

in brief...

# Do computers help police fight crime?

Does the increasing computerisation of police work result in more effective crime-fighting? **Paul Heaton** and **Luis Garicano** study the impact of information technology on the organisation and productivity of US police departments.

The adoption of information technology by police departments in the United States is a relatively recent phenomenon. Before 1987, less than 2% of the 2,200 US police departments with fewer than 100 employees used computers. And as recently as 2003, only 40% of police departments had mobile computer terminals.

So did police departments that adopted information technology earliest see changes in organisational practices and drops in crime relative to those that adopted later? Our research addresses this question by comparing the crime-fighting effectiveness and organisational practices of police departments that were early adopters to those that adopted the technology less rapidly (factoring out demographic and other changes, as well as time trends and department-specific effects).

We use two data sources: first, the triennial Law Enforcement Management and Administrative Statistics (LEMAS) surveys, which document US police departments' use of technology between 1987 and 2003; and second, the FBI's uniform crime reports, which collect crime and arrest statistics for the entire country. We also use demographic data from the US censuses to control for population characteristics.

We find that the departments that adopted information technology grew in size by around 8%, increasing the number of specialised jobs and share of support staff

needed as well as the use of written (as opposed to oral) instructions within the department. These departments also increased the educational standards for new officers by raising both the college requirements and their hours of training by around 200 hours. The increase in training hours appears to be mostly related to the use of mobile terminals.

Thus, the greater use of computers by police departments implies a larger, increasingly complex and more highly educated police force. This outcome is not too surprising. Where our results are puzzling is when we turn to the productivity gains related to this technological revolution.

We measure productivity in two ways: first, crime clearance rates (crimes solved relative to crimes committed); and second, offence rates (crimes per head of population). Surprisingly, we find that the use of information technology neither increased crime clearance rates nor decreased offence rates. In fact, if anything, the use of computers is associated with an increase in property crimes. This is a puzzling set of results, particularly given our finding that the use of technology raises the quality of police staff.

So is there some causal link between these results? Our empirical strategy suggests that the answer is yes, given that the results control for geographical and department-specific characteristics as well as time trends. Of course, as

**Go on the Beat**

Officer name \*

Rank

- ✓ Constable
- Sergeant
- Inspector
- Chief Inspector
- Superintendent

Equipment \*

This is also required.

Route

Choose File no file selected

Fixed?

Computers increase the effectiveness of police work – but only if it is reorganised to take advantage of their presence

always in social science, it is hard to prove causality unequivocally. To increase our confidence in the findings, we study several alternative hypotheses:

- First, it is not simply the case that the more troubled police departments are the ones that adopted information technology faster (which would yield a spurious link between high investment in information technology and small changes in clearance rates).
- Second, it is not the case that future levels of information technology use are connected to changes in organisation and productivity, as would be expected if information technology were the result, rather than the cause, of the changes studied.
- Third, the results for productivity are unrelated to city size or population growth or decline: they hold across the board for growing and shrinking cities and police departments.
- Fourth, controlling for the size of a department's budget does not alter the result, suggesting that it is not the outcome of growing or shrinking budgets.
- Finally, we use the adoption of information technology by state as a plausible 'exogenous' source of variation for the rate of adoption by police departments, and show that the results are still unchanged.

All of this suggests that the conclusion is causal and raises an important question about whether technology really does help police departments and, if so, how.

One key advantage of computers is improved record-keeping. Our research shows that introducing computers for record-keeping did increase the amount of recorded 'minor crimes' such as larceny, accounting for some, but not all, of the measured ineffectiveness of computers. As would be expected, improved record-keeping did not affect the number of homicides and major crimes recorded. This supplies an explanation for part of the puzzle.

We develop the hypothesis that just as in the private sector, it is not only the increased use of computers that is required for better outcomes, but also changes in the organisation of police work. In the context of policing, the organisation of work around computers might change by the use of geographical patterns to allocate resources and to measure the crime-fighting progress of individual officers.

The best-known example of this use of information technology is the New York City Police Department's CompStat system, associated with Bill Bratton's tenure as police chief during the 1990s under then-Mayor Rudy Giuliani. CompStat is an integrated information and management system for policing, which includes several

## Computers plus an integrated information and management system for policing increase crime clearance rates

The image shows a web interface for data entry. At the top, there's a blue header bar. Below it, a 'Crime rate' dropdown menu is open, showing 'Low' selected, 'Medium', and 'High'. To the right of the dropdown is a date field with labels 'MM', 'DD', and 'YYYY'. Below the date field is a 'Category' section with several checkboxes: 'Murder' (checked), 'GBH', 'ABH', 'Common Assault', 'Offensive Weapon', 'Harassment', 'Other Violence' (checked), and 'Violence Against the Person'. Below the categories is an 'Upload a scene of crime image' section with a 'Choose File' button and the text 'no file selected'. The bottom of the form has a grey bar with a thin blue line.

key elements that the LEMAS data capture: data-driven problem identification, internal accountability, geographical organisation of deployment, and measurable goals.

Our research finds that police departments that adopted computers together with CompStat-style organisational practices did experience reduced property and violent crime and significantly increased crime clearance rates (by around 8%). Thus, we conclude that computers do increase the effectiveness of police work, but only if police work is substantially reorganised to take advantage of their presence.

This article summarises 'Information Technology, Organisation and Productivity in the Public Sector: Evidence from Police Departments' by Luis Garicano and Paul Heaton, CEP Discussion Paper No. 826 (<http://cep.lse.ac.uk/pubs/download/dp0826.pdf>).

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