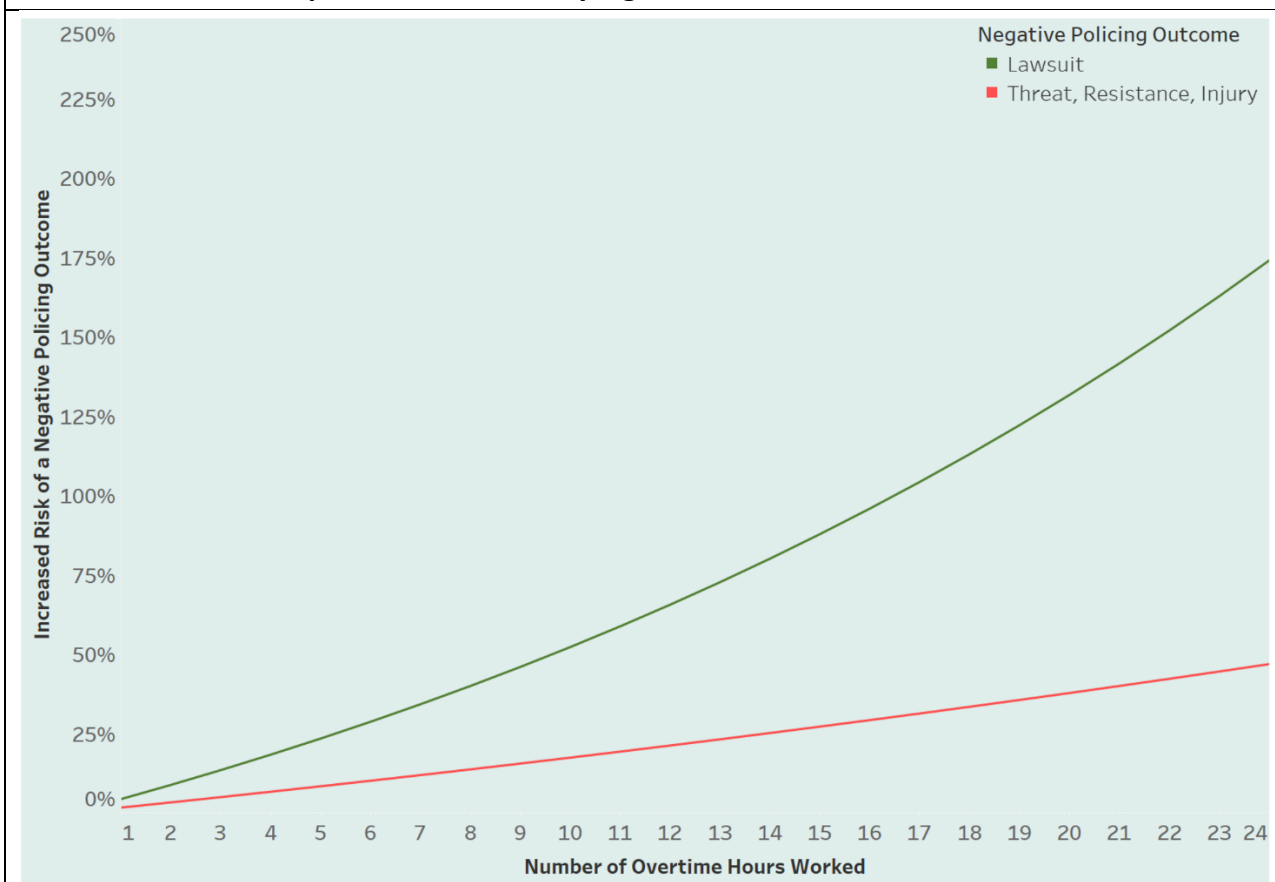
NOTE: 95% of overtime shifts are approximately 10 hours or less. Substantiated IAB and CCRB complaints, Workplace Injuries, and Vehicle Collisions were not statistically significant in this time interval. They are not included in this figure.

An officer who works a total of four hours across the previous three days (regardless of how those four hours are distributed) has a roughly 18% increased risk of being named a lawsuit and a 6.7% increased risk of being involved in an incident resulting in a T.R.I. Report.[99]

The next figure, Figure 3, illustrates the increased odds of each NPO occurring after overtime is worked in the previous five-day window. As before, the overtime hours worked within the five days prior to a given day were considered in total, and without regard to the distribution of time across those days. Although the increased odds of lawsuits and T.R.I. Reports occurring after overtime worked in the five-day window are statistically significant, the odds are lower that each of those NPOs may occur than when the overtime is worked in a previous three- or one-day window. This could be due to the risk of an NPO decreasing as overtime is spread across lengthier windows of time. Interestingly, vehicle collisions have a statistically significant relationship to overtime for the first time when considering overtime worked within the five days prior to an NPO, a finding deserving of further study by NYPD.

One officer in the sample worked approximately 19 hours of overtime over the course of four days (an eight-hour shift on both Friday and Saturday, which were the officer's regular days off, three hours on Sunday after their regular eight-hour shift, and no overtime on Monday), and then was in a vehicle collision the next day (Tuesday), for which the officer was sued. Also of note, this officer had worked 15 out of 16 days prior to the vehicle collision. The analysis described above could not consider causation, and OIG-NYPD did not study the circumstances of the crash or other information relevant to causation. This example is not offered to suggest a causal relationship between overtime and this or any other vehicle collision, it is simply meant to illustrate the relationship between overtime and increased risk of these NPOs. As with Figure 2, workplace injuries and substantiated IAB complaints were not statistically significant, nor were substantiated CCRB complaints.

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[99] For a complete explanation of the increased odds at each hour mark, see Appendix D.

Figure 3: Increased Odds of an NPO Per Hour of Overtime Worked in the Previous Five Days: Lawsuits, T.R.I. Reports, and Vehicle Collisions Are Statistically Significant

NOTE: 95% of overtime shifts are approximately 10 hours or less. Workplace injuries and substantiated IAB and CCRB Complaints were not statistically significant in this time interval. They are not included in this figure.

An officer who works six hours of overtime in total across a five-day period, has roughly a 21.6% increased risk of being named in a lawsuit, a 13.2% increased risk of being involved in a vehicle collision, and a 9.2% increased risk of being involved in an incident resulting in a T.R.I. Report.[100]

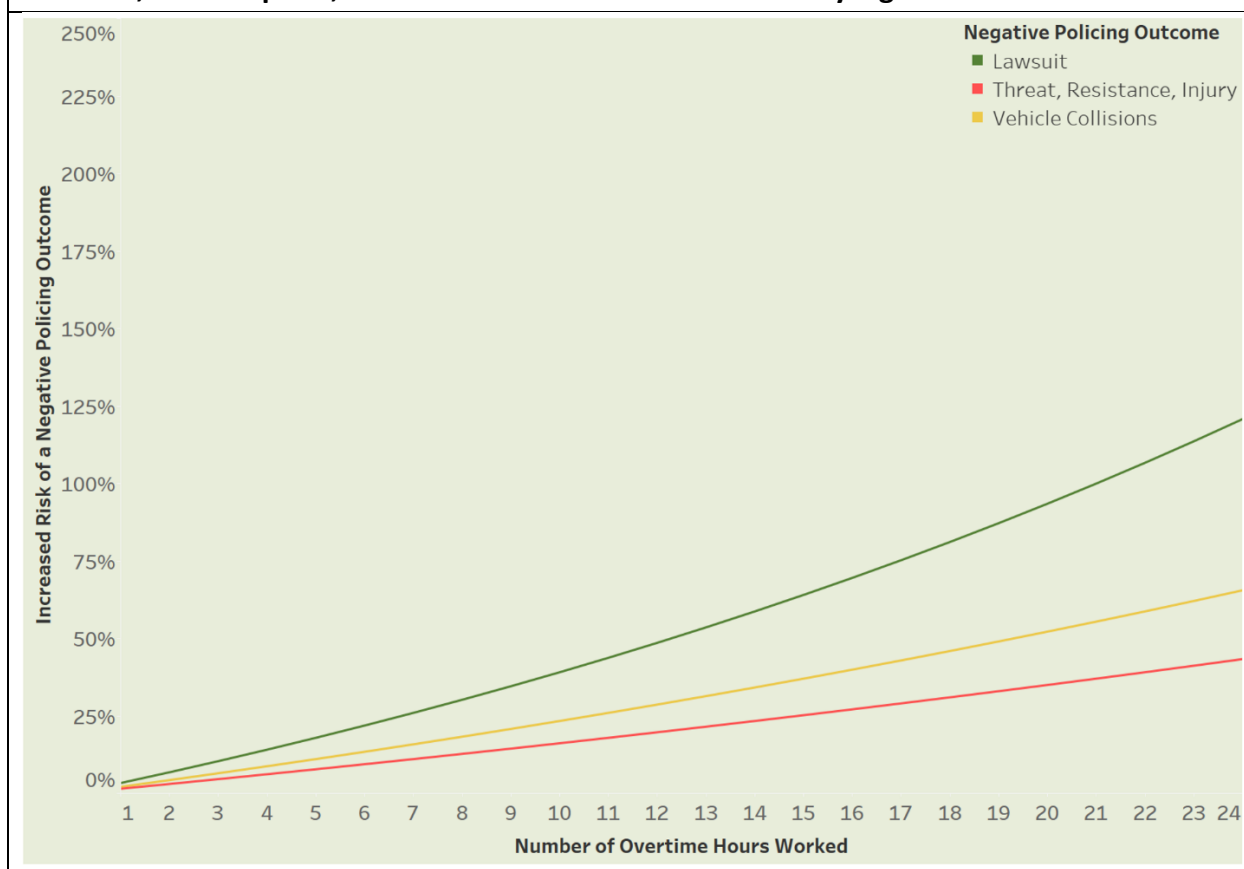Finally, Figure 4, illustrates the increased odds of each NPO occurring after overtime is worked in the previous seven-day window. As before, the overtime hours worked within the seven days prior to a given day were considered in total. Although overtime has a statistically significant relationship to the same NPOs in the seven-day window as in the five-day window, the odds are lower that each NPO may occur after the seven-day window than after the five-day window. This could be due to the risk decreasing as overtime is spread across lengthier periods of time. As with Figure 3, workplace injuries, substantiated IAB complaints, and substantiated CCRB complaints were not statistically significant.

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[100] For a complete explanation of the increased odds at each hour mark, see Appendix D.

