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Police Research, Officer Surveys, and Response Rates

Abstract
In recent years, policing scholars have increasingly used survey methods to gain insight into officers’ attitudes and behaviors. Yet, surprisingly, methodological research analyzing surveys of police officers is rare. We analyzed the extent and correlates of response rates in police surveys, providing insights about the survey design features and study characteristics associated with higher rates of officer participation. We examined the response rates to 497 police surveys reported in 390 articles published in 15 journals from 2008 to 2017. Findings included the following: (1) the average response rate was 64%, but there was a great deal of variation, (2) in-person surveys achieved substantially higher response rates, (3) inviting a greater number of officers to participate in surveys was associated with lower response rates, and (4) response rates have declined over time (though primarily among surveys not administered in-person). We recommend minimally acceptable reporting standards and discuss avenues for future research.

Keywords: policing; law enforcement; survey research; response rates; unit nonresponse
Police Research, Officer Surveys, and Response Rates

Over the fifty-year history of police research, the characteristics of the researchers involved (e.g., ‘inside insiders’ versus ‘outside outsiders’), their agendas (e.g., supportive versus critical), and the methods used have varied considerably (Brown 1996, Reiner 2000, Thomas 2014). One constant has been the enormous formal and informal challenges to gaining access to police officers for research purposes (Reiner 2000). Until recently, the majority of police research was ethnographic using participant observation (Reiner 2000, Squires 2016). However, growing interest in evidence-based policing, new administrative models (e.g., organizational justice), and police use of force has motivated a larger number of quantitative studies, which increasingly have involved surveys of police officers (Martin and Tong 2016). Additionally, mounting concerns about increased police-civilian tensions in countries like the United States and the potential for de-policing (Nix, Wolfe, et al. 2017, Shjarback et al. 2017, Weitzer 2015) have rendered survey research examining officers’ attitudes, fears, and behaviors even more important (e.g., Morin et al. 2017).

Unfortunately, methodological research analyzing surveys of police officers is rare. As a consequence, the guidance available to researchers seeking to conduct police surveys is shockingly thin and often inconsistent. In turn, the strategies, norms, and best practices for designing, conducting, and evaluating police surveys remain unclear. Although the broader literature on survey research methods is a useful starting place (e.g., Babbie 1992, Dillman et al. 2014, Groves et al. 2009), there are unique difficulties to surveying police officers. These include, but are not limited to, the target population being close-knit and especially distrustful of outsiders, and the necessity of obtaining (and maintaining) formal approval from police supervisors (and often multiple supervisors and union representatives) (Reiner 2000, Skogan 2015).
Given the many barriers to surveying police officers, it would be reasonable to expect relatively low response rates in police surveys. This is important because researchers, reviewers, and editors often rely on response rates to estimate the quality of data from surveys (Byrne 2000, Peytchev 2013). Carley-Baxter *et al.* (2009) surveyed journal editors from several disciplines and found that nearly 90% said survey response rates were either somewhat or very important in publication decisions. What, then, is the minimally acceptable response rate for a survey of police officers? Likewise, what survey design features are associated with higher response rates in police surveys?

Regrettably, research methods texts in criminal justice provide inconsistent (and incorrect) information about response rates in general, and virtually no guidance about surveying police officers specifically. For example, Maxfield and Babbie (2014, p. 247) state that ‘a response rate of at least 50 percent is adequate for analysis and reporting,’ Jennings and Reingle (2014, p. 67) argue that ‘60 percent is considered minimally acceptable,’ but Bachman and Schutt (2014, p. 216) assert that ‘even a 70% response rate is not much more than minimally acceptable.’ Skogan (2015) partnered with a professional survey research organization to conduct a rigorous computer-assisted self-administered survey of police officers in Chicago. To increase participation, they prenotified officers about the survey, excluded questions about highly sensitive topics, enlisted the help of numerous insiders (e.g., the Chief of police and district commanders), and had survey ‘sales representatives’ answer questions about the survey at roll calls. Yet, the survey still achieved a response rate of only 25 percent. Are the resultant data from Skogan’s (2015) police survey of sufficient quality for analysis and reporting?

The objective of the current study is to start an informed discussion about police survey research. Our focus is on response rates in surveys of police officers. We begin by reviewing the
broader literature on survey response and scholarship on the unique barriers to police research. Next, we examine the response rates to 497 police surveys reported in 390 articles published in 15 journals from January 2008 to March 2017. Our analysis examines the extent and correlates of survey response, providing insights about the survey design factors associated with higher response rates in police surveys.

**Consequences of Survey Nonresponse**

Although universally agreed upon definitions and reporting standards remain elusive (Smith 2002), the response rate in a survey is normally defined as the percentage of the eligible (or potentially eligible, when eligibility is unknown) sample members who complete the questionnaire (although the definition of what constitutes a ‘completed interview’ can vary) (AAPOR 2016, Groves et al. 2009). Nonresponse occurs when researchers fail to contact all sampled respondents (noncontacts), or when they are unable to elicit cooperation from all of those individuals who are contacted (refusals) (Dillman et al. 2002). Response rates in surveys are important because nonresponse poses two serious problems for research.

The first problem created by survey nonresponse is reduced sample size and/or greater research costs. The lower the response rate, the smaller the final sample of respondents, unless additional time and resources are devoted to increasing the sample size. In turn, a smaller sample size results in greater sampling error and lower statistical power, which reduces the precision of resultant survey estimates and increases the risk of Type 2 errors (false negatives) (Cohen 1992). Because statistical power is inversely related to sample size, even when findings are statistically significant, there is a greater risk of making Type S (sign) and M (magnitude) errors in studies with smaller samples (Gelman and Carlin 2014). Thus, lower response rates, by reducing sample size, can make it harder to reject the null hypothesis when effects exist, and, when the null
hypothesis is rejected, render it more difficult (or even impossible) to accurately estimate the direction and size of those effects.

The second problem—or potential problem—created by survey nonresponse is nonresponse bias (Peytchev 2013). Nonresponse bias occurs when the propensity to respond (P) is correlated with survey variables (Y) (Groves 2006, Groves and Peytcheva 2008). When P is correlated with Y, the magnitude of nonresponse bias will be a function of the strength of that correlation and the amount of nonresponse (average P in the target population) (Bethlehem 2002). However, regardless of the response rate, survey estimates will be unbiased if Y is independent of P (zero covariance), or if Y and P are associated only because of common causes (Z) and statistical adjustments are used to control for Z (zero covariance, controlling for Z) (Groves et al. 2009, pp. 191-192). Nonresponse is ‘nonignorable’ when there is a direct causal relation between Y and P—that is, when Y causes P (Groves et al. 2009). An example would be if support for body-worn cameras affected response behavior in a survey designed to estimate officers’ support for body-worn cameras.

