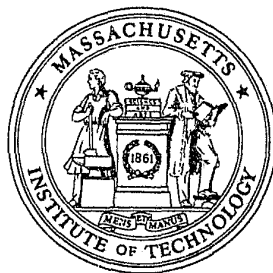


OPERATIONS RESEARCH CENTER



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OF TECHNOLOGY**

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NCJRS

DEC 5 1978

ACQUISITIONS

First Quarterly Progress Report

December, 1977 - March 31, 1978

AN EMPIRICAL STUDY OF METHODS USED
IN CRIMINAL JUSTICE EVALUATIONS

by

Richard C. Larson
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and

Co-Director
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OPERATIONS RESEARCH CENTER
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CAMBRIDGE, MASSACHUSETTS 02139

"An Empirical Study of Methods Used in Criminal Justice Evaluations,"
Grant No. 78NI-AX-0007, funded by the U.S. Department of Justice, Law
Enforcement Assistance Administration, National Institute of Law
Enforcement and Criminal Justice.

An Empirical Study of Methods Used in Criminal Justice Evaluations

FIRST QUARTERLY PROGRESS REPORT

December, 1977 - March 31, 1978

This first quarterly progress report covers the period from grant award through March 31, 1978. The reason for the extended period of the first report is that very little activity occurred in December, 1977 due to the fact that that period was the end of the Fall Semester at M.I.T. Substantial work began on the grant in January, 1978. Future quarterly progress reports will be submitted at the end of June, September, and December.

Personnel:

We are fortunate to have working with us on this grant some very capable M.I.T. graduate students and faculty members. Vicky Bier is a full-time Research Assistant working on the grant. She is a Doctoral student in the Interdepartmental program of Operations Research at M.I.T. She is skilled in tools of Operations Research, including Mathematical Programming, Probabilistic Modeling, and Decision Analysis. Her primary area of research interest on the grant centers around the use and potential abuse of Decision Analysis as applied to program evaluation.

Ed Kaplan is a part-time Research Assistant on the grant and is partially supported under a grant from the U.S. Office of Education through the Department of Urban Studies and Planning at M.I.T. We expect Ed to become more fully supported on the grant during the summer of 1978 and during the 1978-79 academic year. Ed is a Masters candidate in a joint program between the Urban Studies Department and the Operations Research Center; he is seeking a joint degree as Master of City Planning and Master of Science in Operations Research. His area of interest on the grant is primarily in the logistical area.

Professor Tom Willemain is presently working 25% time on the grant. He is Associate Professor of Urban Studies and Planning at M.I.T. He teaches courses in Quantitative Methods of Social Science Research and his current area of interest that is related to the grant focuses on time series analyses and their use in program evaluation research.

We are also benefiting from the cooperation, interaction, and feedback from Professor Martin Rein in the Department of Urban Studies and Planning and from Professor Arnold Barnett in M.I.T.'s Sloan School of Management. Professor Rein is well known for his publications in the qualitative aspects of evaluation and evaluation research. Professor Barnett is becoming nationally known for his publications relating statistics and probabilistic reasoning to various research questions in Criminal Justice. In particular, we are very pleased to learn of Professor Barnett's recent grant award from the National Institute of Law Enforcement and Criminal Justice, and we expect that the two grants will provide a synergistic environment for Criminal Justice and Evaluation Research at M.I.T. over the next 1-1/2 to 2 years.

A Doctoral student in the Department of Urban Studies and Planning, Ms. Cheryl Mattingly has very recently joined our research team. If we find that our areas of mutual interest coincide, it is likely she will be joining us as a Research Assistant during the summer.

Mr. Bruce Lamar, a Doctoral student at the Operations Research Center, worked for us briefly during the end of 1977 and the beginning of 1978, particularly in the area of experimental and quasi-experimental design. He authored a working paper on this subject which is discussed briefly in the Publications section of this quarterly progress report.