Figure 4: Increased Odds of an NPO Per Hour of Overtime Worked in the Previous Seven Days: Lawsuits, T.R.I. Reports, and Vehicle Collisions Are Statistically Significant
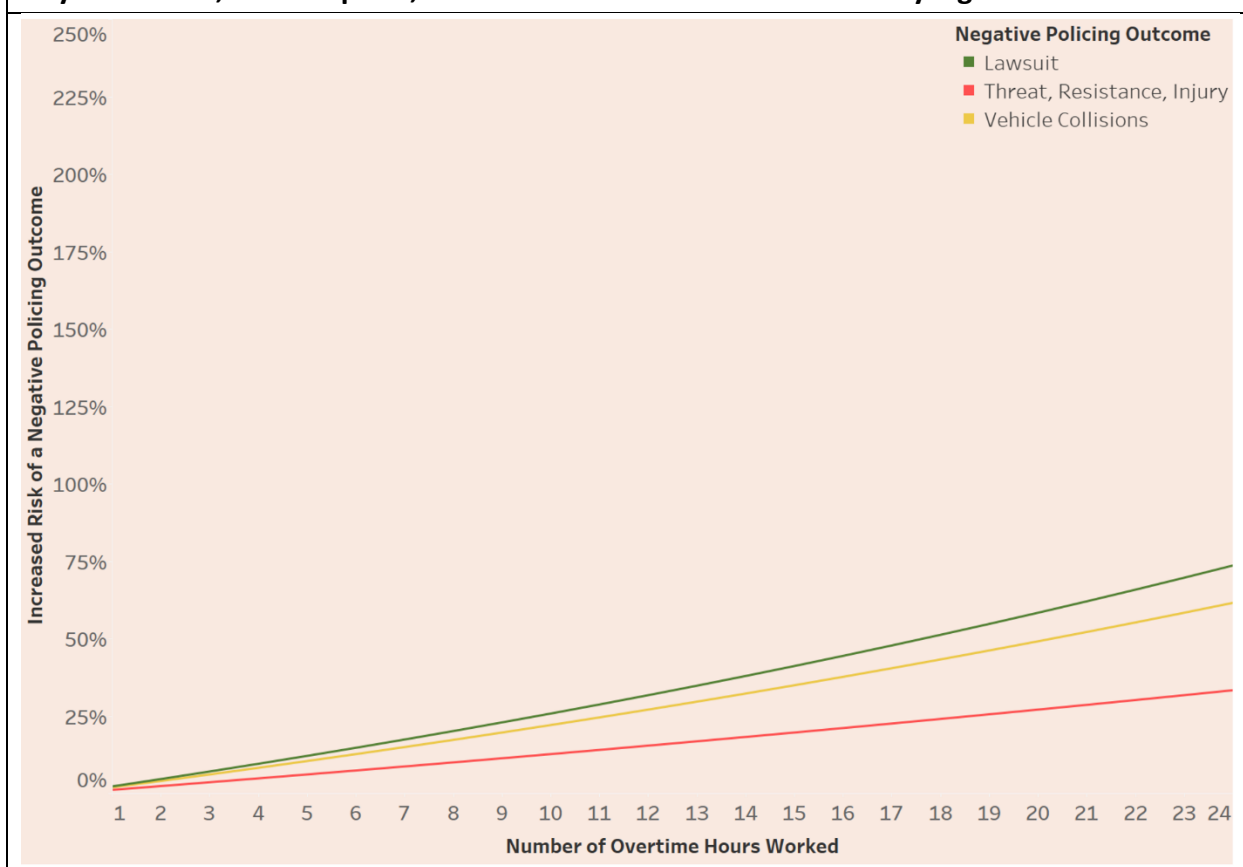
NOTE: 95% of overtime shifts are approximately 10 hours or less. Substantiated IAB Complaints, Workplace Injuries, and substantiated CCRB Complaints were not statistically significant in this time interval. They are not included in this figure.

An officer who works six hours in a seven-day period (regardless of how those six hours are distributed) has a roughly 15% increased risk of being named in a lawsuit, a 13% increased risk of being involved in a vehicle collision, and an 8% increased risk of being involved in an incident resulting in a T.R.I. Report.[101]

For each of the longer windows of time worked, the previous three-, five- and seven-days, OIG-NYPD found that the increased risk of each relevant NPO was lower than the risk associated with overtime worked the previous day. Despite the decreasing risk at the longer timeframe, the statistically significant increased risk associated with vehicle collisions at only the five- and seven-day periods is worthy of further study by NYPD.

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[101] For a complete explanation of the increased odds at each hour mark, see Appendix D.

> **The average length of overtime hours worked consecutively was 4.2 hours, however some officers worked 8 or more consecutive hours of overtime on numerous occasions.**

Figure 5: Distribution of Overtime Shift Lengths
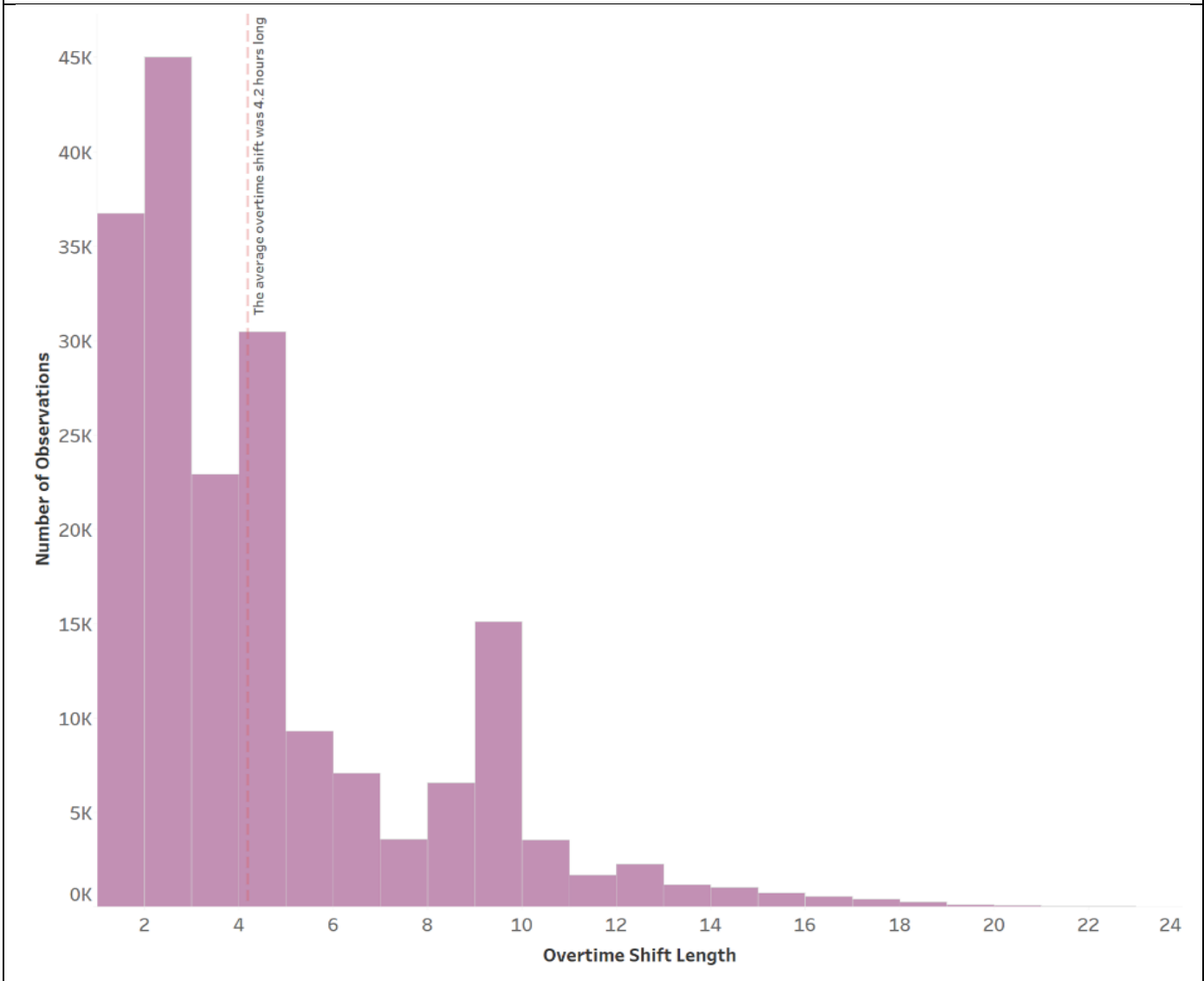
Approximately 16%, or one-in-six, overtime shifts were eight hours or greater (31,583 out of 196,995 overtime shifts). This is notable because, assuming an eight-hour regular shift prior to the overtime shift, these officers would be awake at least 17 hours per day.

Moreover, some officers worked overtime shifts that were longer than their regularly scheduled shift for the day, multiple times per week. For example, one officer worked an eight-and-a-half-hour regular shift on a Monday, followed by twelve hours and forty-five minutes of overtime immediately after. On Wednesday of that week, the officer worked another eight-and-a-half-hour regular shift and then 16 hours and 25 minutes of overtime immediately after. Based on OIG-NYPD's analysis, because the officer worked 16 hours of overtime, the officer's risk of a

substantiated CCRB complaint the following day was 229.7% higher, their risk of a lawsuit was 227.1% higher, their risk of workplace injury was 92.7% higher, and their risk of being involved in an incident resulting in a T.R.I. Report roughly doubled, all on the day following their overtime.

Apart from the increased risk associated with the overtime hours this officer worked, it is also noteworthy that the officer worked an eight-hour shift before their Wednesday overtime shift. Thus, when considering only the cognitive and physiological consequences of a lengthy period of being awake, eight-and-a-half hours into the officer's Wednesday overtime shift, they would have been awake for at least 17 hours. At that point, according to the theory that extended periods of wakefulness may cause impairment similar to the influence of alcohol, their cognitive and physiological functioning may have been equivalent to a .05% BAC for the remaining seven hours of their overtime shift. For the last hour of the officer's overtime shift, their cognitive and physiological functioning could have been on par with someone who was legally intoxicated with a BAC of .10%.

Another officer worked 110 hours over the course of one week, which included five regular shifts, each approximately eight-and-a-half hours long, followed by overtime shifts each day of eight hours and forty-two minutes (Sunday), nine hours and seven minutes (Monday), four hours and seven minutes (Tuesday), four hours and twenty-two minutes (Wednesday), and twenty-eight hours and twelve minutes (Thursday into Friday morning). As with the officer described above, putting aside the increased risk of overtime and considering only the cognitive and physiological consequences of being awake for extended lengths of time, nine hours into the officer's Thursday overtime shift, they would have been awake for at least 17 hours. At that point, as noted above, they might have a cognitive and physiological impairment similar to a .05% BAC, with nineteen hours left to work of their overtime shift. At sixteen hours into the officer's overtime shift, they would have been awake for at least 24 hours, at which point, as noted above, they might have cognitive and physiological functioning equivalent to legal intoxication, at a .10% BAC, with twelve hours left to work of their overtime shift. The officer took a few hours off on Friday and then worked a fourteen hour and fifteen-minute shift on Saturday. Because the officer worked these lengthy overtime shifts, their increased risk of an NPO throughout that week is exceptionally high. This officer's week, which was during the George Floyd protests in May and June 2020, a period requiring an unusually significant and extended law enforcement presence in the City, is depicted in Figure 6, below.

Figure 6 - Example of an officer's overtime week.

