Police Organizational Change after Implementing Crime Analysis and Evidence-Based Strategies through Stratified Policing

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Abstract   This article presents the findings from an evaluation of one sheriff's office in Florida. Evidence-based policing strategies and crime analysis were implemented within the agency through 'stratified policing', an organizational framework to facilitate the systematic implementation of evidence-based practices through problem solving, analysis, and accountability. Crime analysis is an integral part of stratified policing and is the foundation on which all evidence-based practices are implemented and evaluated within the approach. While the agency saw crime reductions after implementation of stratified policing, when implementing and sustaining new practices throughout a police organization, it is important to evaluate components of organizational change. Thus, two waves of the same anonymous online survey were administered to agency personnel to obtain their perceptions about leadership, accountability, communication, and transparency occurring within the agency's crime reduction efforts as well as the frequency of proactive crime reduction activities. Comparisons of the mean results for the two waves (i.e. baseline and one year of implementation) show significant increases in the amount of crime reduction activities in addition to significant improvements in leadership, accountability, communication, and transparency. Personnel were also more satisfied with the agency's crime reduction efforts. The findings support stratified policing as one way to institutionalize crime analysis and evidence-based crime reduction and make important changes to sustain practices within an agency's crime reduction culture.

Introduction

Both research and practice strongly suggest that the most effective strategies police employ to reduce crime (i.e. evidence-based practices) are those in which crime analysis plays an essential role. Problem-oriented policing (Weisburd *et al.*, 2010), hot spots policing (Braga *et al.*, 2014), and focused deterrence (Braga and Weisburd, 2012)

have shown to be the most effective, and crime analysis is essential in the implementation of each approach (Santos, 2014). Even in those approaches that have moderate crime reduction effects, such as community policing (Gill *et al.*, 2014) and disorder policing (Welsh *et al.*, 2015), crime analysis is important (Santos, 2016).

Accordingly, implementing crime analysis effectively for any evidence-based approach requires

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much more than hiring a crime analyst, purchasing software, and putting him/her to work. Achieving true institutionalization of crime analysis for crime reduction requires a systematic organizational structure that ensures crime analysis products are action oriented and that operational personnel respond effectively. Once an agency successfully implements such a structure, not only is crime analysis infused into the organization and crime reduction efforts sustained, but the organizational culture of crime reduction can be transformed.

Consequently, this article examines organizational change that occurred in one agency after the systematic implementation of crime analysis and evidence-based strategies through 'stratified policing', an organizational framework for institutionalizing crime reduction practices into a police agency (Santos and Santos, 2015). The goal of this study is to explore whether, through the implementation of stratified policing, the agency saw improvements in key organizational change components—leadership, accountability, communication, and transparency. Crime analysis is a central part of stratified policing in that it identifies short- and long-term activity to address, provides direction for responses, and evaluates effectiveness for accountability. Thus, the study also examines the organization's short- and long-term proactive crime reduction activities as well as overall satisfaction (i.e. 'buy in') with the agency's crime reduction efforts.

The data for this study are collected through an anonymous survey of sworn personnel before and after one year of stratified policing implementation in the Walton County, Florida Sheriff's Office (WCSO). Measures are created from survey questions which are then examined to determine the impact on the agency's crime reduction culture. *T*-test results that compare the two waves of the survey on the organizational change and proactive

crime reduction activity measures are presented as well as their implications.

Overview of stratified policing

Stratified policing[1] is an approach that seeks to facilitate organizational change for crime reduction by providing a clear and adaptable structure (Santos and Santos, 2012) similar to the stratified structure that has been created in policing to answer citizen-generated calls for service. That is, police agencies designate responsibilities for answering calls for service with each division and rank playing a role in the overall process. The communication centre answers calls and dispatches officers who respond while on patrol; sergeants ensure officers do their jobs; detectives follow-up on calls resulting in certain types of crimes; managers handle complaints and allocate resources; and a wide array of other processes ensure that the structure for answering calls for service is carried out efficiently and effectively (e.g. policies, resource allocation analysis, citizen complaint investigation, discipline, training, etc.).

Likewise, stratified policing is a framework for carrying out crime reduction work collectively throughout the organization (Boba and Santos, 2011; Santos and Santos, 2015. The stratified system is based on the rank structure of the agency and the idea that the police address crime, disorder, and quality of life problem at different levels. The problems vary by their temporal nature and complexity and include individual calls for service and crime, short-term clusters of calls for service and crime, and long-term problems manifested by geography, persons, and property. The structure pairs particular level of problems to the appropriate ranks and divisions of the organization according to current duties, span of control,

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[1] Stratified policing was created by this author and Dr. Rachel Santos in 2004 while working with this author's police agency through a series of grants from the Office of Community-Oriented Policing Services (Boba and Santos, 2011; Santos, 2013; Santos and Santos, 2012). Over the last 13 years, it has been implemented in a range of large and small departments throughout the United States and internationally.

authority, and resources. Crime analysis products are created for each level and guide different evidence-based strategies.

In every police agency, officers and detectives are given the responsibility of reactively responding to calls for service and conducting investigations, so in the stratified policing framework, more complex activity (e.g., short-term clusters of crime, long-term problem areas) is proactively assigned to higher ranks who take responsibility for developing and implementing evidence-based strategies. Implementation of this stratification is adaptable and depends on the size and organizational structure of an agency as well as its capabilities and resources. No matter the execution of stratified policing, every rank in an agency is responsible, proactively involved, and held accountable for continuingly engaging in crime reduction work at a particular level.

