

EXECUTIVE SUMMARY

The Effects of COPS Office Funding on Sworn Force Levels, Crime, and Arrests

Evidence from a Regression Discontinuity Design

A significant new study has been released on the effects of \$1 billion of COPS Office 2009 CHRP grant funding on crime, arrests, and police force strength.



COPS

Community Oriented Policing Services
U.S. Department of Justice



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The Internet references cited in this publication were valid as of the date of publication. Given that URLs and websites are in constant flux, neither the authors nor the COPS Office can vouch for their current validity.

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Background

This is a summary developed by the U.S. Department of Justice's Office of Community Oriented Policing Services (COPS Office) of a report titled "The Effects of COPS Office Funding on Sworn Force Levels, Crime, and Arrests," authored by Philip J. Cook, Duke University and NBER (National Bureau of Economic Research); Max Kapustin, University of Chicago Crime Lab; Jens Ludwig, University of Chicago and NBER; and Douglas L. Miller, Cornell University and NBER. The full paper is available on the COPS Office website at <http://ric-zai-inc.com/ric.php?page=detail&id=COPS-W0827>.

This study is an attempt to estimate the effects of 2009 COPS Hiring Recovery Program (CHRP) grant funding on changes in police force strength, arrest rates, and crime rates. The authors were able to exactly replicate COPS Office funding processes for the \$1 billion in grants awarded to local law enforcement agencies as a part of the 2009 Recovery Act. The analysis uses a natural experiment that resulted from how this funding was awarded. The study compares those agencies with application scores just above the cutoff, and that were far more likely to be successful with their funding requests as a result, to a similar sample of agencies with scores just below the cutoff. This well-regarded statistical technique, called a regression discontinuity design, creates two closely comparable groups, and it approximates a randomized controlled study.

Methods

The authors used Uniform Crime Report (UCR) data for crime and arrests measures, and used both UCR data and U.S. Census Bureau Annual Survey of Government Employment and Payroll data to measure police force strength. The authors describe the extensive efforts they undertook to properly clean all of the data and account for outliers.

Simplified versions of the tables the authors used to report their findings can be found in the appendix. In all of the analyses, the authors compared the results from each of the years 2009, 2010, 2011, and 2012 (post-treatment years) to the baseline of 2007 to 2008 (pre-treatment years). They conducted separate analyses for all agencies applying for COPS Office funding (7,202 agencies) and agencies that serve populations of 0 to 50,000 residents (4,954 agencies) to examine potential differences resulting from population size. They also separately examined agencies where a COPS Office award would have potentially increased the total force strength of the agency by 5 percent or more to see if those agencies with a more significant desired investment of officers experienced a different impact.

Findings

As can be seen in table 1 on page 3, the authors estimate that in 2009, agencies that received COPS Office funding increased their sworn force strength in 2009 by 1.9 percent from 2007–2008 levels when compared to agencies that were unsuccessful in their funding. For agencies with populations from 0 to 50,000, this increase was 2.4 percent. The authors conclude that "the 2009 CHRP grant competition appears to have successfully increased the size of winning agencies' police forces in 2009. Our estimates of officer impacts beyond this point are statistically insignificant, but suggest that this effect persisted into 2010 before declining somewhat in 2011–2012. These effects also appear larger for agencies requesting greater increases to the sizes of their police forces."

Table 2 on page 3 reports estimates of the effects of 2009 CHRP funding on total UCR Part I crime rates from 2009 to 2012. The authors report that “[i]n 2009 the estimated effect was small and statistically insignificant. By 2010, the first full calendar year after the CHRP funding was issued, the decline in crime relative to 2007–8 is 4.5 percent ($p=.052$).” In 2011, the estimates increase to 5.5 percent (p -value of .034) and then in 2012 to 5.1 percent (although with a p -value of .079). The estimates appear slightly larger for smaller agencies and are slightly smaller for those with potential increases in force of 5 percent or more.