**Previous Studies of Survey Response Rates**

Although there is no prior research on response rates in policing studies, there is a large literature on response rates to surveys in general (Groves et al. 2002, Peytchev 2013). Researchers have examined the extent, correlates, and outcomes of survey nonresponse. Groves and Peytcheva (2008) examined response rates from 59 surveys, and found that they ranged from 28% to 86%, with an average of 64%.\(^1\) Macias et al. (2008) examined the response rates of 565 surveys published in 46 different communication-related journals between 1990 and 2002. They found that the average response rate was 50.5%. Analyzing 308 survey administrations in the

\(^1\) Groves and Peytcheva (2008) reported nonresponse rates. The figures we report are the inverse of the nonresponse rates they reported.
field of counseling and clinical psychology, Van Horn and colleagues (2009) found an average response rate of 49.6%. Holbrook et al. (2008) investigated response rates in 114 random-digit-dial (RDD) telephone surveys, which were conducted between 1996 and 2005 by either government contractor survey research firms or news organizations, and found that they ranged from 4% to 70%, with an average of 30%.

Studies have also documented long-term declines in response rates to many different types of surveys (Curtin et al. 2005, Kohut et al. 2012). The decline in response rate occurred across surveys with different sponsors (e.g., government versus private sponsorship) and across modes of administration (e.g., in-person versus telephone) (Brick and Williams 2013, Groves et al. 2009). For example, over the past few decades, the initial rate of nonresponse has nearly doubled in the Current Population Survey, and more than doubled in the National Crime Victimization Survey (Tourangeau and Plewes 2013). The typical response rate in Pew Research telephone surveys fell from 36% in 1996 to just 9% in recent years (Keeter et al. 2017). Unfortunately, it remains unclear whether a similar decline in response rates has occurred in surveys of police officers.

Unsurprisingly, given declines in response rates, another growing area of research is examining the consequences of survey nonresponse for nonresponse bias. Several studies have focused specifically on telephone surveys. For example, scholars have assessed whether the representativeness of telephone surveys has declined over time with declines in response rates (Curtin et al. 2000, Keeter et al. 2017, Kohut et al. 2012). The general finding has been that despite achieving much lower response rates now, compared to previous time periods, telephone surveys continue to provide very accurate prevalence estimates (Dutwin and Buskirk 2017). Keeter et al. (2017, p. 1), for example, found ‘that the bias introduced into survey data by current
levels of participation is limited in scope.’ Other studies have explored whether taking extra steps to increase response rates in telephone surveys reduces nonresponse bias. In one experiment, Keeter et al. (2000) achieved similar estimates from a rigorous telephone survey that achieved a 61% response rate and a standard telephone survey that achieved only a 36% response rate. Finally, Holbrook et al. (2008, p. 527) compared estimates from 114 telephone surveys that exhibited great variation in response rates, and found that ‘response rates were positively associated with demographic representativeness, but only very weakly.’

Researchers have also investigated the relationship between response rates and nonresponse bias in surveys generally, regardless of the mode of administration. To illustrate, Yeager et al. (2012, p. 730) compared estimates from several surveys—probability surveys administered via the Internet or telephone, and nonprobability surveys administered via the Internet—with varying response rates and found that ‘remarkably, higher response rates were associated with lower accuracy of the surveys’ (emphasis added). This was true regardless of administration mode. Peytcheva and Groves (2009, p. 198) reported a similar finding: ‘as [the] nonresponse rate goes down, bias goes up! Such a counter-intuitive finding has been demonstrated with the 1998 Dutch integrated Survey on Household Living conditions (POLS) – the increase in response rate from 47% to 60% over a month resulted in larger biases in key survey statistics.’ This can occur when efforts to increase participation only do so among those types of sampled individuals who are already more likely to participate—thus increasing differences between responders and nonresponders. In the largest study to date, Groves and Peytcheva (2008, p. 174) meta-analyzed 59 methodological studies examining nonresponse bias, and found that the response rate was ‘a poor predictor of the absolute relative nonresponse bias … if a naïve OLS regression line were fit to the scatterplot, the $R^2$ would be 0.04.’
Nonetheless, virtually all studies of nonresponse bias have consistently found that large nonresponse biases often exist (Amaya and Presser 2017, Groves and Peytcheva 2008). Why then is the response rate of a survey, which certainly increases the risk of nonresponse bias (Groves et al. 2009), a weak predictor of nonresponse bias in estimates? The explanation is that nonresponse bias varies primarily within surveys, across different estimates, rather than between surveys (Peytchev 2013). Specifically, nonresponse bias occurs when the propensity to respond (P) is correlated with the survey variable of interest (Y), either because the survey variable affects the propensity to respond (Y → P), or because there are other variables (Z) that are common causes of both (P ← Z → Y) and are uncontrolled (Groves et al. 2009). For this reason, there may be large a nonresponse bias in the estimate for one variable within a survey, but not for another. Additionally, although limited, the evidence to date suggests that nonresponse bias tends to be much larger in univariate estimates than multivariate findings (Amaya and Presser 2017, Heggestad et al. 2015, Lepkowski and Cooper 2002, Martikainen et al. 2007).

There is a sizable literature on the factors influencing the propensity to respond to surveys in general (Groves et al. 2002), and in some specific types of criminal justice surveys, such as inmate surveys (Pickett et al. 2014). Unfortunately, we are unaware of any previous research exploring whether similar factors influence response rates specifically in police surveys. For our purposes, the most relevant research is that exploring how survey design characteristics influence response rates. Prior studies have found that response rates vary significantly across different administration modes. In general, response rates tend to be highest in face-to-face surveys, lowest in Web surveys, with telephone and mail surveys falling in the middle (Groves et al. 2009, Tourangeau and Plewes 2013). For example, in the field of communication, Macias et al. (2008, p. 86) found that average response rates varied by mode, as follows: face-to-face, 79%;
telephone, 61%; mail, 42%; and email, 30%. Shih and Fan’s (2009) meta-analysis found that response rates were about 11 percentage points lower in Web versus mail surveys. Manfreda et al. (2008) reported similar findings.

Peak (1990) argued that a ‘personal touch’ can improve response rates for mail surveys (e.g., postage stamp appeal, personalized cover letters, and high-quality paper; see also Babbie 1992). Research has also demonstrated that prenotification, increased contact attempts, survey sponsorship, and incentives increase response rates (Dillman et al. 2014, Groves et al. 2009). Government- and university-sponsored surveys achieve significantly higher response rates than surveys with other sponsors (Edwards et al. 2002, Groves and Couper 1998, Heberlein and Baumgartner 1978). There is strong evidence that incentives increase response rates in all modes, but the effect depends on the type and amount of the incentive (Singer 2002). Specifically, prepaid incentives outperform promised or lottery incentives, monetary incentives outperform non-monetary incentives (e.g., gifts), and larger incentives outperform smaller incentives, but they do so at a declining rate (Church 1993, Singer and Ye 2013). Again, and unfortunately, there is little evidence about whether these same factors influence response rates in surveys of police officers.