The project secretary is Ms. Dorothy Green. She has extensive organizational skills as well as the more usual secretarial skills, and has taken on a good deal of responsibility in organizing various facets of the day-to-day grant operations. This includes, for instance, the ordering, receiving, cataloging, and organizing of all publications -- including books, reports, and articles -- for the Library that we will need to undertake the empirical analysis for Task 2.

Site Visit:

On February 23 and 24, Vicky Bier, Ed Kaplan and Professor Larson traveled to Washington, DC to meet with relevant individuals at LEAA and related organizations. This included meetings at the National Institute of Law Enforcement and Criminal Justice, particularly with Mr. Ed Zedlewski, the program monitor; meetings with key individuals at the National Criminal Justice Reference Service; a meeting with Mr. Lou Riccio of the Police Foundation; and meetings with individuals at the Urban Institute, including Mr. Harry Hatry, who are concerned with evaluation and its use in Governmental operations. A copy of the handout that we used to describe our project up to that time is appended as Attachment 1.

Publications:

Tentatively, we plan three types of intermediate publications prior to submission of our Final Report. These are:

1. Technical Reports, which would be published in the Technical Report series of the Operations Research Center at M.I.T.
2. Working Papers, which would be published in the Working Papers series of the Operations Research Center at M.I.T.

3. "Research Notes", which typically would be five to fifteen page first drafts of "think pieces" relating to specific aspects of the grant research.

During the first quarter, two publications were produced. Their titles and abstracts follow.

"Structural System Models for Locational Decisions: An Example Using the Hypercube Queueing Model," Richard C. Larson. A structural system model of a spatially distributed system embodies system dynamics as well as statics, explicitly depicts the various states of system operation, and includes probabilistic as well as deterministic features of operation. In this context a locational decision is an allocation of resources within an operating system. This paper uses the recently developed hypercube queueing model to illustrate the ways in which locational decisions - both long-term and short-term - can be made within the framework of a system model. Particularly important is state-dependent interaction among facilities (mobile servers) that precludes application of many traditional locational theories. Recent work outlined in the paper includes a generalization of the N-median problem to congested facilities, optimal dispatching of facilities, districting (sectoring), consideration of quality of locational information, and short-term repositioning of facilities. Recent implementations of the model are also discussed.

"What the Textbooks Say About the Design of Experiments," Bruce W. Lamar. This report reviews classical experimental designs including single and multiple factor analysis of variance, analysis of covariance, and Latin squares designs. Assumptions used in the models are presented, and tests for violations of the assumptions are described. Examples illustrating primary designs and remarks discussing further model extensions and considerations are also included.

Publications Acquired:

Each quarter we expect to receive numerous publications relating to evaluation, particularly in the area of Criminal Justice. Ms. Dorothy Green has been given the responsibility for organizing these publications for the project staff. A full list of the publications received during the first quarter is included as Attachment 2.

Activities:

1. Constructing the Structured Sample: As of March 31, we have completed Task 1 of the proposal and are under way on Task 2, Analysis of Selected Evaluations. We are about 50% completed with Task 2.1, "Select Sample of Evaluations from Each Aggregational Group." As indicated in the proposal, there are two evaluation groups, one in the logistical area and one in the social service area. While undertaking Task 1 and meeting with several people in the evaluation area, we have decided that the formation of each sample of 100 evaluations should be far from a "random sample." Rather, we prefer to think of each of these samples as a "structured" sample. By this, we mean that each sample of 100 evaluation studies would be structured in a way to relate to key previous LEAA evaluation efforts, and/or to methodological concerns, and/or to research hypotheses of the current grant. For instance, in LEAA's earlier and continuing evaluation efforts, there are the NEP Phase I projects and there are so-called exemplary projects. We want each of our two samples to be structured in a way which relates in some sense to each of these two programs. For instance, the NEP Phase I evaluation assessments were commissioned in approximately 18 to 20 different areas. We are currently

selecting a subset of those 18 areas in both the logistical area and the social services area to over-sample from studies in that subset. For instance, one member of the subset might be traditional methods of police patrol, or juvenile diversion projects. If we choose to select those topics for over-representation, then we could build on the knowledge already acquired from the NEP Phase I evaluations in those areas.