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
0:00	Off-duty	Off-duty	Off-duty			Overtime	Off-duty
1:00							
2:00							
3:00							
4:00							
5:00	Regular Shift	Regular Shift	Regular Shift	Regular Shift	Regular Shift		Overtime
6:00							
7:00							
8:00							
9:00							
10:00							
11:00							
12:00							
13:00			Overtime	Overtime			
14:00							
15:00	Overtime	Overtime					
16:00							
17:00			Off-duty	Off-duty	Overtime		Off-duty
18:00							
19:00						Off-duty	
20:00							
21:00							
22:00							
23:00							

NOTE: The figure displays one officer's overtime during one calendar week. In that seven-day period, this officer worked 41 hours and 55 minutes of scheduled work and 68 hours and 45 minutes of overtime work for a total of 110 hours and 40 minutes (averaging 15 hours and 48 minutes of work each day).

Aside from the physiological effects of these extended periods of wakefulness, in light of the frequency and length of the overtime worked by this officer in one week, as well as the changing increased risks associated with the varying windows of time, there are numerous ways to evaluate the officer's overtime and the associated increased risks of NPOs. For example, as a result of the 28.2 hours worked on Friday, this officer's risk of a lawsuit or substantiated CCRB complaint on Saturday was roughly 8 times higher, the risk of the officer being involved in an incident resulting in a T.R.I. Report was 3.5 times higher, the odds of suffering a workplace injury were approximately 3.2 times higher. This officer's risk could also be evaluated at the three-day,

five- or seven-day windows, each of which have their own estimation of the risk, which is calculated independently. Regardless of the window of time considered, this officer had a significantly increased NPO risk because of the very high number of overtime hours worked over the course of these seven days.

> When officers worked overtime shifts of 12 hours or more, the probability of an NPO the following day increased dramatically.

Figure 7: Increased Risk of an NPO the Day After 1 Hour and 12 Hours of Overtime[102]

The odds of being named in a substantiated or partially substantiated CCRB complaint the next day increase by:

7.7% for every hour of overtime worked

144.7% for twelve hours of overtime worked

The odds of being named in a lawsuit for an incident occurring the next day increase by:

7.7% for every hour of overtime worked

143.2% for twelve hours of overtime worked

The odds of being involved in an incident requiring a TRI Report the next day increase by:

4.5% for every hour of overtime worked

70.3% for twelve hours of overtime worked

The odds of suffering a workplace injury the next day increase by:

4.2% for every hour of overtime worked

63.6% for twelve hours of overtime worked

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[102] The increased risk at the 12-hour mark was calculated by raising the odds ratio (see Appendix D) for each NPO to the power of 12.

In the sample, 6,115 shifts of overtime (approximately 3% of all overtime shifts worked) were twelve hours or greater.

One officer in the sample worked a thirteen-hour overtime shift on their regular day off, Friday, which concluded on Saturday morning. On Saturday near the end of that shift, the officer was involved in an incident resulting in a T.R.I. Report (meaning, for example, the officer may have used force, had force used against them, or both) and also reported a workplace injury.[103] While OIG-NYPD could not, and did not attempt to, establish causation between the T.R.I. Report, workplace injury, and overtime, this example is a useful illustration of the increased risk of NPOs that is associated with extended overtime.

c. Results of Data Analysis: Risks on a Department-wide Basis

> **NPOs were disproportionately concentrated on days when officers worked 4+ hours of overtime the day before**

This Report has thus far examined overtime and NPOs using logistic regressions to predict the increased risk for every hour of overtime worked. Sample data was also analyzed to determine when NPOs most often occur. This type of analysis did not involve logistic regressions; it involved categorizing the days on which NPOs occur as either (1) the day after overtime was worked, or (2) the day after no overtime was worked. OIG-NYPD examined the NPOs' distribution across these two types of days, to see if there was a statistically significant (that is, likely not due to chance) observed relationship between all types of NPOs and the "category" of day (day after overtime was worked or day after no overtime was worked) on which they occurred.

The analysis found that the concentration of all types of NPOs, for which the statistical significance could be determined (i.e., lawsuits, T.R.I. Reports, vehicle collisions, and workplace injuries), was most pronounced on days after which 4+ hours of overtime were worked.[104] That is, those NPOs disproportionately occurred on days which followed an overtime shift of 4+ hours and those disproportionate occurrences were likely not due to chance. Using lawsuits as an example, 5% of days in the sample were days on which 4+ hours of overtime were worked the day before. If – contrary to OIG-NYPD's conclusions – NPOs were randomly distributed across the days in the Office's sample, meaning that overtime had no impact on the occurrence of NPOs, we would expect NPOs, including events prompting lawsuits, to be randomly distributed over the days in the sample. Since 5% of the total days in the sample were days with 4+ hours of overtime worked the day before, we would expect 5% of the total number of events prompting lawsuits to occur on those days, that is, we would expect the percentage of days with events prompting lawsuits to

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[103] OIG-NYPD did not request the details of each T.R.I. Report from NYPD, and is thus unable to verify precisely what occurred during this incident, or even if the two incidents were related.

[104] The analysis considered overtime in 30-minute increments (that is, days with 30+ minutes of overtime worked versus days with no overtime, days with 1+ hour of overtime worked versus days with no overtime, and so on). Certain NPOs (e.g., T.R.I. Reports) were statistically significant after lower increments of time. In addition, the statistical significance of IAB and CCRB complaints could not be evaluated. For further explanation, see Appendix F.

match the percentage of days in the sample where 4+ hours of overtime were worked the day before. Instead, 11% of events prompting lawsuits happened on days where 4+ hours of overtime were worked the day before, a higher percentage than we would expect had such events been randomly distributed. Therefore, the risk of events prompting lawsuits is disproportionately concentrated on days when officers worked 4+ hours of overtime the day before. Further examples are noted in Appendix F.

Since every hour of overtime can increase an individual officer's risk of an NPO, when NYPD considers overall trends related to overtime risk, it should consider, in particular, that the risk is most concentrated on days that follow 4+ hour overtime shifts.

The per-officer risks are best understood in the context of NYPD as a whole.

As noted above, presuming an active, public-facing NYPD officer population of approximately 25,000, OIG-NYPD generated the expected number of negative policing outcomes over the course of one year for a Department populated entirely by the 'average' officer (the average officer works 4.2 hours of overtime roughly once every five days) and one where no overtime was worked. Compared to an NYPD where no overtime was worked, an NYPD staffed entirely by officers who work 4.2 hours of overtime, once every five days, would be expected to generate, over the course of one year, at least:

- 102 more lawsuits;
- 61 more substantiated CCRB complaints;
- 1,282 T.R.I. Reports;
- 403 workplace injuries.[105]

These estimates are likely conservative, as they assume that each officer worked overtime approximately once every five days. However, 15% (144 officers) worked overtime twice a week on average, and 9% (92 officers) worked overtime at least once every three days. A higher frequency of overtime shifts results in a higher risk of NPOs occurring the following day.

Another reason that these estimates above are likely conservative is that the largest risks OIG-NYPD observed included those officers who worked overtime shifts of eight hours or greater or who worked overtime the most frequently. Within the sample, 99% of officers (983) worked at least one overtime shift of eight-hours or greater in the three-year period. The average officer worked 30 eight-hour shifts over the course of the three years, which is ten per year on average. Within the sample, 4% (38 officers) worked an overtime shift of eight hours or greater once every two weeks on average. Multiplied across the Department, this would be the equivalent of 950 officers working an overtime shift of eight-hours or greater, at least once every two weeks on average. As noted the above forecasting of NPOs was built around officers working the average

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[105] To calculate these estimates, OIG-NYPD found the daily probability of an NPO occurring per officer. From that statistic, the probability that over the course of a year no NPO occurs was calculated and subtracted from one. The new probability reflects the probability that an officer experiences at least one NPO over the course of a year, which was then multiplied by the population of NYPD.

amount of overtime hours, for the average number of times. However, the risks associated with longer overtime shifts, which further increase the odds, are not included in these estimates. For example, because each eight-hour shift increases the odds of being named in a lawsuit for an incident occurring the next day by 81%, the odds of being the subject of a substantiated CCRB complaint by 82%, the odds of an officer being involved in an incident resulting in a T.R.I. by 43%, and the odds that an officer will suffer a workplace injury by 39%, the potential liability risk to the Department related to those shifts is dramatically greater and thus potentially under-estimated in the projections above.

Finally, these estimates are also likely conservative in quantifying the current risk to NYPD because, based on OIG-NYPD's discussion with the police unions, the overtime hours required by the Department have continued to increase in 2022 and 2023 — years that post-date the analysis. For example, officers are likely working overtime shifts more frequently than OIG-NYPD's data suggests, due to the approximately 10,000 hours a day of overtime required to staff the New York City subway initiative, among other reasons. According to the Police Benevolent Association, many police officers report that after most regular shifts they are required to work four hours of overtime to patrol the subway system and are often called in on their days off to work overtime. For the foreseeable future, it appears that NYPD will continue to rely on overtime shifts to fill in the gaps.

VI. Background—Overtime, Negative Policing Outcomes, and Fatigue

To help explain the observed relationship between overtime and the increased risk of NPOs, OIG-NYPD considered fatigue, which is defined as, "the effects of working too long, or following too little rest, and being unable to sustain a certain level of performance on a task."[106] Fatigue is difficult to quantify precisely, absent medical testing. However, fatigue is associated with a series of reliable and predictable outcomes and is widely accepted by researchers to cause numerous negative effects, including decreased alertness, impaired performance and decision making, and mood changes.[107]

> *"[Policing is] the one profession in which we would want all practitioners to have adequate and healthful sleep to perform their duties at peak alertness levels. Not only is fatigue associated with individual misery, but it can also lead to counterproductive behavior. It is well known that impulsiveness, aggression, irritability and angry outbursts are associated with sleep deprivation."* – William C. Dement, Renowned sleep researcher and founder of the Sleep Research Center at Stanford University

In police officers specifically, fatigue has generally been found to result in administrative errors, falling asleep while driving, committing safety violations, experiencing uncontrolled anger toward a member of the public or suspect, and an

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[106] Dinges, *supra* note 19 at 4.
[107] *Id.* at 6; Alhola, *supra* note 21 at 560; Dawson, *Fatigue, Alcohol, and Performance Impairment*, *supra* note 21 at 551; *see generally* Harrison, *supra* note 21.

increase in the odds of complaints by members of the public.[108] Fatigue can be caused by numerous factors, including working long shifts and experiencing inadequate sleep due to overtime hours.[109] Thus, because fatigue is a contributing factor to numerous negative effects, it is likely that officer fatigue due to overtime contributes to the relationship between overtime and the increased risk of the NPOs that the Office identified.

a. Shift Work, Overtime, and Sleep Deprivation as Causes of Fatigue

i. Shift Work, Overtime, and Extended Shifts

Work-related fatigue and its associated impairments are estimated to cost employers approximately $136 billion a year.[110] Work-related fatigue has many causes, including "shift work," which is generally defined as working a "nontraditional" shift outside of regular daytime hours.[111] Shiftwork involves overnight shifts, rotating or irregular schedules, and extended hours or overtime, and often impacts a body's natural circadian rhythms.[112] Many police officers are shift workers, given that officers need to be on-duty at all hours of the day. For example, NYPD utilizes shifts from 8:00 a.m. to 4:00 p.m., 4:00 p.m. to midnight, and midnight to 8:00 a.m.[113] Fatigue is also influenced by commute times and other lifestyle factors.[114] Each of these factors, particularly extended daily and weekly work hours, can extend time spent awake or reduce sleep opportunities, leading to work-place fatigue.[115] Moreover, studies have shown that long working hours adversely affect the quality of an individual's sleep, which leads to inadequate recovery from those long hours worked and thus more fatigue.[116] Fatigue exists on a continuum, from mild to severe, and it is generally accepted that the longer the working hours, the higher the risk of fatigue.[117] Because overtime hours increase the length of time an individual spends working, overtime can contribute to fatigue.[118]

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[108] *See* Rajaratnam, *supra* note 21 at 2574; Samantha M. Riedy et al*., U.S. Police Rosters: Fatigue and Public Complaints*, SLEEP J., Nov. 2018 at 1; *see also* Desta Fekedulegn et al., *Fatigue and On-Duty Injury Among Police Officers: The BCOPS Study*, 60 J. SAFETY RES 43-51 (2017); Lindsey, *supra* note 78; KING COUNTY AUDITOR'S OFFICE, *supra* note 12.