**Considerations in Surveying the Police**

Researchers face a number of unique challenges when surveying police officers – the first of which is gaining access to the officers (Reiner 2000, Skogan 2015). Besides often requiring permission from the agency head just to administer the survey, the researcher might also need a key officer, such as a respected sergeant or lieutenant, to help distribute (or encourage participating in) the survey (Skogan 2015). Officers are asked frequently to complete surveys and often suffer from survey fatigue. Thus, having an ‘insider’ help encourage participation can be beneficial. Likewise, another important consideration is whether the researcher has
administrative or union approval. While administrative approval may be required simply to gain access to the officers, it may be seen by line-level officers as a reason not to respond. On the other hand, union or bargaining unit approval might enhance response rates.

Researchers must also carefully consider their desired sampling frame. Depending on the nature of the survey, they may wish to target all employees, strictly sworn employees, or perhaps only certain ranks, units, or divisions. For example, if a researcher sets out to survey all sworn officers in-person via roll call meetings, he must bear in mind that a significant portion of the sampling frame could be absent on any given day due to court, vacation, sick leave, or special assignments (Skogan 2015). In our own experience administering police surveys, as many as 1 in 4 officers could be absent from any given roll call meeting because of sick leave, administrative leave, special assignment, or other reasons.

Finally, researchers must take added precaution to ensure anonymity in order to increase participation – as well as honesty among those who do participate. This is especially important if the survey pertains to sensitive topics such as police use of force or misconduct. Simply requesting information about years on the job, gender, race, and rank, for example, might turn some officers away who fear sharing that information could compromise their anonymity. For example, a female Lieutenant with 16 years of service in Division ‘A’ could easily be identified if there are only one or two officers who fit those demographics. Of course, even if such information is not requested by the researcher, some officers may still be skeptical that their identities will remain anonymous. Overall, then, there are many details researchers must consider when surveying police officers.

The Current Study
Prior research finds significant differences in response rates to surveys, depending on the
As important, studies have shown that the effect of survey design features on response rates
varies across target populations (Anseel et al. 2010). Previous studies also suggest that certain
strategies for increasing response rates may work best with particular target populations (Groves
et al. 2000, Pickett et al. 2014). The above scholarship thus raises questions about whether
findings about survey response rates in general population surveys will generalize to surveys of
police officers. As important, it is currently unclear what the ‘typical’ response rate is in police
surveys, whether they have declined over time, or whether they vary by mode or other survey
design characteristics. The current study posed the following research questions:

1. What is the average response rate for police surveys published in the field of criminology
   and criminal justice?
2. Do police survey response rates vary substantially from journal to journal, by journal
   type, or journal impact?
3. Have police survey response rates fluctuated over time?
4. What police survey design features are associated with higher response rates?

Methods

Data Collection

Data collection occurred from March to May of 2017. The first step was to identify the
journals to include in our sample. From the American Society of Criminology’s Division of
Policing website (www.ascpolicing.org), we identified eight policing journals:

1. European Journal of Policing Studies
3. Journal of Police and Criminal Psychology
4. Policing: An International Journal
We also wanted to include a selection of criminology journals with broader foci in our sample.

Using Thomson Reuters’ 2015 Journal Citation Reports, we selected the following eight journals listed under ‘Criminology and Penology’:

1. *British Journal of Criminology*
2. *Crime & Delinquency*
3. *Criminal Justice and Behavior*
4. *Criminology*
5. *Journal of Criminal Justice*
6. *Journal of Research in Crime and Delinquency*
7. *Journal of Quantitative Criminology*
8. *Justice Quarterly*

These eight generalist journals were selected because they are regarded as among the most prestigious journals (Sorenson 2009), are widely read by the field, and publish manuscripts focusing on a variety of criminology and criminal justice-related topics beyond policing. In total, we initially identified 16 journals to scan in order to construct our dataset. However, we could not get online access to *European Journal of Policing*, which has published four volumes to date. As such, our sample included seven policing journals and eight criminology journals.

**Coding Procedure**

Next, two members of our research team visited each journal’s website and scanned every published article (including those available online first) dating back nine years, to 2008. For policing journals, we downloaded every article and scanned the abstracts and/or methods sections in order to determine whether a survey of police officers was involved. Once we determined whether or not each article included one or more police officer surveys, we then
scanned the text for a response rate. This process resulted in the identification of 497 unique surveys, published in 390 articles between January 2008 and March 2017.²

It is important to note that for 43 surveys (about 10 percent of the sample), we calculated the response rate on our own, using other information provided by the authors (e.g., dividing the number of responses by the known sampling frame). We were unable to surmise the response rate for 77 surveys (roughly 15 percent of the sample; see Table 1). Thus, the response rate was not immediately apparent for approximately 25 percent of the surveys in our sample. Moreover, our search revealed zero police surveys published in *Journal of Quantitative Criminology* or *Journal of Research in Crime and Delinquency* (JRCD) during this timeframe. We are not sure whether this surprising finding reflects a lack of relevant submissions by authors or the publication decisions at these specific journals. For example, from personal experience, we know that a previous editor of JRCD—who coauthored the research textbook suggesting that a 50% or higher response rate is required for analysis and reporting (Maxfield and Babbie 2014)—sometimes explicitly pointed to a low response as a primary reason for rejecting or even desk rejecting (without external review) submissions analyzing survey data.

**Results**

The average response rate for police officer surveys published in the aforementioned journals over this nine-year period was 64.3 percent. As expected, there was a great deal of variation: response rates ranged from a low of 5.2 percent to a high of 100 percent (standard deviation: 25.9). The mean response rate across the seven policing journals ranged from a low of 54.4 percent (*Policing: A Journal of Policy and Practice*) to a high of 66.6 percent (*Policing: An International Journal*). The mean response rate across our selection of eight criminology

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² Note that some articles involved multiple surveys (e.g., Gaub *et al.* 2016). In these instances, we treated each survey as a separate case in our dataset.
journals ranged from a low of 66.2 percent (*Crime & Delinquency*) to a high of 95.1 percent (*Criminology*; though note this is based on 2 surveys). Table 1 provides a breakdown of response rates by each individual journal. As a general observation, most of these average response rates barely meet the ‘minimum acceptable’ response rate standards outlined in criminal justice research textbooks (Bachman and Schutt 2014, Jennings and Reingle 2014, Maxfield and Babbie 2014). Further, a large proportion of the police surveys published in leading journals—up to half in some journals—fail to meet these standards, achieving response rates as low as 5.2 percent. At this point, it bears emphasizing that in contrast to the advice in the research method textbooks in our field, leading survey methodologists stress that there is no valid cutoff point for considering a response rate acceptable (Groves 2006, Peytchev 2013).