Likewise, relating to exemplary projects, ABT Associates has been under contract to LEAA to determine which projects nominated for the exemplary status should be so designated. It is our understanding that up to this date, approximately 93% of nominated projects have been rejected by ABT Associates, and only 7% have been designated "exemplary" projects. This activity is of particular interest to personnel on this grant because the process of determining whether or not a project should receive exemplary status is, in fact, an evaluation of an evaluation. Thus, by learning more of the process by which projects were deemed exemplary or not, we will be learning more about the state-of-the-art of evaluating evaluations. Thus, we intend to over-select from projects that were nominated for exemplary status, and we plan to include an over-representation of both those which were deemed exemplary and those which were rejected from the exemplary status. In a sense, we will be evaluating those who evaluate evaluations, and thus learn more about the evaluating of evaluations process, which is the focus of this grant.

A third possible area in which the samples may be structured to relate to previous LEAA evaluation efforts would be in the Impact Cities Program; however, we have not made a decision on this as of this time and we will discuss this further with the program monitor.

In structuring the sample to reflect various methodological concerns, we are particularly interested in those methodologies which are foci of the current research. These include time series analysis, experimental design, use of models in evaluation, and use of decision analysis in evaluation. Thus, we would tend to favor evaluations which reported to use one or more of these methodologies.

Regarding structuring the sample in areas related to research hypotheses of the grant, we are particularly concerned with the following issues: 1) use of evaluations by decision-makers, both long-term and short-term, and even identification of appropriate decision-makers; 2) the expected value of information to be acquired from an evaluation; 3) mis-use and abuse of quantitative methods; and 4) use of adaptive evaluation methods to reflect feedback from the field. As in the other areas, we are attempting to construct the two samples to over-represent these types of concerns.

We hope to have the structured sample completed by April 30 and to have approximately 20% of the appropriate reports reviewed by June 15. We plan to do the full scale reviews indicated in Task 2 during the summer of 1978; this will entail the full-time commitment of three Research Assistants during this time, under the direction of Professor Larson. We also plan to design the questionnaire indicated under Task 2.5 in July and mail out that questionnaire in August.

2. Use of Time Series in Evaluation: Bayesian estimates of program impacts on crime rates: A problem of recurrent interest is the analysis of time series data on crime rates, especially comparison of "baseline" rates with rates during an experimental program. This work will develop and apply Bayesian approaches to the analysis of data comprising sequences of counts of events

(crimes). Professor Tom Willemain will be performing this work.

Classical statistical techniques using Student's t distribution and conventional Bayesian approaches assuming Gaussian increments rest on assumptions which do not hold for sequences of counts. The new work will model the count of crimes per day as a Poisson variate and use Bayesian methods to derive the distribution of the difference in crime rates before and after the initiation of a new crime control effort. Information in this distributional form will be more pertinent than the traditional significance tests and will better display the sampling uncertainties present in the estimates of impacts. This approach will be applied in a reanalysis of data on saturation patrol in Nashville, Tenn. (J.F. Schnelle, et al., "Patrol Evaluation Research: A Multiple-Baseline Analysis of Saturation Police Patrolling During Day and Night Hours," Journal of Applied Behavior Analysis, Vol. 10, No. 1, Spring 1977, pp. 33-40.)

3. Use of Decision Analysis in Evaluation: Vicky Bier has been reading the relevant literature applying decision analysis to the area of evaluation. She is currently drafting a research note entitled "Decision Analysis as a Framework for Evaluation and Decision in Public Policy." This should become available early during the second quarter of the grant activity, and will be forwarded to the grant monitor, Mr. Ed Zedlewski, for his feedback.

4. One-Officer Versus Two-Officer Patrol Units as an Example of Logistical Evaluation: Ed Kaplan is studying issues related to one-officer versus two-officer patrol units as an example of a logistically oriented area that could benefit from the multiple tools of quantitative evaluation research.