Similarly, crime analysis is stratified according to problem types and crime analysis products become the starting point for crime reduction efforts, similar to how a citizen's call to the police department starts that process. Crime analysis products guide the identification, understanding of, response to, and evaluation of crime and disorder at every strata. On a continual basis, standardized products are provided to the appropriate rank and division for the appropriate level of activity.[2] Within stratified policing, each product prompts a response like dispatching a call for service does. Appropriate personnel respond based on evidence-based practices that have been designated by the agency. Importantly, as recommended by Telep and Weisburd (2012), stratified policing combines a variety of effective strategies (e.g. hot spot policing, problem-oriented policing, and focused deterrence) as they are appropriate to the problems addressed.

The stratified policing accountability structure and processes create realistic expectations for evidence-based strategies, review progress of those strategies, document the work being done, and evaluate success. Accountability and communication about proactive crime reduction occurs every day in daily operations, and a stratified structure of meetings is implemented to ensure these operational processes take place, are working, and if not, can be adjusted. Crime analysts routinely update their products to provide evaluation analysis to determine whether implemented responses are effective.[3] Daily accountability meetings occur at the line level of the organization (i.e. roll call briefings) to discuss immediate activity and daily responses. Weekly accountability meetings occur at the mid-manager level to discuss responses to short-term clusters of crime and allocation of resources. Monthly accountability meetings occur at the command level to discuss responses to long-term problems and evaluation of all crime reduction efforts of the agency. Thus, each type of accountability meeting matches the temporal nature of activity and rank assigned. Figure 1 illustrates the stratified policing framework.

Importantly, stratified policing provides mechanisms for an organization to change its reactive crime reduction culture to a proactive culture through structure as well as specific processes. That is, through the stratified policing framework, an organization institutionalizes evidence-based strategies as part of normal business, not as a specialized unit or through overtime work. No additional resources are needed to implement stratified policing, but what takes place is a reallocation of some of each rank and divisions uncommitted time to accomplish this work (i.e. engaging all personnel in crime reduction activities in their 'down time').

[2] For example, officers, detectives, and sergeants are provided action-oriented crime pattern bulletins; lieutenants and captains are provided long-term problem area analysis; and the command staff is provided products reflecting monthly and annual statistical trends. All of these products are standardized in terms of their format and focus. For examples and templates of specific products see Boba and Santos (2011)).

[3] This analysis can be as simple as identifying more crimes in a short-term pattern or as complex as an evaluation of a comprehensive long-term crime prevention programme.
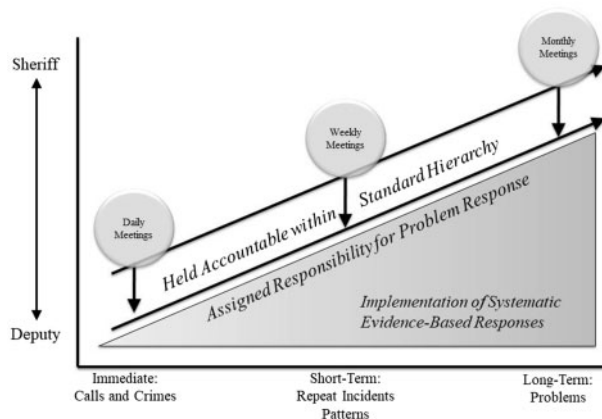
Figure 1: Stratified policing structure.

In order to be effective in crime reduction, it is important to evaluate whether an organization's culture is adapting to the necessary changes required to better address crime problems and sustain practices. Therefore, this study does not measure the impact of stratified policing on crime, but instead examines aspects of organizational change and how stratified policing effects leadership and accountability, facilitates communication and transparency, and influences the amount of crime reduction activities taking place. These are all important elements that are needed to engender organizational change to implement crime analysis and sustain a proactive crime reduction culture.

Agency background and stratified policing implementation

Established in 1827, the Walton County Sheriff's Office (WCSO) provides law enforcement and correctional service for Walton County which is 1,240 square miles and located on the panhandle of Florida. It is situated between Tallahassee and Pensacola running from the Alabama state line to the Florida coastline. In 2014, the county had a population of about 61,000 and included two incorporated cities and one town with the remaining residents living throughout the rural areas of the county. The WCSO is responsible for law enforcement throughout the county with the exception of one of the cities (population of 5,600 in 2014). The deputies deal with a diverse population that includes rural communities on the north end of the county and beaches on the south side that see an estimated 3 million visitors per year. In 2014, the WCSO employed 151 sworn officers for law enforcement duties. There were 198 violent crimes and 1,188 property crimes reported to WCSO in 2014 (FBI, 2014).[4]

In early 2009, Sheriff Michael Atkinson was elected and sought to professionalize the agency as well as improve its crime reduction efforts. He began by providing general supervisory and leadership training for supervisors and establishing standards and best practices in the agency for basic law enforcement duties. In late 2013, the Sheriff identified stratified policing as a way for his agency to consistently and systematically implement crime reduction without additional resources. WCSO began with training and followed tailored recommendations for the implementation of specific crime reduction processes, crime analysis products,

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[4] No homicides; 23 rapes; 6 robberies; 169 aggravated assaults; 338 burglaries; 787 larcenies; and 63 auto thefts.

and accountability meetings.[5] The implementation of crime analysis and stratified policing in the first year included:

1. Data and crime analysis: Access to crime and calls for service data were streamlined for analysis purposes (i.e. improvements to the records management system). Data integrity issues were addressed as they arose. One dedicated full-time crime analyst conducted all types of analysis during the year.