[109] *See* Occupational Safety and Health Admin., *Long Work Hours, Extended or Irregular Shifts, and Worker Fatigue*, U.S. DEP'T. OF LABOR, https://www.osha.gov/worker-fatigue (last visited April 27, 2023); Afonso, *supra* note 20.

[110] Cost of Fatigue in the Workplace, NAT'L SAFETY COUNCIL, https://www.nsc.org/workplace/safety-topics/fatigue/cost-of-fatigue-at-work (last visited April 27, 2023).

[111] Anastasi Kosmadopoulous et al., *Effects of Shift Work on Eating Behavior of Police Officers on Patrol*, 12 NUTRIENTS, April 2020 at 2.

[112] *See* Imelda Wong, *Wake-Up Call: Toward an Industrial Hygiene Approach to Work-Related Fatig*ue*,* SYNERGIST (December 2021), https://synergist.aiha.org/202112-ih-fatigue; Dawson, *Modelling Fatigue*, *supra* note 21 at 551; Kosmadopoulous, *supra* note 111 at 2.

[113] *See e.g.* N.Y.C. Police Dep't, Admin. Guide Proc. No. 324-25. (2023).

[114] *See generally* Wong, *supra* note 112; Dawson, *Modelling Fatigue*, *supra* note 21.

[115] Dawson, *Modelling Fatigue*, *supra* note 21 at 550.

[116] Afonso, *supra* note 20; Harrington, *supra* note 20 at 69; Park, *supra* note 20 at 253; Wong, *supra* note 20.

[117] Dawson, *Modelling Fatigue*, *supra* note 21 at 550; Wong, *supra* note 20 at 12; Virtanene, *supra* note 20 at 739-740.

[118] *See* Dahlgren, *supra* note 20 at 324.

For decades, law enforcement leadership nationwide has been aware that overtime work can have a significant impact on police fatigue.[119] Nonetheless, a culture of overtime and fatigue is commonplace in law enforcement agencies for a variety of reasons, which can disincentivize complaints from officers.[120] Overtime provides significant additional income for police officers, thereby creating an incentive for officers to voluntarily extend their shifts and potentially ignore warning signs of fatigue and, where overtime is mandatory, officers may have no choice but to work despite fatigue.[121] The Police Benevolent Association explained to OIG-NYPD that officers who are dealing with excessive stress as a result of overwork may be concerned about raising issues of fatigue, or concerns about excessive overtime, to their supervisors for fear that supervisors' concerns over an officer's mental health will negatively impact the officer's career or ultimately result in their losing their job.

ii. Sleep Deprivation

Relatively small amounts of sleep loss, as little as two hours of sleep per night consistently, produce measurable increases in fatigue.[122] Sleep deprivation particularly affects decision making in emergencies.[123] It is particularly difficult for individuals experiencing sleep deprivation to deal with situations involving uncertainty and unexpected change.[124] Sleep-deprived individuals have a harder time absorbing evolving information in fast-paced environments to inform their behavior or respond to new conditions.[125] After periods of chronic sleep restriction, it can take multiple days of quality sleep to restore normal performance.[126] Crucially, fatigue cannot be overcome by sheer force of will, motivation, or discipline, because fatigue is physiologically tied to disruption of circadian rhythms and sleep loss.[127]

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[119] Bryan Vila & Dennis Jay Kenney, *Tired Cops: The Prevalence and Potential Consequences of Police Fatigue,* 248 NAT'L. INST. OF JUST. J., 2002 at 18.

[120] Office of Just. Programs, *Officer Work Hours, Stress, and Fatigue*, NAT'L. INST. OF JUST. (July 2012), https://nij.ojp.gov/topics/articles/officer-work-hours-stress-and-fatigue; Vila, *Improving Shift Schedule and Work-Hour Policies,,, supra* note 34 at 7 .

[121] James Barron, *Why Police Officers Are Leaving: Low Pay, Overwork and High Costs,* N. Y. TIMES (December 14, 2022), https://www.nytimes.com/2022/12/14/nyregion/nypd-pay-work-costs.html; Jake Offenhartz, *NYPD Officers Brag About Milking Overtime, Call Detainees Names in Accidental Recording*, GOTHAMIST (April 7, 2023), https://gothamist.com/news/nypd-officers-brag-about-milking-overtime-call-detainees-names-in-accidental-recording.
In discussions with OIG-NYPD, senior NYPD officials estimated that overtime shifts are approximately 50% voluntary and 50% mandatory.

[122] Alhola, *supra* note 21 at 560; Dawson, *Modelling Fatigue, supra* note 21 at 551. *See generally* Harrison, *supra* note 21.

[123] John M. Violanti, *Shifts, Extended Work Hours, and Fatigue: An Assessment of Health and Personal Risks for Police Officers*, NIJ FINAL REPORT (2012) at 21.

[124] Whitney, *supra* note 21 at 750-753.

[125] *Id.*

[126] Alhola, *supra* note 21 at 560.

[127] Vila, *Improving Shift Schedule and Work-Hour Policies*, *supra* note 34 at 8.

Fatigue, as it relates to sleep loss, affects law enforcement in particular. A 2011 study of approximately 5,000 police officers, conducted by Harvard University's teaching hospital, Brigham and Women's Hospital, found that police officers are twice as likely to have sleep disorders, as compared to the general public.[128] Those police officers with sleep disorders were more likely to make administrative errors, fall asleep while driving, commit safety violations, experience uncontrolled anger toward a member of the public or suspect, and are more likely to have higher rates of emotional exhaustion.[129] Whether or not officers had an active sleep disorder, nearly 30% of approximately 4,600 officers in that study reported experiencing excessive sleepiness.[130] In a 1998 study of 144 police officers in two police departments, funded by the U.S. Department of Justice's National Institute of Justice, and conducted by researchers with Washington State University's Sleep and Performance Research Center, officers reported sleep quality that was twice as poor as the general public, and the odds of a complaint alleging misconduct, uses of force, discrimination, and harassment, were found to generally increase as fatigue increased.[131] As noted above, there is a strong relationship between extended periods of being awake and performance akin to a high BAC, and 298 officers in a broader cohort of participants in the National Institute of Justice study, performed on par with a .05% BAC nearly 20% of the surveyed days.[132] This rate was six times higher than is typically found among other shift workers.[133]

b. Fatigue Mitigation Models and Technologies

Early detection of fatigue is essential for preventing accidents, injuries, and other NPOs. Broadly speaking, there are two main methods of predicting fatigue: (1) using data driven models to predict fatigue; and (2) screening or measuring fatigue at the individual level. Using a model to predict fatigue, commonly done through the institution of a fatigue risk management system ("FRMS"), and crafting mitigating policies is a widespread practice in many professions, as evidenced by caps on time in flight for pilots, mandatory rest breaks for train operators, and regulations on cumulative work hours for emergency room residents.[134] An FRMS can also incorporate biomathematical models of fatigue, which can predict a worker's risk of being fatigued

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[128] Rajaratnam, *supra* note 21 at 2574; Beth Pearsall, *Sleep Disorders, Work Shifts, and Officer Wellness*, NAT'L INST. OF JUST. (June 14, 2012), https://nij.ojp.gov/topics/articles/sleep-disorders-work-shifts-and-officer-wellness; *see also* Vila, *Improving Shift Schedule and Work-Hour Policies*, *supra* note 34 at 10.

[129] Rajaratnam, *supra* note 21 at 2574; *see also* Peterson, *supra* note 21 at 1.

[130] Rajaratnam, *supra* note 21 at 2574.

[131] Vila, *Improving Shift Schedule and Work-Hour Policies*, *supra* note 34 at 10; Riedy, *supra* note 108 at 4, 8.

[132] Vila, *Improving Shift Schedule and Work-Hour Policies*, *supra* note 34 at 10.

[133] *Id.*

[134] FED. AVIATION ADMIN., FATIGUE RISK MANAGEMENT SYSTEMS FOR AVIATION SAFETY 2 (2010); 49 C.F.R. § 228.405 (2023); Accreditation Council for Graduate Med. Educ., *The ACGME's Approach to Limit Resident Duty Hours 12 Months After Implementation: A Summary of Achievements*, https://www.acgme.org/globalassets/pfassets/publicationspapers/dh_dutyhoursummary2003-04.pdf (last visited April 27, 2023).

based on shift scheduling and duration, as well as circadian rhythms.[135] These mathematical models are available in user-friendly, commercially available software which can predict and account for fatigue in scheduling practices.[136]

In addition to predictive systems, fatigue-detection technologies are capable of detecting biological indicators of fatigue, such as eye movement, hand-eye coordination, and blink rates.[137] Other methods, such as wearables to track sleep and other biometrics, are in development or being used in pilot programs by entities such as the U.S. Army.[138] These fatigue detection technologies can be combined with modeling systems to create a comprehensive system of fatigue mitigation, using all available data and scientific research.[139]

c. Fatigue Mitigation and Overtime Controls Instituted by Other Law Enforcement Agencies and Comparable Industries

Even without a comprehensive FRMS or the use of fatigue-detection technologies, some of the largest police departments in the United States mitigate fatigue by controlling the factors that cause fatigue, including shift scheduling practices that account for the body's natural circadian rhythms.[140] Law enforcement agencies also have participated in scientific studies evaluating eight-, ten- and twelve-hour shift lengths, and have recommended work and rest policies such as mandating eight hours of rest time for every 16 hours worked.[141] Related specifically to the issue of rest, officers of the City of Oakland Police Department are entitled to an eight-hour rest period after involuntary overtime shifts, prior to the commencement of the officer's next duty assignment, and officers with the Boston Police Department are entitled to the same, to ensure they are properly rested.[142]

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[135] Dawson, *Modelling Fatigue, supra* note 21 at 551.