[Table 1 about here]

**Survey Design and Study Covariates Expected to Predict Response Rate**

*Survey Year*

Research has demonstrated that survey response rates have diminished over time (Curtin *et al.* 2005, Kohut *et al.* 2012). As such, we documented when each survey was administered, based on the timing of the end of data collection. Initially, we could only determine when the data were collected for 333 of the 497 surveys in our sample (67 percent). To be clear, the implication is that this key survey design information was not reported in approximately one-third of published police surveys. We sent emails to the corresponding authors of the articles that contained the remaining 164 surveys, and were ultimately able to ascertain the data collection period for an additional 117 surveys (bringing our total to 450, or roughly 90 percent of our sample). We used this information to create a variable, *Survey Year*, which ranged from 1996 to 2016. In cases where data collection spanned multiple years (e.g., December 2014 to March
2015), we coded the year when data collection stopped. Table 2 provides descriptive statistics for this variable and all others used in subsequent multivariate analyses. At a bivariate level, there was a significant negative correlation between survey year and response rate ($r = -.22$, $p < .001$), indicating that response rates in police surveys have declined over time. This relationship is shown in Figure 1, which plots response rates by survey year.

[Table 2 about here]

[Figure 1 about here]

**Mode**

Based on prior research, we expect that surveys administered in-person receive, on average, higher response rates than surveys administered by mail, phone, or internet (Groves *et al.* 2009, Tourangeau and Plewes 2013). We therefore documented the mode of administration for 421 surveys as indicated by the article’s author(s). Again, it is noteworthy that 76 surveys (roughly 15 percent of our sample) were published without providing clear indication of how they were administered. This is vital survey design information; mode of administration is itself associated with nonresponse bias (Groves and Peytcheva 2008). Among those where information was provided, face-to-face surveys were common. Figure 2 presents the breakdown by survey mode: 47.5 percent were administered at police headquarters, during roll calls, or at training classes. Roughly 25 percent of surveys were web-based, and the remaining 27 percent were collected through the mail or by phone. We therefore created a dichotomous variable, *In-person*, coded 1 if the survey was administered face-to-face and 0 otherwise. A small number of cases (n=13; 3 percent) involved the use of multiple modes of administration. These were coded 1 since a portion of the desired sample had responded to the survey in-person. At a bivariate level,
surveys administered in-person achieved significantly higher response rates than those administered by other means ($t = 13.907, p < .001$).

[Figure 2 about here]

**Number of Invitations Sent**

It is feasible that inviting a greater number of officers to take a survey could produce a lower response rate by: 1) increasing the complexity of survey administration protocol, 2) reducing the amount of time and resources that researchers must devote to recruiting each individual sample member, and/or 3) requiring approval from and/or the involvement of a greater number of police administrators. For example, it is undoubtedly easier to obtain a 100 percent response rate when the number of officers invited to take the survey is 10 at one agency versus 100 or 1,000 at multiple agencies. Thus, police researchers may face a tradeoff between increasing sample heterogeneity (e.g., by surveying multiple agencies) or maximizing response rates. Accordingly, we documented the number of invitations whenever it was provided by the authors. A total of 364 surveys (73% of our sample) included this information. We used the information to create a continuous variable – *Invitations* – which initially ranged from 10 to 83,550 (median = 350). Because a small number of surveys involved an extremely high number of invitations, we top-coded at the 95th percentile (Barnett and Lewis 1994). At a bivariate level, number of invitations was inversely correlated with response rate ($r = -.40, p < .01$) – such that greater numbers of invitations were associated with lower response rates.

**Funding**

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3 Top coding is a common strategy in our field for reducing the influence of outliers (e.g., Anwar and Loughran 2011, Slocum et al. 2013). However, substantively identical results were obtained when models were estimated without top coding and using robust regression.
As noted, government- or university-sponsored research typically yields higher survey response rates than non-sponsored research (Edwards et al. 2002, Groves and Couper 1998, Heberlein and Baumgartner 1978). Additionally, funded studies likely have greater resources that can be devoted to data collection and converting initial nonrespondents. Unfortunately, virtually none of the published studies provided information about whether a specific sponsor was listed in the questionnaire for respondents. We therefore focused on funding. We checked the ‘Acknowledgements’ section of each article, or for articles without such a section, scanned for mention of any of the following terms: ‘grant,’ ‘fund,’ ‘award,’ and ‘sponsored.’ A total of 127 surveys (approximately 25 percent) reported receiving some sort of grant or scholarship funding. We therefore created a dummy variable – funded – coded 1 if the authors mentioned their research was supported by funding and 0 otherwise. However, at a bivariate level, funded and non-funded surveys did not significantly differ in terms of response rates ($t = 0.877, p = .38$).

**Location**

We also examined whether officers working in the United States might be more or less inclined to respond to surveys than officers working elsewhere. We created a dummy variable – US Sample – coded 1 if the survey was administered to US police officers and 0 otherwise. Approximately 51 percent of the surveys in our sample were administered to U.S. police officers. At a bivariate level, surveys with U.S. police officers did not significantly differ in terms of response rate from surveys of police officers employed elsewhere ($t = 1.216, p = .22$).

**Incentives**

We attempted to code for whether or not researchers offered any sort of incentive to take their surveys, as the evidence suggests incentives increase response rates (Singer 2002). To do so, we scanned articles for mention of any of the following terms: ‘incentive,’ ‘dollar,’
‘compensate,’ and ‘offer.’ However, surprisingly, this methodology revealed that virtually none of the articles in our sample included any information about whether incentives were used. Again, then, it appears that key survey design information is often omitted from publications using police survey data. Nonetheless, if we make the conservative assumption that all articles which used incentives reported doing so, we found that 12 surveys (2.4 percent of the sample) included an incentive (e.g., gift cards, coffee and donuts, t-shirts). Nine of these 12 surveys reported a response rate. Those 9 surveys achieved an average response rate of 59.2 percent, which is lower, surprisingly, than the average response rates in surveys not reporting incentives. At the same time, given the very small sample size and ambiguousness of reported survey design information, this result should clearly be interpreted with considerable caution.