2. Organizational training: All supervisors, managers, commanders, and crime analysts were provided a one-day training and follow-up assistance on the products, processes, and their responsibilities within the WCSO-stratified policing model.[6]

3. Set crime reduction goals: WCSO selected goal crimes that would be prioritized for response and measured for evaluation. They were burglaries from vehicles, residential burglaries, commercial burglaries, and criminal mischief.

4. Stratification of responsibility for problem solving: Significant incidents (i.e. major crimes) were assigned to investigations bureau; repeat incidents were assigned to patrol sergeants; patterns were assigned to lieutenants, and problems were assigned to captains.

5. Meeting structure: Daily patrol briefings; weekly action-oriented meetings agency wide; monthly evaluation-oriented meetings agency wide.

6. Communication: An intranet site was developed to facilitate communication of crime analysis and responses among all divisions and ranks.

7. Policy: A general order for implementing stratified policing and proactive crime reduction

activities was created and disseminated to establish roles and responsibilities of all personnel.

During the first year, crime analysts created products on a regular basis, agency personnel responded accordingly with evidence-based practices (e.g. directed patrol in short-term hot spots; working with business owners for commercial burglary problems), and weekly as well as monthly accountability meetings were conducted on a regular basis. Because this was a change in the organization and not just a programme with a clear beginning and end, once established, these processes continued throughout the year. While this study does not focus on closely examining the impact of stratified policing implementation on crime itself, WCSO reported reductions in its goal crimes from 2014 to 2015. Specifically, WCSO saw a 12.5% decrease overall (813 in 2014 to 711 in 2015), with a 4.5% decrease in vehicle burglaries, a 6.4% decrease in residential burglaries, a 42.9% decrease in commercial burglaries, and a 19.8% decrease in criminal mischief.[7]

Methodology

To measure organizational change after the first year of stratified policing implementation, two waves of the same organizational survey were disseminated to all WCSO sworn personnel through an internet link. The first wave was administered in May 2014 (i.e. 'baseline') and the second wave in February 2015 (i.e. 'implementation'). An introduction to the survey ensured the respondent was focused exclusively on proactive crime reduction

[5] This author and Dr. Rachel Santos conducted a needs assessment and provided a 50 page report that tailored stratified policing to WCSO based on the guidebook, *A Police Organizational Model for Crime Reduction: Institutionalizing Problem Solving, Analysis, and Accountability* (Boba and Santos, 2011).

[6] The training and assistance was provided by this author and Dr. Rachel Santos.

[7] There were 224 vehicle burglaries in 2014 and 214 in 2015; 281 residential burglaries in 2014 and 263 in 2015; 56 commercial burglaries in 2014 and 32 in 2015; and 252 in criminal mischief in 2014 and 212 in 2015. Statistics provided by WCSO in their 'Annual Review 2015' produced by the crime analyst.

activities when completing the survey.[8] It also ensured each respondent's anonymity. In both waves, respondents were told that they would be asked to take the same survey again in the future to examine changes in the organization.[9]

The language of individual survey questions is covered in the analysis results section when the finding for each measure is presented. Scales with eight values (0–7) were used for all survey questions so that the range of answers was broad enough to see changes over time since the intent is to administer the survey in multiple years in order to see incremental changes in the organization. The scales used values that represented: (1) agreement, (2) frequency, (3) transparency, (4) amount, and (5) satisfaction. The labels for each scale are provided in the relevant figure along with its corresponding values.

For the analysis, many composite measures were created from multiple questions to represent particular concepts. The average of multiple items on the same scale was used to create the composite measures, so all findings could be interpreted with

same range of values (0–7). In addition, a Cronbach's alpha test was run for each composite measure for both waves together to test for internal consistency and reported with each measure as a footnote. All test results are well above the 0.70 threshold acceptable in social science (Field, 2009).[10]

Table 1 shows the survey response counts by rank as well as the response rate based on the total number of sworn at the time of the survey.[11] In 2014, there was an 80.1%, and in 2015, there was a 91.8% response rate.[12]

Because the survey was anonymous, individual responses from the baseline and implementation survey cannot be matched for a paired analysis, and overall means of each wave are examined. The collective results from each wave of the survey represent the climate of the organization at that time. In other words, the focus of the analysis is not an individual's change in perception, but the change in collective perception (i.e. climate) about the crime reduction culture of the agency.[13] The latter is important because stratified policing focuses on changes to the entire agency.

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[8] Introduction language: 'Thank you for participating in this survey. The purpose is to solicit your view of the agency's current crime reduction strategies as a way to help improve the agency's overall operations. Your responses will be examined with all other sworn personnel in the agency (NOT individually) to provide an overall picture of what the agency is doing. In the future, you will be asked these questions again to determine if and how the agency has improved. For this purpose, the survey asks about your and the agency's DAY-TO-DAY PROACTIVE CRIME REDUCTION AND PROBLEM SOLVING ACTIVITIES. These are the activities you and others in the agency proactively do on a daily basis that are over and above basic police services such as answering calls for service and investigating crimes. These proactive efforts seek to prevent and reduce crime overall in your county. Proactive activities address crime, disorder, and quality of life issues that are larger than resolving one call, investigating one crime, or arresting one offender. Some examples are: 1) an address with 6 calls in four weeks, 2) a pattern of four residential burglaries in one neighborhood over a week, or 3) an address or small area that's had a crime problem for two years. Please answer the best you can based on your experience. This survey is anonymous.'

[9] It was important to WCSO leaders that the survey process be transparent which is why respondents were told they would be surveyed again. The same exact language was included in both waves. Also, since the surveys were anonymous, conducted a year apart, and represented most of the agency, the potential bias of respondents knowing they would be surveyed again was minimized.