An extended abstract describing Ed's current research status in this area is appended to this progress report as Attachment 3.

As the above descriptions indicate, progress is being made simultaneously on the empirical evaluation of evaluations as described under Task 2, and on various other methodologically oriented tasks. For instance, Tom Willemain's work on time series in evaluation relates to Task 3 and particularly to Sub-Tasks 3.1 and 3.2; Vicky Bier's work in Bayesian and decision analytic methods of evaluation relates to Task 3.7; and Ed Kaplan's work in one-officer versus two-officer patrols relates to Task 3.8, Model-Based Evaluations.

Scheduling of Future Activities:

Allowing for the delay in project initiation, due to the idiosyncrasies of academic schedules, the project appears to be running close to schedule as indicated on Figure 3 in the original proposal. We have already outlined above the immediate schedule of activities planned under Task 2 for the next three months. In mid-April we plan another trip to Washington DC to obtain feedback from the project monitor and to obtain information from NCJRS to finalize our sample selections. In the longer term we are planning to adapt the course taught by Professor Larson and Professor Rein, 11.523, "Program Evaluation," to focus next fall on evaluating evaluations. More details of this plan will appear in the next quarterly progress report.

Attachment 1TASK I

To facilitate the screening of the approximately 1500 abstracts contained in the NCJRS listing of project evaluations, a simple checklist was adopted (see attached Phase I checklist). Evaluations which were greater than 100 pages in length were subjected to this checklist. From this crude first cut, a number of topic areas were identified within the logistical/social service/other aggregation groups (see attached list of topic areas). The reviewed abstracts were also assigned a letter grade from 'A' to 'D'; 'A' indicating that the evaluation as described in the abstract appeared to be of high quality, 'D' indicating that the evaluation appeared to have been poorly conducted.

SAMPLING ISSUES

In selecting evaluations to be used in Task II (Analysis of Criminal Justice Evaluations), we are planning a certain amount of deliberate overrepresentation in particular areas. This is to assure that in areas of interest, our sample includes enough evaluations to permit meaningful comparisons, and to give us a general impression of the type and quality of work being done in those areas.

For example, we will probably choose particular topics from the list compiled in Task I for overrepresentation to get some idea of the range of measures and evaluation methods used in these areas. We also plan to use the review volumes by the National Evaluation Program (NEP) to identify particularly problematic areas, where NEP has identified a lack of appropriate measures and methodologies, or a dearth of well-defined evaluations.

Finally, another planned use of over-sampling will be to study organizational questions. For example, several programs have put a great deal of emphasis on policy research and evaluation. These include particular jurisdictions (for instance, Pennsylvania seems to be extremely active in the field of evaluation), particular programs (such as the High Impact Anti-Crime Program, in which a great deal of attention was paid to planning for evaluation), and LEAA-designated exemplary projects. Over-sampling from some of these areas would enable us to address questions such as: How successful are organizations in promoting improved evaluation methods? How do carefully planned evaluations differ from the work of organizations which do not emphasize evaluation? etc.

DATA ISSUES

Having discussed some of our initial sampling efforts and the attendant sampling issues, our next step is to obtain the mentioned documents. We are hopeful that LEAA/NCJRS can help us out here.

Can we obtain a list of LEAA funded exemplary projects?

Can evaluation projects in general be obtained on loan from NCJRS? Another field trip to Washington to collect these documents is planned. It is only after we have been able to review several of the actual evaluations that we will be able to choose our final sample and proceed to Task II.

TASK II

Once our sample has been selected, the analysis of these evaluations will begin. A more detailed checklist has been devised for this phase (see attached draft of Task II checklist) which will be used in conjunction with short "mini-critiques" of the sample studies. As mentioned in the research proposal, this phase will conclude with a report: "Analysis of Selected Criminal Justice Evaluations".