[136] *Id.* at 553; *see also* SAFTE-FAST: FATIGUE RISK MANAGEMENT SOLUTIONS, https://www.saftefast.com/ (last visited April 27, 2023); Predictive Safety: PRISM Fatigue Management System, https://predictivesafety.com/prism-fatigue-management-system/ (last visited April 27, 2023).

[137] Wong, *supra* note 20.

[138] Michael Strasser, 'Sensored' For Success: Fort Drum Soldiers Participate in Performance Optimization Research, U.S. ARMY (Oct. 29, 2020), https://www.army.mil/article/240380/sensored_for_success_fort_drum_soldiers_participate_in_performance_optimization_research

[139] Wong, *supra* note 20.

[140] *See e.g.* Division of Sleep Medicine, *Lou's Killer Shift*, HARVARD MEDICAL SCHOOL, https://sleep.hms.harvard.edu/education-training/public-education/sleep-and-health-education-program/sleep-health-education-98 (last reviewed Oct. 1, 2021).

[141] Karen L. Amendola et al., *The Shift Length Experiment: What We Know About 8-, 10-, And 12-Hour Shifts In Policing*, NAT'L. POLICING INST. (November 2011); Lindsey, *supra* note 78 at 6.

[142] MEMORANDUM OF UNDERSTANDING BETWEEN CITY OF OAKLAND AND OAKLAND POLICE OFFICER'S ASSOCIATION (2019) at 7, available at https://cao-94612.s3.amazonaws.com/documents/OPOA.pdf (last visited April 27, 2023); BOSTON POLICE DEP'T., RULES AND PROCEDURES – RULE 102 (February 11, 2003), available at https://static1.squarespace.com/static/5086f19ce4b0ad16ff15598d/t/56a28e2440667a9ab03ff147/1453493796591/Rule_102_Amended.pdf (last visited April 27, 2023).

Many other police departments have imposed controls which are largely aimed at reducing the fiscal costs of overtime, but are also likely to mitigate fatigue. The King County Sheriff's Office (Seattle) distributes overtime shifts according to how much overtime officers have worked in the preceding seven days, with preference for overtime shifts given to those officers who have not worked any overtime in the preceding seven days.[143] The San Francisco Police Department caps officer work hours at 16 hours in a 24-hour period, including on-duty hours, overtime, and external employment, and caps overtime hours at 20 hours in one week.[144]

City auditor's offices and other oversight bodies have examined overtime and secondary employment in connection with law enforcement officer fatigue.[145] For example, the San Jose, California, Office of the Auditor recommended that the San Jose Police Department enforce limits on overtime and secondary employment, in order to mitigate the potential for officer fatigue.[146] The Honolulu City Auditor examined the Honolulu Police Department's overtime policies and found that it was not accounting for the risks of officer fatigue in its overtime policies.[147] The City of Milwaukee Comptroller audited the Milwaukee Police Department's overtime and found that the lack of caps on overtime may contribute to, among other things, fatigue and decreased performance in demanding situations.[148] In response, the Milwaukee Police Department noted that it shared the Comptroller's concerns that excessive overtime may impact, among other issues, its members' mental health and work performance.[149] The City of Chicago Office of the Inspector General conducted a comprehensive audit of the Chicago Police Department's overtime policies and found that there were not sufficient controls to prevent officer fatigue.[150] The Inspector General recommended that the Chicago Police Department implement policies in order to help

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[143]KING COUNTY AUDITOR'S OFFICE, *supra* note 12 at 34.

[144] SAN FRANCISCO POLICE DEP'T., DEPARTMENT NOTICE: OVERTIME RULES AND REPORTING (Feb. 2021), https://www.sanfranciscopolice.org/sites/default/files/2021-03/SFPDNotice.21020.20210329.pdf (last visited April 27, 2023).

[145] Because of the numerous ways in which police overtime can be influenced both by operational needs and officer motivations, city auditor's offices and other oversight bodies have conducted in-depth audits of police department overtime practices to determine, among other issues, the financial impacts of overtime usage and whether overtime shifts are appropriate and justified. *See* KING COUNTY AUDITOR'S OFFICE, *supra* note 12, PORTLAND CITY AUDITOR, POLICE OVERTIME: MANAGEMENT IS LAX DESPITE HIGH OVERTIME USE (Oct. 2019), CITY OF OAKLAND OFFICE OF THE CITY AUDITOR, OAKLAND POLICE DEPARTMENT (OPD) OVERTIME RECOMMENDATION FOLLOW UP REPORT ON OPD OVERTIME PERFORMANCE AUDIT RELEASED IN 2019 (Jan. 2022), DALLAS OFFICE OF THE CITY AUDITOR, AUDIT OF DALLAS POLICE DEPARTMENT OVERTIME – FINAL REPORT (August 2022), SAN ANTONIO CITY AUDITOR, AUDIT OF SAN ANTONIO POLICE DEPARTMENT OVERTIME AUTHORIZATIONS (August 2021).

[146] SAN JOSE OFFICE OF THE CITY AUDITOR, *supra* note 31 at ii.

[147]OFFICE OF THE CITY AUDITOR, AUDIT OF THE HONOLULU POLICE DEPARTMENT'S OVERTIME POLICIES, PROCEDURES, AND PROTOCOLS, *supra* note 12 at 33.

[148] AYCHA SAWA, MILWAUKEE COMPTROLLER, *supra* note 12 at 8.

[149] *Id.* at 15.

[150]CITY OF CHI OFFICE OF THE INSPECTOR GENERAL, REPORT OF THE OFFICE OF THE INSPECTOR GENERAL: CHICAGO POLICE DEP'T. OVERTIME CONTROLS AUDIT (Oct. 2017) at 36, 47-48.

prevent officer fatigue, including limiting the number of hours officers may work in a given period, including secondary employment.[151]

One law enforcement agency which has acknowledged the impact of fatigue and worked to mitigate its effects is the Washington D.C. Metropolitan Police Department ("MPD"). MPD crafted specific policies to prevent officer fatigue and noted that the implications of officer fatigue on all aspects of policing are significant.[152] Among other policies, the MPD imposes a limit of 18 hours of work within a 24-hour period and 98 hours in a seven-day calendar week.[153] Moreover, the MPD includes outside employment in that count. Off-duty work must be reported and cannot exceed thirty-two hours

"Fatigue can seriously undermine police-citizen interactions, vehicle operation safety, member use of force, general decision-making, officer alertness, and impair physical and mental performance. Therefore, it is imperative that police officers receive the proper amount of rest, and that officer fatigue be monitored and closely supervised by all members within the Department."

-   Washington D.C. Metropolitan Police Department

in a seven-day week.[154] MPD officers are required to notify their supervisors when they are within two hours of their daily limit or four hours of their weekly limit, and adjustments are made to their schedules as necessary.[155] Although exceptions are made for emergencies and other limited situations, supervising officers are required to closely monitor compliance with work hour limitations.[156]

Finally, other industries involving dangerous or stressful working situations have made efforts to mitigate fatigue in order to prevent accidents or injuries. Railroad employees are subject to caps on their consecutive hours on duty and required to take a certain number off-duty hours between shifts.[157] The Federal Aviation Administration recommends a non-punitive system in which pilots and other crewmembers can report feelings of fatigue and request relief from duties on that basis.[158] The United States Coast Guard recommends schedules that maximize uninterrupted sleep and maintain consistent work-rest schedules for at least two continuous weeks.[159] The National Response Team, an organization of 15 federal agencies which provides guidance for workers in disaster operations, noted that the chief factor leading to increased risk of

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[151] *Id.* at 48.
[152] *See* District of Columbia, Metropolitan Police, *supra* note 34.
[153] *Id.* at 2.
[154] *Id.*
[155] *Id.* at 4.
[156] *Id.* at 5-6.
[157] *See* 49 U.S.C. § 21103(a).
[158] U.S. Dep't of Transp., Fed. Aviation Admin., AC No. 120-103, Fatigue Risk Management Systems for Aviation Safety 4 (2010).
[159] U.S. Coast Guard, Crew Endurance Management Practices, – A Guide for Maritime Operations 19 (2003).

fatigue, and accidents or injuries, is the length of work shifts, and recommends comprehensive, organization-wide fatigue management strategies.[160]

Because the causes of fatigue are multifaceted, mitigation techniques should be equally varied, as are those noted above. Nonetheless, there is widespread consensus that fatigue is a risk that must be mitigated, particularly in high risk occupations. To the extent overtime contributes to fatigue, overtime is a measurable factor that can be managed, and where emergencies call for significant overtime, steps can be taken to evenly allocate it across officers. To that end, controlling high overtime shift lengths or evenly distributing shifts so as not to impact operations relies on an in-depth understanding of the police department's overtime data. The National Institute of Justice has noted that the best way to control overtime in policing is by "recording, analyzing, managing, and supervising."[161] In short, to mitigate fatigue due to long shifts and overtime, the first step is to conduct an in-depth analysis of the many factors that influence overtime, including shift lengths, schedules, operational needs, and whether overtime is appropriately justified and allocated.

d. NYPD Policies on Fatigue Mitigation and Overtime

OIG-NYPD has reviewed NYPD's Patrol and Administrative Guides, which do not mention fatigue, cap overtime hours or ensure that overtime hours are evenly distributed (except for sergeants and lieutenants), prescribe guidelines for mandatory time off or rest periods after long shifts or mandatory overtime, or provide guidance to commanding officers on methods of shift scheduling for purposes of mitigating officer fatigue.[162] Although Commissioner Sewell recently announced a platform on which officers can volunteer for overtime shifts, a significant initiative that may change the distribution of overtime, it is important to note the platform does not limit overtime or mandate an even distribution of overtime shifts.[163] NYPD does have procedures that seek to equalize the distribution of overtime among supervisors, but those procedures apply only to sergeants and lieutenants.[164] NYPD informed the Office that distribution of overtime is in the discretion of each NYPD command and often is distributed by seniority – meaning that more senior officers have the option to work overtime, and if they choose not to, overtime is assigned to more junior officers.[165]

Next, NYPD reported that it offers an extensive health and wellness program, including support services for stressors in an officer's personal or professional life. These services are designed to assist officers coping with divorce or other family issues, including financial issues,

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[160] The Nat'l Response Team, Guidance for Managing Worker Fatigue During Disaster Operations, Vol. I, at 9–10 (2009).

[161] David H. Bayley & Robert E. Worden, *Police Overtime: An Examination of Key Issues*, Nat'l Inst. of Just., May 1998, at 1.

[162] The policies NYPD directed OIG-NYPD to were: N.Y.C. Police Dep't, Admin. Guide Proc. Nos. 319-18, 324-07, 324-15, 324-16, 324-18, 324-19, 332-20, 332-21 (2023) and N.Y.C. Police Dep't, Patrol Guide. No. 324-15 (2023).

[163] DeStefanotony, *supra* note 26.

[164] N.Y.C. Police Dep't, Admin. Guide Proc. No. 324-18. (2023). Sergeants and lieutenants make up approximately 12% and 5% of the entire NYPD force, respectively.