[10] Separate tests were also run for each wave for each measure with similar results that all met the 0.70 threshold.

[11] 'Line level' includes deputies, corporals, and detectives, and 'command staff' includes captains, majors, chief deputy, sheriff, assistant chiefs, and chiefs.

[12] While both response rates are respectable, after discussions with WSCO leaders about the discrepancy, it is likely that the timing of the survey and personal time off after their high activity spring break period may have accounted for the lower response rate in 2014.

[13] While this analysis examines all respondents' answers together to provide overall results in this article, additional comparisons by and across rank have been made by the agency to examine change more closely for organizational adjustments to stratified policing after 2015.

Table 1: Survey responses by rank and response rate

	Baseline	Implementation
Line level	86	105
Sergeants	17	21
Lieutenants	12	17
Command staff	6	4
Total surveyed	121	147
Total sworn	151	160
Response rate	80.1%	91.8%

Limitations and future research

There are several limitations of this study. The first is that because it is the first survey of its kind, there are no standards or other agencies' results on which to base comparisons.[14] Further research on the implementation of stratified policing using this survey will help to provide context to these results and further support.

Secondly, this initial analysis of WCSO's data seeks to accomplish the goals of this special issue and this journal of providing research palatable to both researchers and practitioners. Thus, the analysis conducted for this article is fairly simple and straightforward. Future analysis of these data will examine the composite and single measures by rank as well as conduct a cross comparison of measures within the save wave. In addition, multivariate analysis and examination of additional waves of the survey for WCSO and comparisons to other agencies will be conducted as the data are collected.

Analysis findings

The analysis results are broken down into three general categories: (1) leadership and accountability,

(2) communication and transparency, and (3) proactive crime reduction activities. The results of each category are illustrated in figures that denote the scale values and labels, means for each wave of the survey, and significance levels. Independent t-tests were used to test the difference between the baseline and implementation waves, and a full table of the statistical coefficients is presented in Table A1 in Appendix.[15]

Leadership and accountability

It is important to measure both leadership and accountability when understanding organizational change facilitated by stratified policing. Leadership is critical to the creation and maintenance of an organization's culture (Schein, 1992, 2010), thus is key to implementing stratified policing. In addition, accountability is one of the foundational components of stratified policing, carried out through interpersonal accountability as well as a structure of meetings. It is central to successful organizational change, so that expectations are managed by personnel at all levels and there is an integrated view of the organizational aims and objectives (Carnall, 2009).

Consequently, respondents were presented with 13 items that asked specifically about organizational leadership and accountability for crime reduction efforts. For the analysis, two composite and two single measures were created using the 'agree' scale. They include:

- Leadership focus (single): *How much do you agree that the agency's leadership is collectively focused on proactive day-to-day crime reduction and problem solving?*

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[14] This exact survey has been administered to a number of different agencies over the last year, but most of those agencies are still in the initial implementation phase of stratified policing, so cannot be used for comparison.

[15] Paired (dependent) t-tests could not be conducted since the survey was anonymous in both waves and individuals' responses could not be matched. As a sensitivity test, two additional considerations were made for each independent t-test. First, the results for Levine's test for equality of variances was closely scrutinized, and when equal variance could not be assumed, the more stringent significance level, etc., was used. Second, for each test, a one sample t-test was conducted to compare the implementation data to the mean value of that measure of the baseline wave. In both considerations, the findings reported here remained consistent and significance levels were very strong across all three methods.

- Leadership participation (composite, four items[16]): *How much do you agree that the people in the rank directly above you do the following:* (1) directly participate in day-to-day proactive crime reduction and problem solving; (2) teach those in your rank about day-to-day proactive crime reduction and problem solving; (3) encourage those in your rank to participate in day-to-day proactive crime reduction and problem solving; (4) promote teamwork for those in your rank to participate in proactive day-to-day crime reduction and problem solving.

- Clear expectations (single): *How much do you agree that there are clear expectations for your rank in participating in day-to-day proactive crime reduction and problem solving?*

- Accountability (composite, seven items[17]): *How much do you agree that each group is being held accountable for day-to-day proactive crime reduction and problem solving?* (1) deputies; (2) investigators; (3) sergeants; (4) lieutenants; (5) captains; (6) majors; and (7) sheriff.

Figure 2 shows the means and significance levels for each wave of these four measures. Before implementation WCSO personnel 'slightly agreed' (4.18) that the agency's leadership was focused on crime reduction. After the first year of implementation, there was a significant improvement ($p < 0.01$) closer to 'somewhat agree' (4.64). Personnel also 'slightly agreed' about leadership participation before implementation (4.22). While this measure did improve after implementation to 'somewhat agree' (5.19), it was only significant at the $p < 0.10$ level.

In terms of accountability, all means were numerically higher than the means for leadership. Personnel 'somewhat agreed' (4.86) that there

were clear expectations for crime reduction before implementation, and there was significant improvement after implementation ($p < .01$) closer to 'mostly agree' (5.53). For the second accountability measure, personnel were between 'slightly' and 'somewhat agree' (4.67) that all ranks were being held accountable for crime reduction work. There was also a significant ($p < 0.01$) increase closer to 'mostly agree' (5.36) after implementation.