**Journal Type**

A cursory glance at Table 1 suggested that surveys published in criminology journals might have, on average, higher response rates than surveys published in policing journals. Perhaps the general criminology journals have a higher informal standard for what constitutes an acceptable response rate. There may also be differences in the rigorousness of studies published in specialty versus generalist journals. Or, it could be that more established researchers – who have more connections to police executives – typically achieve better response rates and therefore submit their research to these journals rather than policing-specific journals. To consider these possibilities, we created a dummy variable, *Crim Journal*, coded 1 if the survey was published in one of the criminology journals and 0 if it was published in one of the policing journals. At a bivariate level, surveys published in the generalist criminology journals achieved significantly higher response rates than those published in the policing journals ($t = 2.085$, $p = .04$).
Impact Factor

We further noted that the criminology journals had higher impact factors according to Thomson Reuters’ 2015 Journal Citation Reports – each of these journals ranked in the top 22 out of 57 journals indexed under ‘Criminology and Penology.’ Conversely, only one policing journal cracked the top 30 (Policing & Society, ranked 15th). Similar to the above discussion, impact factor may be related to response rates, such that researchers who achieve poor response rates may shy away from submitting to higher impact journals due to fear of being rejected. Or there may tend to be differences, on average, in the methodological expertise and/or rigor of authors who tend to publish in low versus high-impact journals. As such, we sought to include some sort of measure of the journal’s impact – but four of our seven policing journals were not indexed as of 2015. Accordingly, we turned to Sorenson (2009), which provides an alternative measure of journal impact factor for all but two of the journals in our sample – British Journal of Criminology and Policing: A Journal of Policy and Practice. To impute a value for surveys published in British Journal of Criminology, we found four journals that Sorenson (2009) did score which had similar impact factors (within 0.1 point) according to the 2015 Journal Citation Reports, and used those journals’ average Sorenson score. Policing: A Journal of Policy and Practice was not included in Sorenson (2009) nor the 2015 Journal Citation Reports. We assigned this journal a score of 0. Sorenson ranges from 0 to 1.21 with a mean of 0.12. At a bivariate level, Sorenson was positively and significantly correlated with response rate ($r = .12, p = .02$).

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4 The four journals were Policing & Society, Journal of Criminal Law & Criminology, Journal of Interpersonal Violence, and Youth Violence and Juvenile Justice. The resulting formula used to impute a Sorenson score for British Journal of Criminology was $(0 + .09 + .09 + .03)/4 = .05$.

5 While we include a measure of each journal’s impact factor in our analyses, we recognize the limitations of such metrics (Baker 2015). Perhaps we need to revise our concept of ‘impact.’ Currently, it refers to who cites which paper, and in which journal. This means that impact operationally measures our willingness to cite each other, and is
Multivariate Analysis

Table 3 presents the results of an ordinary least squares (OLS) equation that regressed our dependent variable *response rate* onto each of the seven covariates. The model as a whole was statistically significant ($F = 31.86, p < .001$) and explained roughly 42 percent of the observed variation in response rates. Three variables were significantly associated with the outcome: *survey year, in-person, and invitations*. Survey year was negatively associated with response rate. The point estimate ($b = -.532, p < .05$) suggests that with each passing year, response rates in our sample declined by approximately 0.5 percentage points. In-person administration ($b = 24.046, p < .01$) was strongly related to response rate, such that surveys administered face-to-face yielded, on average, a 24 percentage points higher response rate than surveys administered online, through the mail, or over the phone. Finally, the point estimate for the number of invitations sent was negative and statistically significant ($b = -.010, p < .01$). Researchers who invited a greater number of officers to take their survey typically achieved a lower response rate. That is, for every additional 100 officers invited to take the survey, response rate declined by approximately 1 percentage point. The regression model additionally suggests that funding, journal type, and journal impact were not significantly associated with response rate. Furthermore, surveys administered to police in the United States did not yield significantly higher or lower response rates than surveys administered elsewhere.

Finally, we ran an additional OLS regression model whereby we considered whether the effect of survey year on response rate was moderated by administration mode. It is feasible that

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influenced by how often the journal is published, and how often it publishes articles in a particular field, among other factors. Currently, it is not a measure of impact on the world that is being studied.

6 We used robust standard errors in order to account for heteroskedastic error terms (Hayes and Cai 2007).
noncontacts and refusals – both of which are related hydraulically to response rate – have increased particularly among mail, telephone, and e-mail surveys due to growing difficulties in reaching people when they are at home and high levels of advertisements and spam. For example, according to Kaspersky Lab (n.d.), spam has comprised between 52 and 71 percent of all emails over the last three years. Likewise, a survey invitation received via mail/email is easier to overlook or mistake for spam, especially if the recipient does not recognize the sender (see Vehovar et al. 2002). By contrast, in-person surveys administered in police agencies (e.g., at roll calls) would likely be less impacted by these problems. To consider whether administration mode moderated the effect of survey year on response rate, we included in the model an interaction term: in-person*survey year. The point estimate was statistically significant ($b = 1.182, p = .04, 95\% CI = [.053, 2.310]$), which suggests that administration mode indeed moderated the effect of survey year on response rate. Figure 3 graphically depicts the interaction effect (full regression results available upon request). Inspection of the Figure reveals that the decline in response rates over time appears primarily to be restricted to surveys administered via mail, phone, and the Internet. Face-to-face survey response rates, on the other hand, remained relatively stable over this period. With these results in mind, we now turn to a discussion of the implications of our study.

Discussion and Conclusion

Police surveys are vital to enhancing our understanding of officers’ attitudes, beliefs, customs, and ultimately, behaviors – perhaps more than ever given the current climate of distrust between citizens and police in the United States (Weitzer 2015). Though not very common a half-century ago, there has been an explosion of survey-based police research over the last few
decades. These studies have provided valuable insight about a wide variety of topics, including officer stress (Duxbury et al. 2015, Shane 2010), police culture (Ingram et al. 2013), the Ferguson effect (Nix and Pickett 2017, Wolfe and Nix 2016), body-worn cameras (Gaub et al. 2016, Jennings et al. 2014), utilization of research (Rojek et al. 2012, Telep 2017) and perceptions of citizens (Nix, Pickett, et al. 2017, Pickett and Ryon 2017) among others. Yet, given the increased utilization of survey methods for police researchers, it is somewhat surprising that research analyzing police survey methods is nonexistent.

As a result, we have no idea what should be considered a ‘good’ or even ‘acceptable’ response rate for a police survey. Our ability to identify best practices in terms of administering surveys to police samples has likewise been impeded by this dearth of research. Policing scholars typically use Dillman et al. (2014) as a guide, but findings such as those may not be directly applicable to police surveys, which come with a unique set of challenges (e.g., being granted ‘access’ to the officers, cynicism and distrust of researchers, and/or fear of the survey not being truly anonymous). The present study uncovered the average response rates for police surveys published in fifteen peer-reviewed journals over the last nine years – 64%. It is important to understand that this figure is affected by survey design features. Furthermore, we demonstrated empirically what factors are associated with higher response rates. We arrived at three key findings which warrant further discussion.