[165] N.Y.C. Police Dep't, Admin. Guide Proc. No. 324-18. (2023).

or experiencing stress as a result of work-related critical incidents, such as particularly difficult public interactions involving homicide, child abuse, or similar challenges. Some of these stressors may cause fatigue, and some of these support services may help mitigate that fatigue. OIG-NYPD commends the Department on this array of significant support services. However, NYPD has not, to date, developed or offered support services for officers specifically to address the impacts of overtime and lack of sleep, including fatigue. Such services would complement the existing offerings for officers, and it is important to note that NYPD reported to OIG-NYPD that it is currently considering options to address these issues.

Furthermore, the majority of support services offered by the Department currently require the officer to self-report that they are experiencing these stressors, although NYPD informed the Office that it is training supervisors to monitor indicators of fatigue and the impact of fatigue on officers, a promising first step to offering proactive interventions. The existing training for new officers concerning the stressors of law enforcement work does not teach officers to identify or mitigate fatigue due to long work hours.

In its 2019 report, *An Investigation of NYPD's Officer Wellness and Safety Services,* OIG-NYPD noted that, despite NYPD's awareness that officer fatigue poses risks, NYPD had no policies on managing or mitigating fatigue for officers or supervisors.[166] According to the Department, after OIG-NYPD's 2019 report, it consulted a range of experts on the topic of suicide prevention, to address suicide risk among officers and in order to improve their overall mental health and wellness. These efforts, too, are commendable. Nonetheless, NYPD has not, to date, imposed controls in order to specifically prevent fatigue caused by extended hours, sleep deprivation, or excessive overtime. In addition, NYPD informed the Office that it has not reviewed any studies, model practices, or any other sources, or consulted any experts, specifically with respect to overtime, scheduling, off-duty employment, fatigue or exhaustion management, rest while on duty, or sleep deprivation. NYPD did state that, although it has in-house expertise, it is also committed to collaborating with external experts to evaluate existing programs and to consider potential programs.

NYPD informed the Office that it replaced one of its early intervention programs, the Risk Assessment Information Liability System ("RAILS"), with a new platform, the Risk Case Management System ("RCMS"). According to NYPD, RCMS will mimic RAILS, in that it will be used to monitor various performance indicators, including some indicators which relate to officer wellness generally. NYPD informed the Office that its early intervention programs accounted for fatigue in that they flagged outcomes that may be the result of fatigue, such as disciplinary issues. However, NYPD reported that it does not consider extended work hours or off-duty employment to be a potential early warning sign that should be monitored. Rather, the Department relies on each officer to self-report if they are fatigued due to extended hours, and an

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[166] N.Y.C. DEP'T OF INVESTIGATION, OFF. OF THE INSPECTOR GENERAL FOR THE NYPD, AN INVESTIGATION OF NYPD'S OFFICER WELLNESS AND SAFETY SERVICES 37 (2019) at 37.

individual who self-reports may be given more administrative tasks or a less stressful post. NYPD does not otherwise have a system in place to monitor signs or indicators of officer fatigue such as long shifts or a means to closely monitor the wellness of officers who have worked significant periods of overtime. OIG-NYPD has not yet reviewed specific details related to RCMS, but there is no indication that this new system will incorporate monitoring of officer fatigue that is caused by extended hours and/or the related sleep issues that may occur.

OIG-NYPD reviewed NYPD's labor agreements with its officers and found that there are no provisions for protecting against fatigue caused by extended hours or related excessive work schedules and/or overtime issues. In OIG-NYPD's discussions with the relevant NYPD unions, the Lieutenants Benevolent Association expressed that past administrations had not addressed the issues created by high turnover and excessive overtime and did not put mechanisms in place to prevent officers from being overworked due to overtime. The union further stated that the current administration recognizes that fatigue and overtime are issues among its officers and is working to address them, as evidenced by the new overtime portal and union contract, although no solution is an overnight fix. The union also expressed that increased overtime hours can create additional mental strain for NYPD officers, and it is particularly difficult for younger officers who often bear the brunt of the overtime shifts.

VII. Conclusion

OIG-NYPD's analysis found that overtime hours are associated with increased likelihood of negative policing outcomes for NYPD officers and the public, and therefore increased liability risk to the City. While the association between overtime hours and NPOs does not necessarily imply, much less establish, causation, the relationship is strong and consistent with other law enforcement studies on the subject, as well as scientific research assessing long working hours and fatigue, and their relationship to negative outcomes generally. Police officers are often confronted with physical and emotional challenges which may be more difficult to handle when an officer is fatigued. Fatigued officers may not cope as effectively with these challenges, which can create greater risks for the officer and the public. Moreover, because NYPD relies on officers to self-report fatigue and does not deem extended work hours to be potential indicators of increased risk, NYPD currently does not proactively provide support for officers who are working overtime and may suffer fatigue as a result.

This Report is just the first step in assessing the risk posed to both officers and the public by overtime and fatigue. The data OIG-NYPD analyzed spans 2019 through 2021. NYPD currently faces the largest exodus of officers from the force since the post-9/11 era, just as the City is experiencing an increase in major crimes.[167] While NYPD works to fill those vacancies, more

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[167] *See* Dean Balsamini, *'Bleeding blue': Cops flee NYPD in biggest exodus since 9/11*, N.Y, POST (Jan. 7, 2023), https://nypost.com/2023/01/07/cops-flee-nypd-in-biggest-exodus-since-9-11/; Chelsia Rose Marcius & Ed Shanahan,

overtime may be needed to fill in the gaps, although the NYC Comptroller's Office has found that, historically, even when NYPD headcount rose, its use of overtime hours did not decrease as might be expected.[168] Nonetheless, further attrition will likely only exacerbate the risk quantified in this Report.[169] Although recommendations from experts vary, the universal consensus is that fatigue and sleep deprivation pose real risks to law enforcement agencies and the public that must be addressed.

OIG-NYPD recommends that NYPD develop effective risk management strategies with respect to overtime and officer fatigue that are tailored to the unique needs of the Department. To do so, NYPD should take a full accounting of both the risks and benefits of overtime and shift-work, in light of the potential connection between fatigue and NPOs. While this Report looked at the relationship between overtime and NPOs, a full assessment would require an additional analysis of other risk factors for both fatigue and NPOs, such as the timing and consistency of officer shifts, the extent of outside employment, the public safety and other operational need for overtime shifts, and how overtime hours are distributed.[170]

Given the size of NYPD, and the scope and complexity of the analysis required, NYPD would be best served by engaging a private firm with the resources and policy expertise to perform the necessary work. That firm should be tasked with evaluating the risks and benefits of the Department's overtime use, the associated risks of fatigue as well as other negative outcomes (related or unrelated) and to propose solutions to mitigate those risks. In the interest of transparency, the firm's analysis should be shared with the public, as other city auditor and oversight body reports on police overtime have been. To facilitate that evaluation, NYPD should also immediately start tracking data that will be necessary for the analysis but is currently unavailable, such as outside employment hours.

Pending this more extensive analysis, there are a number of steps that NYPD should take in the short-term. NYPD should consider the mitigation strategies implemented by the other industries and police departments described in this Report, many of which are among the largest police departments in the United States. For instance, given the dramatic increased risks posed by lengthy overtime shifts, such as eight or twelve hours, NYPD could cap total shift length to prevent overtime above a set number of hours, and could implement mandatory rest periods or time off between lengthy overtime shifts to ensure officers are well rested and fit for duty. Mitigating the

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Major Crimes Rose 22 Percent in New York City, Even as Shootings Fell, N.Y. TIMES (Jan. 5, 2023), https://www.nytimes.com/2023/01/05/nyregion/new-york-crime-stats.html.

[168] OVERTIME OVERVIEW, *supra* note 24 at 4-5.

[169] An analysis of NYPD's justification for overtime usage was beyond the scope of this Report. OIG-NYPD cannot say whether NYPD is or is not properly utilizing its overtime hours.

[170] For instance, crime obviously occurs at night, and officers need to be able to respond. There are also more nuanced operational issues, such as arrests that take place at the end of a shift, or emergency situations that require a robust response. These issues are not insurmountable, however, as the medical profession has proven when confronted with the same challenges and circumstances. *See supra* note 134.

risk that fatigued officers pose to themselves and to the residents of New York City will create safer officers and communities.

VIII. Recommendations

1. NYPD should develop and incorporate policies related to fatigue in its written overtime procedures.

2. NYPD should develop a system to track off-duty employment hours worked by its officers.

3. NYPD should develop and implement training for officers concerning how to recognize and to mitigate the effects of fatigue due to long work hours, as NYPD currently provides to supervisors.

4. To further inform its development of overtime and fatigue-related policies, NYPD should utilize a consulting firm that specializes in, among other things, risk assessments, to calculate the risks and benefits of overtime and to identify solutions to mitigate those risks while meeting the Department's overtime needs. This assessment should include an analysis of fatigue-associated risks and overtime shift justifications, and the assessment should identify solutions to control overtime shift length and distribution. Depending on the results of this assessment, NYPD should develop appropriate risk mitigation strategies.

5. NYPD should make the results of the risk assessment recommended in number 4, above, and any recommendations, available on its public website in an area that is readily accessible.

6. NYPD should codify in its Patrol Guide and/or Administrative Guide any changes made as a result of the risk assessment and recommendations. If no changes are made, NYPD should issue a statement explaining its decision-making on its public website in an area that is readily accessible.

Appendix A: Detailed Methodology
      I. Generating the Random Sample

Before OIG-NYPD collected data and began an analysis, the Office drew a sample of officers from the broader NYPD population. Three filters were applied to the overall population of NYPD officers – first, only officers who were active members of service for all days between January 1, 2019 and December 31, 2021 were included, to ensure sufficient datapoints and consistency across all three years of the timeframe. The sample was then limited to officers, detectives, and sergeants—members of NYPD most likely to have regular interaction with the general public, and therefore most likely to give rise to liability. As a complement, OIG-NYPD filtered out officers in non-public-facing roles (building maintenance/ payroll, etc.).[171] The resulting population of potential officers for this Report was approximately 25,000.