Communication and transparency

Communication about crime reduction activities and transparency about roles and responsibilities is central to successful implementation of stratified policing. It is important leaders send a consistent message along with a structure of clear processes and practices (Carnall, 2009). These should be communicated initially and throughout implementation to overcome resistance (Mills *et al.*, 2009) beginning at the top and encouraged at each successive level below (Bolman and Deal, 2008). In addition, any plan should be realistic and achievable and processes are clearly 'defined, tasked, constituted, and resourced' (Carnall, 2009, p. 104), in other words transparent.
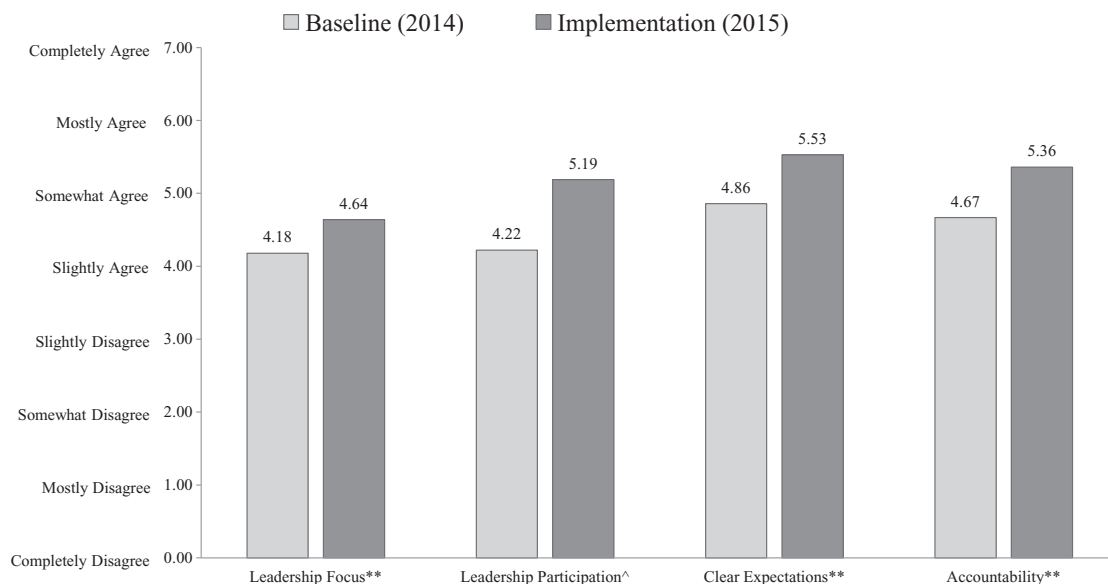
Consequently, respondents were presented with 17 items that asked specifically about communication and transparency of the agency's crime reduction efforts. Four composite and one single measure were created. The scales vary by measure and are noted below:

- Communication within/between groups (composite, four items,[18] frequency scale): *How often do the following groups have clear communication about day-to-day proactive crime reduction and problem solving?* (1) those in your rank; (2) those in your rank and criminal investigations; (3) those in your rank and

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[16] Cronbach alpha for both years = 0.941.
[17] Cronbach alpha for both years = 0.921.
[18] Cronbach alpha for both years = 0.866.

Independent T-test Results for Baseline Survey and Implementation: ^p < .10; *p < .05; **p < .01

Figure 2: Leadership and accountability.

narcotics/vice; and (4) those in your rank and crime analysts.

- Communication between ranks (composite, five items,[19] frequency scale): *How often do you think the following groups have clear communication about day-to-day proactive crime reduction and problem solving?* (1) deputies and sergeants; (2) sergeants and lieutenants, (3) lieutenants and captains; (4) captains and majors; and (5) majors and sheriff.

- Transparency (single, transparency scale): *How transparent are the roles and responsibilities of personnel in the agency's overall day-to-day proactive crime reduction and problem solving?*

- Supposed to do and actually do (composite measures, seven items,[20] amount scale): *How much do you know about what each group is supposed to do in day-to-day proactive crime*

reduction and problem solving? and *How much do you know about what each group actually does for day-to-day proactive crime reduction and problem solving?* (1) deputies; (2) investigators; (3) sergeants; (4) lieutenants; (5) captains; (6) majors; and (7) sheriff.

Figure 3 shows the means and significance levels for the two waves of these five measures. The results show significantly more communication ($p < 0.01$) within and between groups from 'occasionally' (3.23) to 'often' (4.03) after implementation of stratified policing. There is also significantly more communication ($p < 0.01$) between ranks from 'often' (3.94) to 'frequently' (4.72) after implementation.

The single measure for transparency of the roles and responsibilities of personnel significantly improved ($p < 0.01$) from 'somewhat transparent' (3.15) closer to 'fairly transparent' (3.74).

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[19] Cronbach alpha for both years = 0.942.
[20] Cronbach alpha for both years = 0.917 and 0.916, respectively.

Independent T-test Results for Baseline Survey and Implementation: ^p < .10; *p < .05; **p < .01