Tables 3 and 4 present estimates for violent and property crime rates respectively. The results are broadly similar to those when examining overall crime. Violent crime rates in CHRP-funded agencies declined 9.2 percent (p -value .022) in 2010 relative to 2007–8, with estimates becoming smaller and less precisely estimated thereafter. Among property crimes, none of the estimates are significant at the 10 percent level or lower; however, among smaller agencies (serving between 0 and 50,000 residents), the effect on property crime rates appears to be both larger and more precisely estimated (7.6 percent decline in 2012 relative to 2007–8, p -value of .038). As the authors note, “The effects of COPS Office hiring grant funding on violent crime rates appear to be larger, overall, than those on property crime rates, which is consistent with previous studies. And this pattern is also relevant for policy purposes since the social costs of crime are disproportionately driven by violent crime. However. . . the sensitivity of the violent crime results to the choice of baseline year raises concerns and argues for caution in interpreting these estimates.”

Finally, tables 5, 6, and 7 present results on the effects of COPS Office hiring grants pertaining to arrests for all crimes, and separate tables for violent crime and property crimes. The analysis of arrest data is an attempt by the authors to identify the potential mechanisms through which increased police presence may reduce crime. As the authors state, “police may reduce crime by arresting and incapacitating offenders or by deterring criminal

activity from occurring in the first place. . . . If arrests decline alongside crime, this suggests that the deterrence and prevention activities additional officers undertake outweigh any effect on crime from apprehending more offenders. On the other hand, if additional police resources reduce crime while increasing arrests, this suggests that the effects of apprehension and incapacitation dominate those of deterrence and prevention activities. . . . If police reduce crime and arrests simultaneously, then increased police spending may not strain courts and correctional systems, and could potentially alleviate (rather than exacerbate) concerns about America’s incarceration rate.”

The authors go on to report, “. . . the estimated effects of COPS Office funding on arrest rates show a similar pattern to those on crime rates. Despite the reduction in sample size, arrest rates in 2010 relative to 2007–8 are 6.2 percent smaller (p -value=.090). As with crime rates, the effects on violent arrest rates tend to be larger than those on property arrest rates. However, these effects disappear in 2011–12, suggesting that patterns of arrest attenuate more rapidly after receipt of COPS funding than patterns of criminal activity.”

Summary

In summary, the authors state, “We find that COPS Office funding increased officers per capita in 2009 relative to 2007–8 by almost 2 percent for agencies near the funding threshold, and led to declines in reported UCR Part 1 crimes of approximately 5 percent in subsequent years, albeit estimated with varying degrees of precision. A similar estimated decline in arrests was found in 2010, suggesting that deterrence, rather than incapacitation, may on net be the mechanism driving these results. . . . Though not sufficiently strong to conclude that there are increasing returns to police spending, the results presented here provide suggestive evidence that additional police resources represent a cost-effective approach to reduce crime.”

Appendix. Simplified versions of tables found in Cook et al.

Significant results (p-values <.05) are presented in bold.

Table 1. Change in officers per 100,000 residents between 2009 CHRFP-funded agencies compared to non-funded agencies (relative to 2007–2008)

Year	All Agencies		Agencies with populations: 0-50,000	
	Percent Change	p-value	Percent Change	p-value
<i>All Potential Increases in Agency Force</i>				
2009	1.9	.03	2.4	.02
2010	2.1	.12	2.3	.15
2011	1.2	.42	1.7	.35
2012	.6	.71	1.1	.56
<i>Potential Increases in Agency Force of 5%+</i>				
2009	3.2	.02	3.7	.01
2010	3.2	.11	3.8	.08
2011	2.1	.34	2.8	.24
2012	1.7	.50	2.2	.42

Original table 2: Log officers per 100,000 residents, relative to 2007–2008.

Table 2. Change in total crimes per 100,000 residents between 2009 CHRFP-funded agencies compared to non-funded agencies (relative to 2007–2008)

Year	All Agencies		Agencies with populations: 0-50,000	
	Percent Change	p-value	Percent Change	p-value
<i>All Potential Increases in Agency Force</i>				
2009	-1	.57	-1.5	.51
2010	-4.5	.05	-6.3	.03
2011	-5.5	.03	-7.2	.02
2012	-5.1	.08	-7.4	.04
<i>Potential Increases in Agency Force of 5%+</i>				
2009	-.3	.92	-.7	.81
2010	-3.8	.28	-5.0	.20
2011	-4.7	.23	-5.8	.18
2012	-2.2	.62	-3.8	.43

Original table 3: Log total crimes per 100,000 residents, relative to 2007–2008.