First, surveys administered in-person fared much better in terms of response rates than surveys administered through the mail, over the phone, or on the Internet. The average response rate to surveys administered in-person was 79.4 percent – versus just 48.6 percent for surveys distributed via other means. Even after controlling for other potentially important covariates in our multivariate models, face-to-face administration remained strongly associated with higher
response rates. Although less convenient and perhaps more time-consuming (e.g., requiring attending numerous roll-call meetings spread out over several days), researchers should be aware that the return on investment will likely make it worth their while.

Second, we observed that response rates are declining over time – a finding that was restricted to surveys administered via mail, phone, or Internet. There are two plausible explanations for this finding. Research suggests that non-contacts and refusals have increased over the last few decades – both of which reduce response rates. Non-face-to-face surveys, in particular, have seen an increase in non-contacts and refusals (Peytchev 2013). Also, Internet surveys typically achieve lower response rates than other non-face-to-face administration modes (e.g., mail, phone) – and these have become far more widespread in recent years. That in-person police surveys have not concurrently experienced a significant decline in response rates is promising, and it reiterates the appeal of surveying officers face-to-face.

Third, there was a significant inverse relationship between number of invitations sent and response rate. Our regression model demonstrated that each additional 100 officers invited to take a survey corresponded with about a one percent decline in response rate. Researchers undoubtedly want samples large enough to analyze statistically – but they may ultimately face a tradeoff between sample size and response rate. Larger sample sizes are important for increasing statistical power. Additionally, most police surveys are conducted with nonprobability samples. However, when relying on nonprobability samples, greater sample heterogeneity (e.g., recruiting officers from different agencies) is critical for reducing sampling bias and increasing generalizability of findings (Blair et al. 2014, Shadish et al. 2002). As Blair and colleagues (2014, p. 101) explain, in nonprobability samples, ‘measures of relationships should be resistant to sample bias as long as the sample is diverse but not necessarily if the sample is restricted.’
Therefore, it would likely be a mistake to restrict sampling for a police survey to a single agency, rather than multiple agencies in different areas, simply in hopes of maximizing the response rate.

Equally important as our findings, a number of non-findings were also worth noting. We were surprised at some of the difficulties we encountered while coding the articles in our sample. One hundred and twenty (24%) of our 497 surveys did not include readily apparent response rates. We were able to calculate the response rate for 43 of these surveys – but this left us with 77 surveys for which the response rate was unknown or unclear. Importantly, in some cases the authors noted that it was not possible to determine a response rate given their sampling strategy (e.g., requesting participation through email and asking participants to forward the email to colleagues). Other important methodological details were also commonly missing. One out of every three surveys failed to mention when the data were collected. One out of every four surveys did not indicate how many officers were invited to participate. And for approximately one out of every seven surveys, it was unclear how the survey was administered (i.e., whether in-person or by some other method). Finally, 12 of the 497 surveys in our sample involved an incentive of some sort – but while a few studies explicitly mentioned not offering any incentive, the overwhelming majority simply did not say.

It is important to note that our findings related to underreporting of certain survey design features are consistent with other areas of criminal justice research. Perry et al. (2010, p. 245), for example, evaluated the reporting transparency of experimental crime and justice studies and found that ‘reporting was poor on methods of randomization, outcome measures, statistical analyses, and study findings.’ Nevertheless, we find it troubling that such basic survey design information was so often left out of published articles. As such, we provide what we believe should be the minimally acceptable set of reporting standards below:
1. When the data were collected (from start to finish)
2. How/where the survey was administered
3. Whether incentives were offered
4. Whether/how many follow-ups there were
5. The size of the sampling frame
6. The number of officers invited to participate
7. What officers were told the survey was about
8. The number of surveys returned
9. The number of surveys excluded from subsequent analyses and the reason(s) why
10. The response rate – being clear about the numerator and denominator

Providing these details will better permit readers to assess the strengths and weaknesses of the survey methodology, and in turn, the results of the study.

Our study is not without its own limitations. We only looked at nine years of publications, and although this resulted in a sample of nearly 500 surveys collected over a twenty-year period, it is still only a fragment of all relevant publications. Relatedly, we only scanned fifteen peer-reviewed journals, which means we did not code studies published in dozens of other journals, or unpublished studies (including theses and dissertations). To this point, it is possible that the response rates in our sample are overestimates of response rates in the population of police surveys due to selection bias (i.e., researchers may be less likely to write up their studies when they achieve low response rates). We were furthermore limited to exploring the relationship between response rate and only a few general survey design characteristics, in part because, as we have noted, reporting was often incomplete. However, in the case of police surveys there are several other unique design issues that may be relevant and offer promising directions for future research. For instance, who is administering the survey – an agency, professional association, union representatives, or just curious academics? We captured whether the surveys were funded or not, but it may be more important to note who physically distributes the surveys (or whose name is on the cover letter). Another detail worth considering is
how the survey is presented to officers (i.e., what it is about). Is it possible that officers are less willing to respond to surveys that pertain to sensitive topics such as use of force or misconduct? Or alternatively, they may be more willing to respond to a survey that is about a topic they personally care about. Future studies would do well to investigate these possibilities, assuming reporting standards improve.

Another limitation of our study is that we restricted our analysis to response rates of police surveys. Future studies might consider going beyond our analysis by comparing, for example, police response rates to civilian response rates to surveys about the police. Perhaps there may be meaningful differences over time, across various administration modes, or even across journals. We furthermore did not assess response quality (e.g., satisficing, speeding, item nonresponse). Stylistic responding (e.g., response acquiescence) is common in surveys and reduces data quality (Pickett and Baker 2014). Likewise, even in surveys with high response rates, item nonresponse reduces analytic sample size and can bias findings. Future studies should thus consider what survey design features are associated with different measures of response quality. For example, Medway and Tourangeau (2015) found that $5 incentives significantly decreased item nonresponse in telephone surveys. In the context of police surveys, it seems especially relevant to consider whether factors such as union sponsorship, the promise of anonymity, and/or the survey topic are related to reductions in, for example, acquiescent responding, speeding through the survey, and/or failing attention checks. Even when anonymity is promised, officers are often skeptical that their identities will not be revealed when answering demographic questions (especially those working for small departments). Research that can shed light on these issues would be a welcomed addition to the literature.
We conclude by reiterating that although our analysis indicated that the average response rate among police surveys published in the last decade was approximately 64 percent, there was an enormous amount of variation, with some published studies realizing a response rate under 10 percent. Yet, it bears repeating that research has demonstrated that low response rates are typically only weakly related to non-response bias. As such, a low response rate on its own is no reason to dismiss the findings of a survey. Given the weight of the evidence (Groves and Peytcheva 2008), the burden should be on manuscript referees to state why they believe a low response rate is suggestive of non-response bias. That is, referees should be required to identify explicitly patterns of over- or under-representation on some variable that is known to be related to the outcome. At the same time, it is incumbent upon researchers to be completely transparent about their survey methodology so that referees and readers can have a better idea why a response rate may be low – or high. It is our hope that the analyses we have presented will spark continued interest in police survey methodology, as police surveys are so important to our understanding of the profession.
References