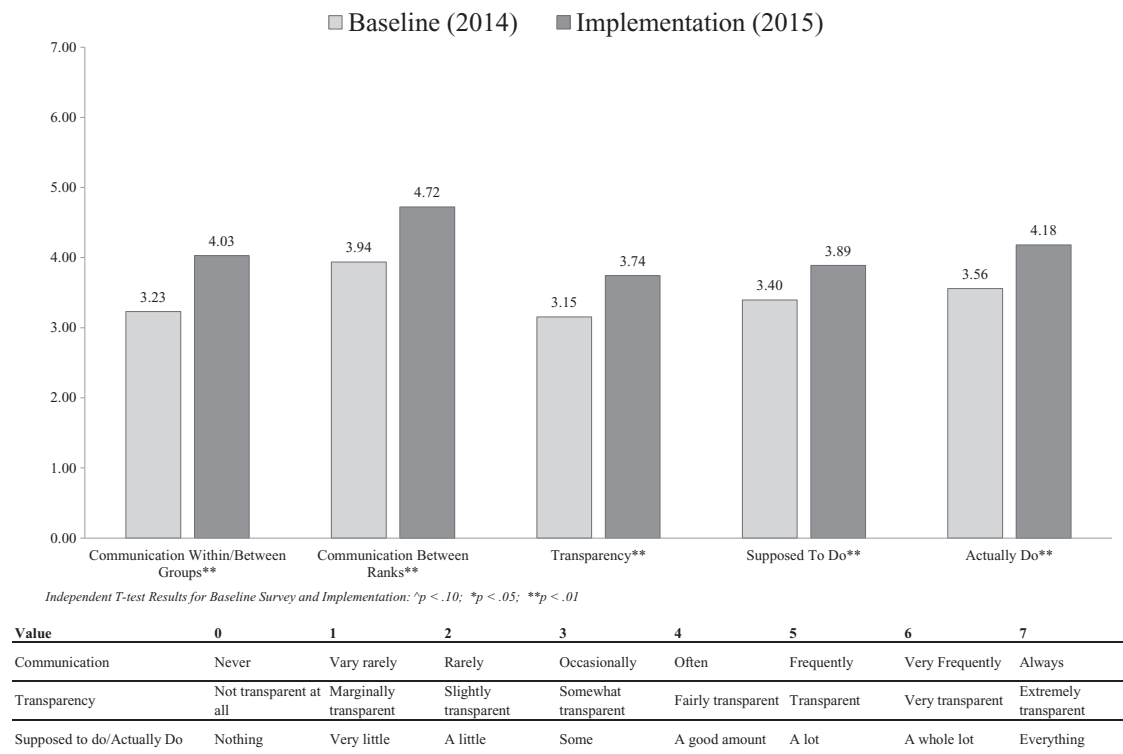| Value	0	1	2	3	4	5	6	7
Communication	Never	Vary rarely	Rarely	Occasionally	Often	Frequently	Very Frequently	Always
Transparency	Not transparent at all	Marginally transparent	Slightly transparent	Somewhat transparent	Fairly transparent	Transparent	Very transparent	Extremely transparent
Supposed to do/Actually Do	Nothing	Very little	A little	Some	A good amount	A lot	A whole lot	Everything

Figure 3: Communication and transparency.

Similarly, both composite measures of transparency improved significantly as well. The figure illustrates that what individuals thought ranks were 'supposed to do' for crime reduction significantly improved ($p < 0.01$) and moved closer to 'fairly transparent' (from 3.40 to 3.89). Results for what individuals thought ranks 'actually do' also significantly improved ($p < 0.01$) to just above 'fairly transparent' (from 3.56 to 4.18).

Proactive crime reduction activities

In the context of proactive crime reduction, police agencies struggle with fully institutionalizing new and better practices. They compete with the ingrained culture of responding to calls for service, investigating crimes, and making arrests which when applied generally do not reduce crime

(Telep and Weisburd, 2012). Stratified policing seeks to add systematic implementation of evidence-based practices to the repertoire of a police organization's day-to-day business, so it is important to also examine change in an agency's proactive crime reduction practices.

Respondents were presented with 11 items that asked about the frequency of as well as individuals' satisfaction with the agency's proactive crime reduction efforts. Two separate questions were asked for a series of items in categories based on the stratified policing framework (Boba and Santos, 2011)—short term and long term. Thus, four composite measures were created along with a single measure for satisfaction. They include:

- Identify and resolve short-term activity (composite, two items, two measures,[21] frequency

[21] Cronbach alpha for both years = 0.896 and 0.918 respectively.

Independent T-test Results for Baseline Survey and Implementation: ^p < .10; *p < .05; **p < .01

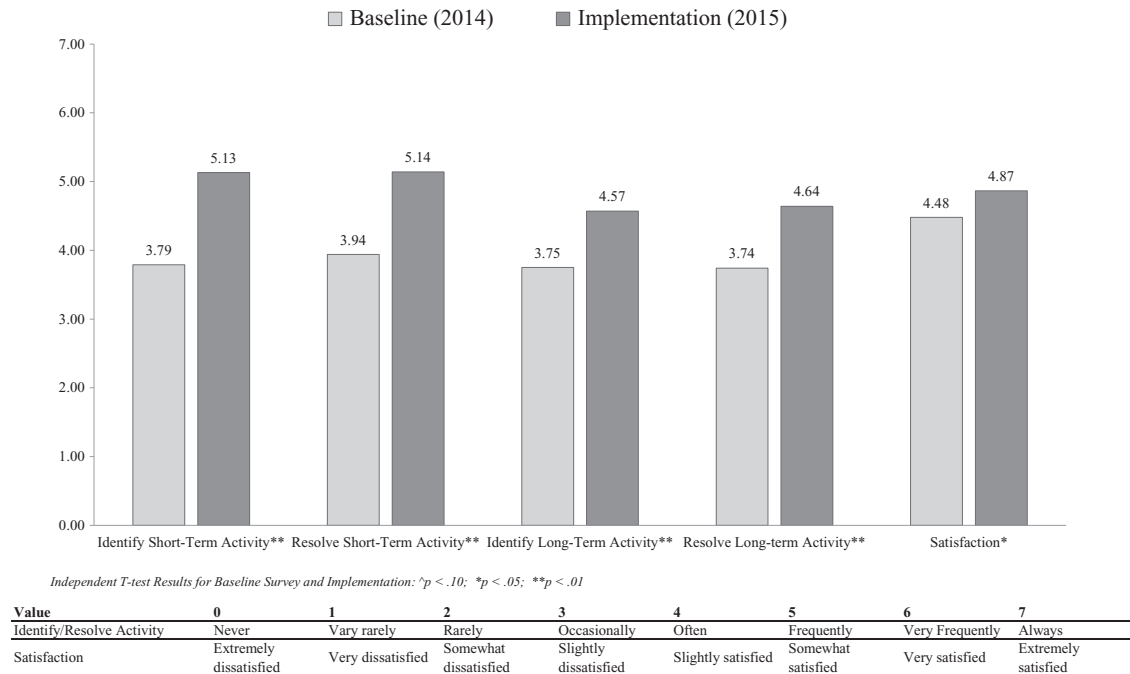| Value	0	1	2	3	4	5	6	7
Identify/Resolve Activity	Never	Vary rarely	Rarely	Occasionally	Often	Frequently	Very Frequently	Always
Satisfaction	Extremely dissatisfied	Very dissatisfied	Somewhat dissatisfied	Slightly dissatisfied	Slightly satisfied	Somewhat satisfied	Very satisfied	Extremely satisfied

