

Re: Computer Simulation of Police Patrol Operations

The R.C.M.P. Detachment in Burnaby has been selected by the R.C.M.P. Force for a National Research Council computer simulation study. It will be made without cost to the Municipality and will consist of an analysis of the Patrol Operation with a view to determining the Detachment's weaknesses and strengths.

The first such study undertaken in Canada was at Gloucester Township, Ontario. The results of this study were the subject of the following article which appeared in the January 29, 1974 edition of the Citizen, an Ottawa publication:

"Ottawa, Tuesday, January 29, 1974

The Citizen

COMPUTER 'ADMIRE'S' GLOUCESTER POLICE ABILITY
by Jo Ann Gosselin

Gloucester Township has a pretty efficient police force.

A computer says so.

Two National Research Council staffers, Dr. F.R. Lipsett and John G. Arnold of the radio and electrical engineering branch, have taken a scientific look at the community's police patrol operation.

The results of their first-time-in-Canada undertaking revealed not only the force's strong points but graphically underscored potential problem areas.

The research concentrated primarily on the workload and patterns of each of the five geographic police zones within the semi-rural community.

Gloucester Township has a population of approximately 45,000 and covers an area of 116 square miles. Large tracts are sparsely populated, other sections densely inhabited.

There are 49 policemen on the Gloucester force, including the chief and deputy chief, and three civilians.

Gloucester Police handle much the same assignments as do other forces -- but there are notable differences.

More than half the past year's criminal activities were traced to non-residents. The township's juvenile delinquency rate is negligible. Police activity remains constant throughout the week and throughout each of the work shifts -- it does not rise sharply on weekends or at night.

But Gloucester is growing. And the demand for police services is keeping pace. A few U.S. cities, facing similar increases, turned to computer simulation programs in attempts to identify their needs.

Lipsett and Arnold, aware of the American projects, felt the idea might benefit Canadian centres, and Gloucester, because it is near the NRC, was approached.

Given council's go-ahead, and Police Chief Ken Duncan's willing assistance, the researchers went to work.

Using two single-month police car logs -- one winter, one summer -- the NRC team drew up a computer program duplicating existing Gloucester patrol operations.

For the program the township was divided into 90 small geographically equal sections. And, using a one-to-10 increasing scale, each section was assigned a number relating to the actual density of police calls.

Then the Gloucester Police force was subjected to all manner of street situations -- all simulated.

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Zones were rearranged to grossly unbalance the workload -- then rearranged to make it equal. Patrol cars were added, and taken away. Close to 300 computer runs were done.

It was a safe, yet visible way of testing the system, and both parties expressed satisfaction with the results.

"We welcomed the study", said Chief Duncan. "It would show whether our operation was efficient and whether we were making the right decisions. Having such graphic documentation is also bound to assist us in planning for the future. The segmented map has given the men a better idea of exactly where zone patrols should be stepped up."

Preventive police work is given high priority in Gloucester -- and is apparently paying off, as the uniform number of calls would indicate.

This intangible area of police work was not touched in the NRC experiment, nor were other routine assignments such as the serving of summonses and warrants, court duty, traffic patrol or officer-initiated activity.

STATISTICAL ACCOLADES

But what was covered -- headquarter-dispatched calls -- provided Gloucester police with statistical accolades: 90 per cent of the calls required only one car and officer; 10 per cent of the calls were inter-zone; an average of five minutes response time to a priority-one call; and a higher clearance rate for cases than most forces because the constable answering the call handles most of his own investigative work.

Recommended areas for caution: two few available cars might hamper the overall performance of the force; and one of the five zones was handling nearly double the calls of another.

Since the research was concluded, late last year, the township has added to its fleet of police vehicles and anticipates a redesigning of police zones to accommodate a sixth.

The NRC draft report of the project also recommends the force be increased 25 per cent a year, a manpower requirement Chief Duncan feels can be reduced through more effective deployment of staff.

Lipsett and Arnold, encouraged by the first attempt at defining a part of the Canadian police scene, hope to use it as a base for ongoing research.

They now have the Ottawa Police Department under similar scrutiny and other forces have expressed interest in the project.

Arnold sees it as more than a purely scientific venture: "Our aim is to assist police administrators in planning more efficient patrol areas. Municipalities like to save money but they also like to know they're getting their money's worth."

The simulation study in Burnaby commenced on March 11, 1974. Results will be referred to Council in due course.

This is for the information of Council.