From that pool, R statistical software (R) was used to generate a random sample of 1,000 officers. Due to data constraints (e.g., duplicate names or incomplete Employee Identification Numbers), seven officers were removed from the random sample, leaving 993 public-facing officers, detectives, and sergeants that were active between 2019 and 2021.[172]

      II. Collection of Overtime Hours Worked

OIG-NYPD used City Human Resource Management System (CHRMS) to collect all pay events and compensatory time for overtime hours worked by the officers in the sample between January 1, 2019 and December 31, 2021. OIG-NYPD consulted with CHRMS representatives to identify actual overtime hours worked, whether paid or for compensatory time. Using R, OIG-NYPD aggregated, for each officer for each day, paid and/or compensatory overtime events, to represent the net number of overtime hours worked by each officer on that day.[173]

Of the total 1,088,328 days examined (365 days in a year multiplied by 3 years + 1 day for a leap year [2020] for each of 993 officers), overtime was worked 196,955 times (roughly 18% of days). OIG-NYPD assigned days where no overtime was worked a 0 in the data set. Days where overtime was worked were given each officer's total for that day. Thus, every day either had a 0 or the total overtime hours worked. In addition, OIG-NYPD lagged overtime worked across the seven preceding days, (that is, OIG-NYPD created variables based on the overtime worked the day before, two days before, three days before…) and created four columns aggregating at certain

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[171] A full list of the commands OIG-NYPD excluded is available in Appendix B.
[172] Given that the NYPD population that OIG-NYPD examined was approximately 25,000 public-facing officers, a sample of 993 officers is statistically representative of all 25,000 public-facing officers at a 99% confidence interval.
[173] As an example, there were many instances where officers worked both a 'regular' overtime shift as well as a 'night' overtime shift. In that scenario, OIG-NYPD would take the sum of both events as a representation of the total overtime worked.

periods of time: the previous day, the previous three days, the previous five days, and the previous seven days.[174]

For example, an officer who worked five hours of overtime on Monday, two hours of overtime on Thursday, and one hour of overtime on Saturday, had the following schedule:

Figure 8: Example Officer Work Schedule

DAY	Overtime Hours Worked
Monday	**5.0**
Tuesday	**0**
Wednesday	**0**
Thursday	**2.0**
Friday	**0**
Saturday	**1.0**
Sunday	**0.0**

Assuming the officer worked no overtime the week before, their Monday Previous Day, and Previous Three, Five, and Seven Day total overtime would be 0. On Tuesday, their Previous Day, and Previous Three, Five, and Seven Day total overtime would all be 5 hours. On Wednesday and Thursday, their Previous Day total overtime would be 0, but their Previous Three, Five, and Seven Day would be 5 hours. Because the officer worked 2 hours of overtime on Thursday, their Friday Previous Day and Previous Three Day total overtime is 2 hours, and those 2 Thursday overtime hours add to the 5 worked on Monday such that the officer's Previous Five and Seven Day total overtime worked is 7 hours. On Saturday, the officer's Previous Day overtime worked is zero, but their Previous Three, Five, and Seven Day total overtime worked remain 2, 7, and 7 hours respectively. On Sunday, their Previous Day overtime total worked is 1 hour, which adds to the other time windows such that the officer's Previous Three and Five Day overtime worked is a total of 3 hours, and their Seven Day overtime total is 8 hours. This aggregation is depicted in the figure below.

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[174] More time worked may increase the likelihood of an NPO arising during that time. To properly calculate future risk, not risk while the overtime is occurring, in OIG-NYPD's models, NPOs are only associated with overtime worked the previous day, three days, five days, and seven days worked. They are not associated in the model with overtime worked on the day the NPO occurred

Figure 9: Example Officer Work Schedule with Aggregation Totals

Day of the Week	Overtime Worked (Hours)	Previous Day Total Hours	Previous Three Days Total Hours	Previous Five Days Total Hours	Previous Seven Days Total Hours
Monday	5	--	--	--	--
Tuesday	0	5	5	5	5
Wednesday	0	0	5	5	5
Thursday	2	0	5	5	5
Friday	0	2	2	7	7
Saturday	1	0	2	7	7
Sunday	1	1	3	3	8

III. Detailed Explanation of Data on Negative Policing Outcomes

a. *Lawsuits*

OIG-NYPD requested and received from the Law Department all Active, Closed, and Dormant lawsuits involving members of the sample where an alleged incident occurred between January 1, 2019 and December 31, 2021, regardless of when the lawsuit was filed. The Comptroller provided OIG-NYPD with a list of Notices of Claim (an initial, procedural step prior to filing a lawsuit) alleging an incident that occurred during the timeframe, regardless of when the Notice of Claim was filed. OIG-NYPD filtered that list against the Law Department data to include in the sample Notices of Claim which were resolved prior to litigation (and thus did not reach the Law Department). For each officer, each lawsuit with an incident that occurred on a day within the time period examined was scored as a 1. In some instances (ten officers total), officers were involved in incidents that generated more than one lawsuit on the same day, but the coding scheme scored any 'alleged incident' day with a 1. Days with no alleged incident were scored with a 0. With a binary dependent variable (1 for lawsuit, and 0 for no lawsuit) and four independent variables (Previous Day, Three Day, Five Day, and Seven Day) established, OIG-NYPD then performed four logistic regressions.

b. *CCRB Complaints*

OIG-NYPD collected from CCRB all complaints (regardless of the number of allegations included in each complaint) filed against officers for incidents that occurred during the three years of the study. Per a prior agreement between CCRB and NYPD, that data did not include any incident where a complaint was filed and resolved via mediation between the officer and complainant.[175]

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[175] *See generally* Civilian Complaint Review Board, *Mediation Process*, NYC.GOV, https://www.nyc.gov/site/ccrb/mediation/mediation-process.page (last visited April 27, 2023).

OIG-NYPD performed two manipulations of the data. Aside from mediation, CCRB complaints have one of several outcomes—the alleged victim/complainant could be unavailable or uncooperative, the complaint could be closed pending litigation, the officer could be exonerated, the complaint could be unfounded or unsubstantiated, or the allegations made could be substantiated. In order to limit the possibility of false or frivolous allegations, OIG-NYPD only examined complaints CCRB substantiated or partially substantiated.

Like lawsuits, substantiated or partially substantiated CCRB cases were then aggregated by officer and day, such that if at least one substantiated incident occurred on any given day, for any given officer, that day received a 1 for that officer. If an officer did not have a substantiated CCRB complaint on a given day or no incident occurred, that day was scored a 0. After those manipulations of the original CCRB data, with a binary dependent variable (1 for substantiated or partially substantiated CCRB complaint, and 0 for neither substantiated nor partially substantiated complaints, or no incident occurred at all) and four independent variables (Previous Day, Three Day, Five Day, and Seven Day) established, OIG-NYPD then performed four logistic regressions.

c. IAB Complaints

OIG-NYPD received from NYPD's Internal Affairs Bureau all investigations of officers in the sample for allegations or incidents occurring within the three-year period. Like CCRB complaints, only substantiated or partially substantiated investigations were included. For all officers, days where an incident led to a substantiated or partially substantiated IAB complaint received a score of 1, and days where either no incident or an investigation that was not substantiated occurred received a score of 0. After those manipulations of the IAB dataset, with a binary dependent variable (1 for substantiated or partially substantiated IAB complaint, and 0 for neither substantiated nor partially substantiated complaints, or no incident occurred at all) and four independent variables (Previous Day, Three Day, Five Day, and Seven Day) established, OIG-NYPD then performed four logistic regressions.

d. Threat, Resistance, Injury (T.R.I.) Reports

OIG-NYPD requested from NYPD all recorded T.R.I. Reports by officers in the sample over the three-year period. NYPD provided a dataset with officers separated by rows and days separated by columns. For days where no incident resulting in a T.R.I. Report occurred, NYPD listed the cell as "N/A." For days where a T.R.I. incident occurred, NYPD provided general descriptors. OIG-NYPD converted this 993 X 1,096 dataset into a 3 X 1,088,328, with a column for officer name, date, and T.R.I. For each officer, all days where a T.R.I. was described were scored 1, and all days where no T.R.I. was described were scored 0. With a binary dependent variable (1 for T.R.I. recorded and 0 for no T.R.I. recorded) and four independent variables (Previous Day, Three Day, Five Day, and Seven Day) established, OIG-NYPD then performed four logistic regressions.

e. Workplace Injuries

OIG-NYPD requested from NYPD a list containing all documented injuries for officers named in the sample within the three-year period. The data was provided in a format like the Threat, Response, and Injury dataset, where each officer represented a row, and each day a unique column. Like T.R.I. data, OIG-NYPD manipulated this dataset, such that officers, dates, and injuries were contained to 3 columns and 1,088,328 rows. All days where no injury to an officer was recorded received a 0 and all days where an injury occurred received a 1. With a binary dependent variable (1 for workplace injury and 0 for no workplace injury) and four independent variables (Previous Day, Three Day, Five Day, and Seven Day) established, OIG-NYPD then performed four logistic regressions.

f. Vehicle Collisions

OIG-NYPD received from NYPD a list of all vehicle collisions involving officers in the sample within the three-year period. The data arrived as a two-column list—for each officer in the sample who had been involved in a vehicle collision, the officer was named in one column and the date(s) of the collision in the second. OIG-NYPD scored each date in this dataset with a 1, and days not included in the collision data scored a 0. With a binary dependent variable (1 for vehicle collision and 0 for no vehicle collision) and four independent variables (Previous Day, Three Day, Five Day, and Seven Day) established, OIG-NYPD then performed four logistic regressions.

Appendix B: List of Included and Excluded NYPD Units

As described in Appendix A, OIG-NYPD limited the pool of eligible officers from which to draw the random sample to officers in public-facing roles. To filter out these types of officers, OIG-NYPD collected the Command and/or Unit of every officer, sergeant, and detective active between 2019 and 2021 and assessed which units had little public interaction. The units that were excluded from the generation of the random sample are reported below.

1. BROOKLYN COURT SECTION/UNIF
2. S.I. COURT SECTION/UNIF
3. QUEENS COURT SECTION/UNIF
4. MANHATTAN COURT SECTION/UNIF
5. BUILDING MAINTENANCE/ UNIFORM
6. CAB COMM. OUTREACH DIV/UNIF
7. CANDIDATE ASSESSMENT DV/UF
8. POLICE ACADEMY/ UNIFORM
9. POL ACAD STUD OFF TRAIN COMP33
10. CHIEF OF TRANSP/TRP-BUR/UNF
11. DA SQ STATEN ISL./UNF
12. DISTRICT ATTORNEY – QUEENS/UNF
13. DEPT OF INVESTIGATIONS SQ/ UNF
14. DRIVER TRAIN UNIT P.A./ UNIF
15. FLEET SERVICES DIV/UNIF
16. HEALTH AND WELLNESS SEC/UNIF
17. MEDICAL DIV/UNIF
18. PAYROLL SECT OTHER SEP/UNI
19. PAYROLL SECT RET UNI

Appendix C: Examining the Risk of Double Counting NPOs

Although each NPO carries its own cost and risk to the City, OIG-NYPD also studied the rate at which different NPOs overlap. There were 304 instances where an officer had two NPOs on the same day, 43 instances where an officer had three NPOs on the same day, five instances where an officer had four NPOs occurred on the same day, and one instance where an individual officer was named in a lawsuit, the subject of both a substantiated IAB complaint and CCRB complaint, received a workplace injury, reported a T.R.I., and was involved in a vehicle collision. Together, these overlapping instances constitute less than 15% of the sample. In addition, while OIG-NYPD is able to study whether any particular officer was involved in multiple NPOs on the same day, the limitations of the data received meant that the Office was unable to confirm whether in those cases, the NPOs were related to the same incident. Given the low frequency of overlap, it was determined that the analysis was not unduly influenced by any incident generating multiple NPOs.

