

Research Findings

Exploring the spatial variation in police activity

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Executive summary

This project sought to understand the factors that structure the spatial patterns of police response to calls for service and police self-initiated activity. Officer responsiveness was measured through the number of events that were unfounded and the number of arrests made. Self-initiated activity was measured through the number of traffic stops conducted. Taken together these activities can be referred to as officer vigor. Two major factors, the number of serious crime incidents (UCR Part 1 crimes) and the level of officer staffing, were investigated to determine their influence on officer responsiveness and self-initiated officer activity. This analysis also investigated how socio-demographics and land use characteristics influence these activities. Philadelphia data on calls for service, police officer activity, arrest data, and officer staffing levels for 2004 through 2008 was used to investigate these questions. Socio-demographic information and land use characteristics were derived from a number of sources including the U.S. Census and official land use records.

Results suggested that both the level of serious crime and the level of officer staffing had an impact upon officer activity. For every additional 100 unit increase in the count of serious crime events the number of unfounded events increased by 5.5% and the number of traffic stops declined by 10.6%. This suggests that officers are sensitive to their workload and may be adjusting their workload to accommodate the demands that serious crimes place on their available resources. Officer staffing levels were similarly related to officer activity. Every additional 100 officer hours was associated with a 4.4% reduction in the count of unfounded events and a 3.8% increase in the number of arrests. The relationship between arrests and officer staffing levels and arrests and officer workload was not as consistent with theoretical predictions. Taken together these findings suggest that officers are sensitive to their workload and may be altering their work activity to accommodate differences in the available resources. Additionally, these relationships may be sensitive to how officer vigor is quantified.

Purpose

The primary goal of this research project was to evaluate one of the main theories that attempts to explain the factors that structure the spatial variability in policing activities. Broadly this research addressed the question: Is police response to calls for service and self-initiated activity influenced by the level of serious violent crime? Police responsiveness was measured by the final disposition given to a case and the number of arrests made for low seriousness events; self-initiated activity was measured by the level of traffic enforcement. Additional questions are also addressed such as: Does the relationship between police workload and responsiveness and police workload and self-initiated activity vary over time? Do socio-demographic and land use characteristics of where officers are working influence the type and quantity of police activity?

Method

Philadelphia data on calls for service, police officer activity, arrest data and officer staffing levels for 2004 through 2008 were obtained. Multi-level non-linear modeling was used to investigate how these factors linked together. Both cross-sectional and longitudinal models were used to investigate the spatial variability in officer activity. The cross-sectional models investigated the vigor of officer action within a district while the longitudinal models investigated vigor within a district over time.

Findings and implications

The vigor of police activity was sensitive to both officer workload as well as the level of officer resources. In other words, when officers are tasked with responding to, and the investigation of, more serious crimes there tends to be a greater number of unfounded events and a lower number of proactive self-initiated activity (as measured by traffic stops). These findings are consistent with theoretical predictions that officers will attempt to manage their workload in an effort to have the ability to respond to serious criminal events.

The vigor of police activity was also sensitive to the level of patrol resources available. More officer hours assigned to patrol was associated with lower levels of unfounded events and higher levels of traffic stops. Again these findings are consistent with theoretical predictions that officers manage their workload in the face of variable resource levels. When more officers are available fewer calls for service go unfounded and more traffic stops are conducted.

Finally, this analysis investigated the relationship between socio-demographic characteristics and land use and its relationship to the vigor of patrol officer activity. The results suggested that these characteristics did not consistently link to officer vigor. In other words, although characteristics such as socioeconomic status, stability, and racial composition frequently linked to vigor it was not consistent across various types of analyses nor was it always in the direction predicted by the theoretical framework that guided this analysis. Taken together this suggest that these relationships could use further conceptual clarification and empirical research.

The findings of these analyses suggest that the vigor of police action, in response to citizen's calls for service as well as self-initiated activity, is sensitive to how much serious crime officers are tasked to deal with along with the level of officer staffing. These results suggest that realistic changes in crime levels and realistic changes to officer staffing levels can have a measurable impact on the type and quantity of work that patrol officers undertake.

Notes

This is a summary of the dissertation research conducted by Dr Travis Taniguchi. Dissertation Committee: Jerry H. Ratcliffe (chair), Elizabeth R. Groff, Ralph B. Taylor. Opinions and conclusions stated here are solely the author's and do not necessarily reflect the opinions of Temple University or Temple University's Department of Criminal Justice. For further information, contact Travis Taniguchi at ttaniguchi@redlandspolice.org or 909-557-6972.