Figure 4: Short- and long-term crime reduction activities, satisfaction.

scale): *How often does your agency identify the following for response?* and *How often does your agency attempt to permanently resolve the following?* (1) an individual address with repeat calls over several weeks, and (2) a pattern of several crimes over one to several weeks (linked by some or all of the following: suspect, area, MO, time/day, property type).

- Identify and resolve long-term activity (composite, three items, two measures,[22] frequency scale): *How often does your agency identify the following for response?* and *How often does your agency attempt to permanently resolve the following?* (1) an address that has been a problem for 1 or more years; (2) a hot spot area that has been a problem for 1 or more years; and (3) a chronic offender who has repeatedly been arrested for 1 or more years.

- Satisfaction (single, satisfaction scale): *How satisfied are you with your agency's overall day-to-day proactive crime reduction efforts?*

Figure 4 shows the means and significance levels for each wave of these five measures. The results show significant improvement ($p < 0.01$) in how often the agency identifies and permanent resolves of short-term activity from 'occasionally' (3.79 and 3.94) in the baseline survey to 'frequently' (5.13 and 5.14) after implementation. WCSO also saw significant improvement ($p < 0.01$) in the identification and resolution of long-term activity from 'occasionally' (3.75 and 3.74) in the baseline survey to 'frequently' (4.57 and 4.64) after implementation. Lastly, the satisfaction personnel had with the agency's overall crime reduction activities improved significantly ($p < 0.05$) from between

[22] Cronbach alpha for both years = 0.924 and 0.952, respectively.

'slightly' and 'somewhat satisfied' (4.48) closer to 'somewhat satisfied' (4.87).

Discussion of findings

The findings from the implementation of crime analysis and stratified policing by the Walton County Sheriff's Office show the promise of stratified policing as an organizational structure for institutionalizing crime analysis and evidence-based crime reduction. In addition to seeing a decrease of just over 12% in the counts of their goal crimes from 2014 to 2015, the survey results are overwhelming in that, after the first year of implementation of stratified policing, WCSO saw statistically significant changes in nearly all of the key organizational characteristics—leadership, accountability, communication, and transparency—as well as in its frequency of proactive crime reduction activities and satisfaction.

A total of 41 items were asked of WCSO sworn law enforcement personnel before and one year into the implementation of stratified policing. For each characteristic, multiple measures were used to establish reliability of the results for that particular characteristic. The surveys were anonymous, and comparisons of the collective responses from each wave were conducted for a total of 14 measures. Independent t-tests showed that all but two measures saw significant improvement at the $p < 0.01$ level.

Leadership and accountability

There were two measures of leadership. The first measure was a single item, and after implementation of stratified policing, WCSO personnel agreed more strongly that organization's leadership was collectively focused on proactive crime reduction and problem solving. The second measure was a combination of four items to delve more deeply into aspects of leadership and asked if respondents agreed that the rank above them (1) directly participant in proactive day-to-day crime reduction and

problem solving; (2) taught their rank about . . .; (3) encouraged those in their rank to participate in . . .; and (4) promote teamwork for their rank to participate in . . . proactive day-to-day crime reduction and problem solving. Personnel agreed more strongly after implementation, but the difference was not quite as strong as the previous measure ($p < 0.10$).

For accountability, there were two measures as well. The first was a single measure asking whether personnel agreed there were clear expectations for their rank for crime reduction. Once again, WCSO personnel more strongly agreed after implementation that expectations were clear for their rank. The second measure was a composite of seven items that assessed whether each rank within the organization were being held accountable for proactive crime reduction. Overall, WCSO personnel agreed more strongly after implementation of stratified policing that these groups were being held accountable for crime reduction.

Communication

Communication was also assessed with two composite measures. The first measure asked how often there was clear communication between groups about crime reduction, specifically (1) within their rank, (2) their rank and criminal investigations, (3) their rank and narcotics/vice, and (4) their rank and crime analysts. The second measure asked how often there was communication about crime reduction between ranks—deputies and sergeants, sergeants and lieutenants, lieutenants and captains, captains and majors, majors and the sheriff. For both measures, WCSO personnel reported more frequent communication after stratified policing implementation.

Transparency

Transparency was assessed with three measures. The first was a single measure that asked how transparent the roles and responsibilities were for crime reduction overall. WCSO personnel felt the roles and responsibilities of all personnel in the agency

were more transparent after stratified policing implementation. The remaining two were composite measures and represent two aspects of transparency that were asked about each rank. That is, the first asked how much is known about what a particular group is *supposed to do* for crime reduction where the other asked what is known about what that group *actually does* for crime reduction. For both composite measures, WCSO personnel reported knowing more both about what personnel were supposed to do and what they actually did after implementation which supports the results for the overall measure of transparency.