<table>
<thead>
<tr>
<th>Policing Journals</th>
<th>N</th>
<th>N that report RR</th>
<th>Mean RR</th>
<th>St. Dev.</th>
<th>Min</th>
<th>Max</th>
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<tr>
<td>International Journal of Police Science &amp; Management</td>
<td>59</td>
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<td>26.7</td>
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<td>30</td>
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<td>6.5</td>
<td>100.0</td>
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<td>5.9</td>
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<td>Police Quarterly</td>
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<td>61</td>
<td>66.0</td>
<td>22.4</td>
<td>12.4</td>
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<td>Policing: A Journal of Policy and Practice</td>
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<td>14.2</td>
<td>100.0</td>
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<td>Policing: An International Journal</td>
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<td>66.6</td>
<td>26.4</td>
<td>7.3</td>
<td>100.0</td>
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<tr>
<td>Policing &amp; Society</td>
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<td>50</td>
<td>56.1</td>
<td>26.1</td>
<td>7.3</td>
<td>100.0</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Criminology Journals</th>
<th>N</th>
<th>N that report RR</th>
<th>Mean RR</th>
<th>St. Dev.</th>
<th>Min</th>
<th>Max</th>
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<tr>
<td>British Journal of Criminology</td>
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<td>5</td>
<td>74.0</td>
<td>26.5</td>
<td>30.0</td>
<td>95.0</td>
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<td>11</td>
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<td>33.2</td>
<td>98.0</td>
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<td>Criminal Justice and Behavior</td>
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<td>12</td>
<td>71.8</td>
<td>29.8</td>
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<td>98.4</td>
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<td>Journal of Criminal Justice</td>
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<td>Journal of Quantitative Criminology</td>
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<td>Journal of Research in Crime and Delinquency</td>
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<td>71.3</td>
<td>19.0</td>
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<td>88.5</td>
</tr>
</tbody>
</table>

| Total/Average                             | 497| 420              | 64.3    | 25.9     | 5.2 | 100.0|

*As of March 2017.*
Table 2. Descriptive statistics.

<table>
<thead>
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<th>Variable</th>
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<th>Mean</th>
<th>S.D.</th>
<th>Min</th>
<th>Max</th>
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<tr>
<td>Response Rate</td>
<td>420</td>
<td>64.293</td>
<td>25.881</td>
<td>5.200</td>
<td>100</td>
</tr>
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<td>Survey Year</td>
<td>450</td>
<td>2008</td>
<td>4.266</td>
<td>1996</td>
<td>2016</td>
</tr>
<tr>
<td>In-person</td>
<td>421</td>
<td>.475</td>
<td>—</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Invitations</td>
<td>364</td>
<td>644.225</td>
<td>699.030</td>
<td>10</td>
<td>2,574</td>
</tr>
<tr>
<td>Funded</td>
<td>497</td>
<td>.256</td>
<td>—</td>
<td>0</td>
<td>1</td>
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<tr>
<td>US Sample</td>
<td>497</td>
<td>.507</td>
<td>—</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Incentive</td>
<td>497</td>
<td>.024</td>
<td>—</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Crim Journal</td>
<td>497</td>
<td>.129</td>
<td>—</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Sorenson</td>
<td>497</td>
<td>.122</td>
<td>.180</td>
<td>0</td>
<td>1.210</td>
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</tbody>
</table>
Table 3. OLS regression model predicting response rate.

<table>
<thead>
<tr>
<th>Variable</th>
<th>$b$</th>
<th>Robust SE</th>
<th>95% CI</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey Year</td>
<td>-.532*</td>
<td>.265</td>
<td>-1.054, -.011</td>
<td>-.096</td>
</tr>
<tr>
<td>In-person</td>
<td>24.046**</td>
<td>2.661</td>
<td>18.807, 29.286</td>
<td>.467</td>
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<tr>
<td>Invitations</td>
<td>-.010**</td>
<td>.002</td>
<td>-.014, -.005</td>
<td>-.261</td>
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<tr>
<td>Funded</td>
<td>.123</td>
<td>2.723</td>
<td>-5.238, 5.484</td>
<td>.002</td>
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<td>US Sample</td>
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<td>2.720</td>
<td>-6.042, 4.666</td>
<td>-.013</td>
</tr>
<tr>
<td>Crim Journal</td>
<td>5.373</td>
<td>3.715</td>
<td>-1.940, 12.686</td>
<td>.078</td>
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<tr>
<td>Sorenson</td>
<td>5.522</td>
<td>7.207</td>
<td>-8.668, 19.711</td>
<td>.042</td>
</tr>
</tbody>
</table>

$N$ 279
$R^2$ .423
$F$-test 31.86***

Entries are unstandardized partial regression coefficients ($b$), robust standard errors (SE), 95% confidence intervals (CI), and standardized partial regression coefficients ($\beta$). ** $p < .01$; * $p < .05$
Figure 1. Response rates by survey year, 1996 – 2016 (N = 450).
Figure 2. Administration modes (N = 421).

In-person: n = 200 (47.5%)

Mail: n = 106 (25.2%)

Web: n = 105 (24.9%)

Phone: n = 10 (2.4%)
Figure 3. Interaction effect of administration mode and survey year on response rate.
Appendix: Studies Included in the Sample

**Criminology Journals**

*British Journal of Criminology*
- Lum 2009
- Bradford and Quinton 2014
- Chu and Abdulla 2014
- Jonathan-Zamir and Harpaz 2014
- Brown 2016

*Crime & Delinquency*
- Sobol et al. 2013
- Chu and Sun 2014
- Uluturk et al. 2014
- Nix 2017a
- Nix 2017b
- Telep 2017

*Criminal Justice and Behavior*
- Gershon et al. 2009
- Adams and Buck 2010
- Godfredson et al. 2010
- Sleath and Bull 2012
- Gau et al. 2013
- Terrill and Paoline 2013
- Allisey et al. 2014
- Gracia et al. 2014
- Duxbury et al. 2015
- Donner et al. 2016
- Johnson and LaFrance 2016
- Karaffa and Koch 2016
- Smith et al. 2016
- Wolfe and Nix 2017