Table 3. Change in Violent Crimes per 100,000 residents between 2009 CHRFP-funded agencies compared to non-funded agencies (relative to 2007–2008)

Year	All Agencies		Agencies with populations: 0-50,000	
	Percent Change	p-value	Percent Change	p-value
<i>All Potential Increases in Agency Force</i>				
2009	-4.3	.21	-4.7	.27
2010	-9.2	.02	-11.3	.02
2011	-6.5	.14	-6.8	.21
2012	-7.4	.11	-8.7	.13
<i>Potential Increases in Agency Force of 5%+</i>				
2009	-5.0	.33	-4.4	.44
2010	-10.7	.08	-12.2	.07
2011	-9.7	.14	-9.6	.18
2012	-9.2	.17	-9.9	.18

Original table 4: Log violent crimes per 100,000 residents, relative to 2007–2008.

Table 4. Change in property crimes per 100,000 residents between 2009 CHRFP-funded agencies compared to non-funded agencies (relative to 2007–2008)

Year	All Agencies		Agencies with populations: 0-50,000	
	Percent Change	p-value	Percent Change	p-value
<i>All Potential Increases in Agency Force</i>				
2009	.1	.95	-.1	.96
2010	-3.6	.14	-5.2	.08
2011	-4.2	.10	-5.9	.06
2012	-5.0	.09	-7.6	.04
<i>Potential Increases in Agency Force of 5%+</i>				
2009	1.7	.57	1.3	.69
2010	-2.1	.56	-3.2	.43
2011	-2.2	.59	-3.2	.46
2012	-1.5	.75	-3.3	.52

Original table 5: Log property crimes per 100,000 residents, relative to 2007–2008.

Table 5. Change in total arrests per 100,000 residents between 2009 CHRPFunded agencies compared to non-funded agencies (relative to 2007–2008)

Year	All Agencies		Agencies with populations: 0-50,000	
	Percent Change	p-value	Percent Change	p-value
<i>All Potential Increases in Agency Force</i>				
2009	-1.2	.68	-1.4	.70
2010	-6.2	.09	-9.9	.03
2011	-.9	.82	-2.8	.58
2012	1.4	.76	-1.4	.81
<i>Potential Increases in Agency Force of 5%+</i>				
2009	-1.9	.67	-2.5	.61
2010	-8.7	.11	-11.1	.06
2011	.4	.95	.3	.96
2012	4.6	.50	3.9	.61

Original table 6: Log total arrests per 100,000 residents, relative to 2007–2008.

Table 6. Change in violent arrests per 100,000 residents between 2009 CHRPFunded agencies compared to non-funded agencies (relative to 2007–2008)

Year	All Agencies		Agencies with populations: 0-50,000	
	Percent Change	p-value	Percent Change	p-value
<i>All Potential Increases in Agency Force</i>				
2009	-1.5	.72	-.6	.91
2010	-8.9	.07	-10.9	.07
2011	-.7	.90	.9	.89
2012	1.8	.76	3.8	.61
<i>Potential Increases in Agency Force of 5%+</i>				
2009	-1.9	.78	-.1	.99
2010	-14.2	.05	-14.4	.08
2011	-4.1	.61	-2.5	.78
2012	1.2	.90	2.1	.84

Original table 7: Log violent arrests per 100,000 residents, relative to 2007-2008.

Table 7. Change in property arrests per 100,000 residents between 2009 CHRP-funded agencies compared to non-funded agencies (relative to 2007–2008)

Year	All Agencies		Agencies with populations: 0-50,000	
	Percent Change	p-value	Percent Change	p-value
<i>All Potential Increases in Agency Force</i>				
2009	.2	.95	-.3	.94
2010	-4.7	.26	-8.5	.10
2011	-.5	.92	-2.9	.61
2012	1.1	.83	-3.2	.63
<i>Potential Increases in Agency Force of 5%+</i>				
2009	.6	.91	-1.1	.85
2010	-5.2	.41	-8.1	.24
2011	3.4	.62	2.3	.76
2012	5.7	.47	3.8	.66

Original table 8: Log property arrests per 100,000 residents, relative to 2007–2008.



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