Proactive crime reduction activities

Finally, proactive crime reduction and problem-solving activities were assessed with five measures. Four of the measures are similar and were meant to examine how often crime reduction activities for short- and long-term problems were conducted. Short-term activity included addresses with repeat calls and crime patterns, whereas long-term activity included problem addresses, problem areas, and problem offenders. WCSO personnel reported identifying short- and long-term activity more often as well as permanently resolving both types of activity more often after stratified policing implementation. The last measure assessed overall satisfaction, and WCSO personnel reported being more satisfied (at the $p < 0.05$ level) with the agency's crime reduction activities after stratified policing implementation.

Implications for police practice

As Telep and Weisburd (2012) assert, to be effective in crime reduction police leaders cannot simply prescribe to one strategy, but instead need to implement several different strategies that are evidenced based. For example, they recommend combining short- and long-term problem solving with a place-based approach, such as hot spots policing, and community policing strategies that

increase police legitimacy (Telep and Weisburd, 2012).

The necessary elements to institutionalize proactive and effective crime reduction can be a difficult process for police organizations. Police leaders cannot assume that just symbolically committing to an innovative approach will result in organizational change and the rank-and-file incorporating new strategies into day-to-day operations. In order to employ crime reduction approaches within a police organization, police leaders must make practical decisions based on the structure, current operations, and resources of their agencies.

Unlike answering calls for service which has a clear structure and long-established processes, there are not conventional practices or clear direction from research about how to implement a combination of proactive crime reduction strategies (e.g. hot spots policing, problem-oriented policing, community policing, and focused deterrence) and institutionalize those processes within the police organization. Thus, police executives have a need for guidance to encourage different behavior and create organizational change so that evidence-based strategies are institutionalized, become part of the everyday routine, and are as normal as responding to routine calls for service.

Stratified policing is one such approach that provides a clear framework, processes, and practices to incorporate evidence-based crime reduction strategies in multiple levels of the organization. According to Carnall (2009) and Crank (2004), a comprehensive, thorough approach is necessary to change an organization's culture. Consequently, the findings of this study provide strong evidence from one police agency that after adopting stratified policing, positive changes to the proactive crime reduction culture can been realized. The distinct structure outlined by stratified policing with set crime analysis products, evidence-based practices, and accountability mechanisms achieved more proactive crime reduction activities and higher satisfaction with WCSO's overall crime reduction

efforts. Even more meaningful, there were significant improvements to WCSO's crime reduction culture in terms of leadership, accountability, communication, and transparency which are all important and necessary factors for true organizational change (Crank, 2004; Carnall, 2009; Macleod and Todnem, 2009).

Conclusion

This study contributes to ongoing police research and practice in terms of how police leaders can successfully implement and sustain crime reduction strategies in their agencies. When implementing a crime reduction approach, it is important to determine if crime is reduced. Just as important is to determine whether there is an impact on accountability, leadership, communication, and transparency as well as whether the agency experiences organizational change and can sustain its crime reduction efforts.

When police leaders seek to implement crime analysis and evidence-based crime reduction strategies, they should consider an organizational structure and processes that will transform the crime reduction culture to institutionalize evidence-based strategies as part of normal business. When such a structure is achieved, an organization will be better suited to sustain crime reduction efforts. This article illustrates one agency's success; however, with additional research of stratified policing and other such approaches, police leaders will have a better understanding about how to institutionalize crime analysis and evidence-based approaches in their organizations.

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Appendix

Table A1: *T*-test results

	Equal variances	Basline survey, mean (SD)	Implementation, mean (SD)	*t*	df	Sig. (two-tailed)	Mean difference	Std. error difference
Leadership and accountability								
Leadership focus	Assumed	4.18 (2.11)	4.64 (2.13)	−1.752	258	0.081	0.46	0.264
Leadership participation	Not assumed	4.22 (1.90)	5.19 (1.37)	−4.653	210	0.000	0.97	0.209
Clear expectations	Assumed	4.86 (2.12)	5.53 (1.73)	−2.773	230	0.006	0.67	0.242
Accountability	Assumed	4.67 (1.62)	5.36 (1.22	−3.846	218	0.000	0.69	0.180
Communication and transparency								
Communication within/ between groups	Assumed	3.23 (1.55)	4.03 (1.26)	−4.275	207	0.000	0.80	0.187
Communication between ranks	Not assumed	3.94 (1.50)	4.72 (1.29)	−4.573	260	0.000	0.79	0.172
Transparency	Not assumed	3.15 (1.81)	3.74 (1.71)	−2.689	256	0.008	0.59	0.220
Supposed to do	Assumed	3.40 (1.40)	3.89 (1.43)	−2.794	258	0.006	0.49	0.176
Actually do	Not assumed	3.56 (1.62)	4.18 (1.72)	−2.982	256	0.003	0.62	0.209
Crime reduction efforts								
Identify short-term activity	Assumed	3.79 (1.58)	5.13 (1.37)	−7.538	273	0.000	1.34	0.178
Resolve short-term activity	Assumed	3.94 (1.67)	5.14 (1.34)	−6.353	228	0.000	1.19	0.188
Identify long-term activity	Assumed	3.75 (1.83)	4.57 (1.58)	−4.025	273	0.000	0.83	0.206
Resolve long-term activity	Assumed	3.74 (1.76)	4.64 (1.61)	−4.359	266	0.000	0.90	0.207
Satisfaction	Not assumed	4.48 (1.52)	4.87 (1.50)	−2.055	256	0.041	0.39	0.188