To further identify any potential relationship between NPOs, OIG-NYPD generated a correlation matrix to study associations between outcomes. As the correlogram demonstrates, only two NPO associations (CCRB Complaint and IAB Complaints, and Vehicle Collisions and Lawsuits, both in **GREEN** below) had positive correlation coefficients, meaning that when one NPO occurred, the other tended to occur, but neither pairing was associated to any statistically meaningful degree. As a refresher, while specific thresholds may differ between academic disciplines, anything less than ±0.5 is typically considered to be only minorly correlated (as is the case of CCRB Complaints and IAB Complaints, and Vehicle Collisions and Lawsuits, in Green). The correlation matrix confirms the finding of the descriptive statistics—there are very few 'double-dipping' instances of multiple NPOs occurring on the same day, and thus potentially from the same incident. Even the correlations provided here may overrepresent the, admittedly small, correlation between NPOs. It is entirely possible that an officer could accrue two unrelated NPOs on the same day, but given limitations in the data, it would be impossible to disaggregate them in this correlogram. This would in turn "improve" the correlation between the two NPOs in the correlogram.

Table 1: Correlogram of NPOs by Day of Occurrence

	Lawsuit	Substantiated CCRB Complaint	Substantiated IAB Complaint	T.R.I. Report	Vehicle Collision
Substantiated CCRB Complaint	-0.02	-- --	-- --	-- --	-- --
Substantiated IAB Complaint	-0.06	**0.02**	-- --	-- --	-- --
T.R.I. Report	-0.22	-0.28	-0.21	-- --	-- --
Vehicle Collision	**0.05**	-0.10	-0.10	-0.29	-- --
Workplace Injuries	-0.09	-0.18	-0.15	-0.33	-0.08

Appendix D: Increased Risk of Statistically Significant NPOs For All Periods of Time[176]

Overtime Hours	Lawsuit	CCRB Complaint	T.R.I. Report	Injury
Table 2: Exponentiated Coefficients for Statistically Significant NPOs (Previous Day)				
1	8%	8%	4%	4%
2	16%	16%	9%	9%
3	25%	25%	14%	13%
4	34%	35%	19%	18%
5	45%	45%	25%	23%
6	56%	57%	30%	28%
7	68%	69%	36%	33%
8	81%	82%	42%	39%
9	95%	96%	49%	45%
10	110%	112%	55%	51%
11	126%	128%	62%	57%
12	143%	146%	70%	64%
13	162%	165%	77%	70%
14	182%	186%	85%	78%
15	203%	208%	93%	85%
16	227%	232%	102%	93%
17	252%	258%	111%	101%
18	279%	286%	121%	109%
19	308%	316%	131%	118%
20	339%	348%	141%	127%
21	373%	383%	152%	137%
22	409%	421%	163%	146%
23	448%	461%	175%	157%
24	491%	505%	187%	168%

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[176] The percentages represent increased risk, not total risk. In the tables below, 'Hours' represents net overtime hours worked by an officer over the course of the specific window of time. 'Lawsuit' represents being named in a lawsuit, 'CCRB complaint' represents being named in a substantiated or partially substantiated CCRB complaint, 'T.R.I. Report" represents being involved in an incident resulting in a T.R.I. Report, 'Injury' represents a workplace injury, and 'Vehicle Collision', represents being in a vehicle collision.

Table 3: Exponentiated Coefficients for Statistically Significant NPOs and Hours Worked (Previous Three Days)		
Overtime Hours	Lawsuit	T.R.I. Report
1	4%	2%
2	9%	3%
3	13%	5%
4	18%	7%
5	23%	8%
6	29%	10%
7	34%	12%
8	40%	14%
9	46%	15%
10	52%	17%
11	59%	19%
12	66%	21%
13	73%	23%
14	80%	25%
15	88%	27%
16	96%	29%
17	104%	31%
18	113%	33%
19	122%	36%
20	132%	38%
21	142%	40%
22	152%	42%
23	163%	44%
24	174%	47%

Table 4: Exponentiated Coefficients for Statistically Significant NPOs and Hours Worked (Previous Five Days)			
Overtime Hours	Lawsuit	TRI	Vehicle Collision
1	3%	2%	2%
2	7%	3%	4%
3	10%	5%	7%
4	14%	6%	9%
5	18%	8%	11%
6	22%	9%	13%
7	26%	11%	16%
8	30%	13%	18%
9	35%	14%	21%
10	39%	16%	23%
11	44%	18%	26%
12	49%	20%	29%
13	54%	22%	31%
14	59%	23%	34%
15	64%	25%	37%
16	70%	27%	40%
17	75%	29%	43%
18	81%	31%	46%
19	87%	33%	49%
20	93%	35%	52%
21	100%	37%	55%
22	107%	39%	59%
23	114%	41%	62%
24	121%	43%	66%

Table 5: Exponentiated Coefficients for Statistically Significant NPOs and Hours Worked (Previous Seven Days)

Overtime Hours	Lawsuit	TRI	Vehicle Collision
1	2%	1%	2%
2	5%	2%	4%
3	7%	4%	6%
4	10%	5%	8%
5	12%	6%	11%
6	15%	7%	13%
7	17%	9%	15%
8	20%	10%	17%
9	23%	11%	20%
10	26%	13%	22%
11	29%	14%	25%
12	32%	15%	27%
13	35%	17%	30%
14	38%	18%	32%
15	41%	20%	35%
16	44%	21%	38%
17	48%	23%	40%
18	51%	24%	43%
19	55%	26%	46%
20	58%	27%	49%
21	62%	29%	52%
22	66%	30%	55%
23	70%	32%	58%
24	74%	33%	62%

Appendix E: Logistic Regression Output[177]

Lawsuits	Intercept	Coefficient	Standard Error	Significance	Odds Ratio
Overtime the previous day	-8.81	0.074	0.027	0.007	1.077
Overtime the previous three days	-8.85	0.042	0.015	0.006	1.043
Overtime the previous five days	-8.79	0.033	0.011	0.003	1.033
Overtime the previous seven days	-8.87	0.023	0.009	0.003	1.023

Substantiated CCRB Complaints	Intercept	Coefficient	Standard Error	Significance	Odds Ratio
Overtime the previous day	-9.31	0.075	0.035	0.032	1.077

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[177] The following models were not significant at the $p < 0.05$ threshold: All substantiated or partially substantiated IAB complaints and CCRB complaints; Workplace Injuries at Three, Five and Seven Days timeframe; and Vehicle Collisions the Previous Day and Three Days timeframe.

Threat, Resistance, Injury Reports	Intercept	Coefficient	Standard Error	Significance	Odds Ratio
Overtime the previous day	-6.53	0.044	0.010	0.000	1.045
Overtime the previous three days	-6.53	0.016	0.006	0.004	1.016
Overtime the previous five days	-6.55	0.015	0.004	0.000	1.015
Overtime the previous seven days	-6.55	0.012	0.003	0.000	1.012

Workplace Injuries	Intercept	Coefficient	Standard Error	Significance	Odds Ratio
Overtime the previous day	-7.32	0.041	0.015	0.007	1.042

Appendix F: NPO Concentration Among 'No Overtime Worked the Previous Day' and Overtime Worked the Previous Day in 30 Minute Increments

Hour of Overtime	Proportion of Sample	Lawsuits	T.R.I. Reports	Vehicle Collisions	Workplace Injuries
No overtime	82%	79% (-3%)	77% (-5%)	74% (-8%)	79% (-3%)
.5	17%	22% (5%)	21% (4%)	24% (7%)	19% (2%)
1	15%	18% (3%)	18% (3%)	20% (5%)	16% (1%)
1.5	13%	17% (4%)	16% (3%)	17% (4%)	14% (1%)
2	11%	15% (4%)	13% (3%)	14% (3%)	12% (2%)
2.5	10%	15% (5%)	12% (2%)	13% (3%)	12% (2%)
3	8%	13% (5%)	11% (3%)	11% (2%)	11% (3%)
3.5	7%	13% (5%)	11% (3%)	10% (2%)	10% (2%)
4	5%	11% (6%)	8% (2%)	6% (1%)	8% (3%)
4.5	5%	10% (5%)	7% (2%)	6% (1%)	7% (3%)
5	4%	9% (5%)	6% (2%)	5% (0%)	6% (2%)
5.5	4%	8% (4%)	6% (2%)	4% (0%)	6% (2%)
6	4%	7% (3%)	5% (1%)	4% (0%)	5% (1%)
6.5	3%	6% (2%)	4% (1%)	4% (0%)	5% (1%)
7	3%	5% (1%)	4% (1%)	4% (1%)	5% (2%)
7.5	3%	5% (2%)	4% (1%)	4% (1%)	4% (1%)
8	3%	5% (2%)	3% (1%)	4% (1%)	3% (0%)

NOTE: This table describes the disproportionality of various NPOs at 30-minute increments. While overtime worked that was below the increment was included in the analysis, for interpretation sake, it is not included here. The first number in each cell in columns 3-7 represents the proportion of NPOs contained in that increment of time. The second number, in parentheses, details the net disproportionality from the expected value provided by the population proportion in column 2. Positive differences represent higher observed values than would be expected, and negative differences represent lower values than would be expected. Differences may be slightly different due to rounding.

IAB and CCRB NPOs were not included in this analysis because expected values were consistently lower than 5, a value needed for Chi-Square analysis.[178]

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[178] Chi-Square tests require specific assumptions about the distribution of data. In order to prevent Type I errors, conditions with less than 5 observations are typically inappropriate. *See* Lisa Sullivan, *Hypothesis Testing – Chi Squared Test*, Bos. Univ., https://sphweb.bumc.bu.edu/otlt/mph-modules/bs/bs704_hypothesistesting-chisquare/bs704_hypothesistesting-chisquare_print.html (last visited April 27, 2023).

Appendix H: Chi-Square Statistics for Expected vs. Observed NPOs at various Overtime Increments

Hour of Overtime	Lawsuits	T.R.I. Reports	Vehicle Collisions	Workplace Injuries
.5	-- --	34.686***	-- --	18.574***
1	2.557	29.427***	13.779***	6.555*
1.5	3.360	28.042***	13.459***	5.703
2	4.006	28.224***	12.679***	4.525
2.5	5.287	28.130***	13.393***	4.412
3	6.295*	29.782***	12.814***	6.831*
3.5	6.737*	33.918***	12.148***	6.258*
4	11.744***	31.398***	12.610***	11.826***
4.5	13.125***	32.279***	11.922***	10.639***
5	12.064***	32.776***	13.619***	9.140**
5.5	5.760	32.654***	14.350***	7.934***
6	6.611*	28.247***	13.022***	5.828
6.5	-- --	27.692***	12.100***	6.731*
7	-- --	27.556***	12.100***	7.692*
7.5	-- --	27.619***	12.100***	4.642
8	-- --	27.844***	12.100***	4.469

NOTE: Due to Expected Values being less than 5 across overtime increments, substantiated or partially substantiated CCRB complaints/IAB complaints are not included in this analysis, nor are individual increments in Lawsuits or Vehicle Collisions that fail to meet the requirement. Each table reports the Chi-Square value for differences between observed and expected frequencies of NPOs in three categories: a) when no overtime was performed the previous day, b) when overtime at or above the increment in the first column was performed the previous day, and c) when overtime was performed the previous day, but the length was less than the increment in the first column. All Chi-Squares required 2 degrees of freedom.

* p < 0.05, ** p < 0.01, *** p < 0.001