*Criminology*
- Ingram et al. 2013
- Markowitz and Watson 2015

*Journal of Criminal Justice*
- Morash et al. 2008
- Sun et al. 2008
- De Angelis and Kupchik 2009
- Miller et al. 2009
- Gerber et al. 2010
- Kim et al. 2010
- Schafer 2010
- Shane 2010
- Sobol 2010
- Sun et al. 2010
- Sun and Chu 2010
- White et al. 2010
- Moon and Jonson 2012
- Ingram and Terrill 2014
- Jennings et al. 2014
- Jennings et al. 2015
- Nix and Wolfe 2016
- Hine and Murphy 2017
- Pickett and Ryon 2017

*Justice Quarterly*
- Zalman et al. 2008
- Eterno et al. 2016
- Johnson and Dai 2016
- Nix and Wolfe 2017

*Policing Journals*
- *International Journal of Police Science & Management*
  - Addis and Stephens 2008
  - Foley et al. 2008
  - Jamel et al. 2008
  - Parker and Sarre 2008
  - Phillips 2008
  - Stephens and Pugmire 2008
  - Wilson et al. 2008
  - Aremu 2009
  - Ozel et al. 2009
  - Srivastava 2009
  - Wu et al. 2009
  - Andreescu and Vito 2010
  - Archbold et al. 2010
  - Chown 2010
  - Eterno and Silverman 2010
  - Gotschalk and Gudmundsen 2010
  - LaFrance and Allen 2010
  - LaFrance and Placide 2010
  - Marcum et al. 2010
  - Phillips et al. 2010
  - Vito and Higgins 2010
  - Wright 2010
  - Burrell and Bull 2011
  - Glomseth et al. 2011
  - Hassell et al. 2011
  - Julseth et al. 2011
  - LaFrance 2011
  - Leino et al. 2011
  - Pagon et al. 2011
  - Powell and Tomyn 2011
  - Zengin et al. 2011
  - Fekjaer and Halrynjo 2012

*Journal of Police and Criminal Psychology*
- Carlan and Nored 2008
- Lindsay and Shelley 2009
- Matsch et al. 2009
- Payne and Guastaferro 2009
- Prochniak 2009
- Blandino et al. 2010
- Dorta et al. 2010
- Ghazinour et al. 2010
- Johnson et al. 2010
- Prati and Pietrantoni 2010
- Carlan et al. 2011
- Hogan et al. 2011
- Rooy et al. 2011
- Sachau et al. 2012
- Clark-Miller and Brady 2013
- Chopko et al. 2014
- Smith and Bull 2014
- Johnson 2015
- Sarapin and Sparks 2015
- Arnten et al. 2016
- Brady 2016
- Brown and Daus 2016
Can et al. 2016
Chaplin and Shaw 2016
Ellrich 2016
Fyhn et al. 2016
Hansson et al. 2016
Jo and Lamb 2016
Johnson 2016
Padyab et al. 2016
Roach et al. 2016
Rogers et al. 2016
Singh 2016
Thornton and Herndon 2016
Walsh et al. 2016
White et al. 2016
Young 2016
Arble et al. 2017
Carter et al. 2017
Johnsen et al. 2017
Patry et al. 2017
Schaveling et al. 2017

*Police Practice & Research*
Coleman 2008
Jolleve II 2008
Mon and Chu 2008
Rosenberg et al. 2008
Sever et al. 2008
Steinheider and Wuestewald 2008
Sun and Chu 2008
Aremu and Lawal 2009
Yim and Schafer 2009
Buker 2010
Frantzen 2010
Gul et al. 2010
Phillips 2010
Correia and Jenks 2011
Lasley et al. 2011
Oschwald et al. 2011
Perrott and Kelloway 2011
Senjo 2011
Bissett et al. 2012
Chapman 2012
Coon and Travis III 2012
Grubb and Bennett 2012
Rojek et al. 2012
Steinheider et al. 2012
Backteman-Erlanson et al. 2013
Kankaanranta 2013
Martin et al. 2013
Shane 2013
Skogan 2013
Balmer et al. 2014
Mufitic and Collins 2014
Pizio 2014
Sundstrom and Wolming 2014
Vuorensyrja 2014
Howes and Goodman-Delahunty 2015
Lobnikar and Meško 2015
Oxburgh et al. 2015
Phillips 2015
Heffren and Hausdorf 2016
Kelly and Hassett-Walker 2016
McCarty and Lawrence 2016
Schnobrich-Davis 2016
Violanti et al. 2016
Wolfe et al. 2016
Back et al. 2017
Johnson and Hunter 2017
Kula 2017
Lambert et al. 2017
Steyn 2017
Vito et al. 2017
Wain et al. 2017

*Police Quarterly*
Culhane et al. 2008
Lindsay 2008
Lord and Friday 2008
Lyons et al. 2008
Peak et al. 2008
Zhao et al. 2008
Carlan and Lewis 2009
Chaiyavej and Morash 2009
Colvin 2009
Crank and Giacomazzi 2009
Hassell and Brandl 2009
Schafer et al. 2009
Kenney et al. 2010
Ryder and Tew 2010
Schaible and Gecas 2010
Tankebe 2010
Thomas et al. 2010
Cordner and Cordner 2011
Stewart 2011
Stroshine and Brandl 2011
Darroch and Mazerolle 2012
Ivkovic et al. 2012
McCarty and Skogan 2012
Rojek et al. 2012

*Terrill and Paoline 2012
Wentz and Archbold 2012
Chermak et al. 2013
Kim et al. 2013
Lonsway et al. 2013
Farrell 2014
Haynes and Giblin 2014
Menard and Arter 2014
Ross and Wright 2014
Telep and Lum 2014
Bates et al. 2015
Bell et al. 2015
Davis et al. 2015
Mumford et al. 2015
Rhodes 2015
Blumberg et al. 2016
Brinser and King 2016
Carter 2016
Gaub et al. 2016
Morrow et al. 2016
Schaible and Six 2016
Kim et al. 2017
Van Craen and Skogan 2017

*Policing: An International Journal*
Huang and Cao 2008
Liederbach et al. 2008
Lindsay et al. 2008
Nikels and Verma 2008
Schafer and Martinell 2008
Somvadee and Morash 2008
Sun and Triplett 2008
Talaga and Tucci 2008
Aremu et al. 2009
Gorenak and Gorenak 2009
Ivkovich 2009
Johnson 2009
Kury et al. 2009
Noblet et al. 2009
Sun et al. 2009
Cohen and Shamai 2010
Ivkovich and Shelly 2010
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