TOPIC LIST

LOGISTICAL

- 1) Team Policing
- 2) Patrol Strategies
- 3) Aerial Patrol
- 4) Computer Usage and Information Systems
- 5) Strategic Crime Prevention

SOCIAL SERVICE

- 1) Volunteers in Probation and Parole
- 2) Pre-Trial Release
- 3) Juvenile Diversion
- 4) Residential Programs for Drug Abusers
- 5) Police-Community Relations

MISCELLANEOUS

- 1) Research and Development and/or Planning Units
- 2) Personnel/Staff Training Programs

PERSONNEL

Richard Larson is Associate Professor of Urban Studies and Electrical Engineering at MIT, where he teaches courses in stochastic processes, probabilistic models, and the evaluation of public programs. Dr. Larson is the principal investigator of this project.

Martin Rein is Professor of Urban Studies and Planning at MIT, where he is actively involved with courses such as the evaluation of public programs, policy analysis of social service systems, and sociological aspects of policy research. Professor Rein is well known for his contributions to the evaluation literature.

Arnold Barnett is Associate Professor of Management and Operations Research at MIT. Professor Barnett teaches courses in the areas of statistics, stochastic processes, and urban operations research. In addition to other research, Professor Barnett has been an active statistical researcher in the criminal justice field for the past four years.

Thomas Willemain is Associate Professor of Urban Studies and Planning at MIT. His teaching includes courses in statistical methodology, policy analysis of social service systems, and quantitative methods in health planning. Professor Willemain is primarily interested in the methodological aspects of program evaluation.

Vicki Bier is a Ph. D. candidate at the Operations Research Center, MIT. She received the B. Sc. in Mathematical Sciences from Stanford University in 1976. Her research interests are in the development of quantitative techniques for application to "soft" situations.

Edward Kaplan is a joint master's degree candidate (MCP/SM) in Urban Studies and Operations Research at MIT. He received the B.A. in Urban/Economic Geography from McGill University in 1977. His research interests lie in the development of mathematical modeling techniques for application to the evaluation of criminal justice programs.

Dorothy Green is the project secretary. For the past 10 years, she has organized special projects for travel agents, nuclear engineers, lawyers and other professionals. She has studied at City College in New York.

0.2

DOCUMENT 2

ACCESSION NUMBER: ... 09900.00.012328
 TITLE: EX-OFFENDERS AS PAROLE OFFICERS - AN EVALUATION OF THE PAROLE OFFICER AIDE PROGRAM IN OHIO
 PUBLICATION DATE: 73 PAGES: 102

PUBLICAT NUMBER(S): U
 AUTHOR(S): SCOTT, J E BENNETT, P A
 CORPORATE AUTHOR: OHIO STATE UNIVERSITY
 COLUMBUS OH 43210

GRANT(S): 2860-00-J3-72 (LEAA)
 SPONSORING AGENCY: US DEPARTMENT OF JUSTICE
 LAW ENFORCEMENT ASSISTANCE
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 633 INDIANA AVENUE, NW
 WASHINGTON DC 20531

SALES AGENCY: OHIO STATE UNIVERSITY PRESS
 HITCHCOCK HALL, ROOM 316
 2070 NEIL AVENUE
 COLUMBUS OH 43210

ANNOTATION:

AN EVALUATION OF OHIO'S USE OF EX-OFFENDERS AS PAROLE OFFICER AIDES.

ABSTRACT:

THIRTEEN AIDES WERE ORIGINALLY HIRED TO PERFORM TASKS SIMILAR TO THOSE OF A PAROLE OFFICER. THEIR PERFORMANCE IN COMPARISON TO A CONTROL GROUP OF OHIO PAROLE OFFICERS WAS ASSESSED USING SEVERAL TECHNIQUES - AN ATTITUDINAL QUESTIONNAIRE, IN-DEPTH INTERVIEWS, FIELD WORKER'S REPORTS, UNIT SUPERVISORS RATINGS, A SURVEY OF INMATES, AND A SURVEY OF PAROLEES SUPERVISED BY AIDES AND PAROLE OFFICERS. THE RESULTS FROM THE ANALYSIS OF THE ATTITUDINAL QUESTIONNAIRE INDICATE AIDES POSSESS THOSE ORIENTATIONS AND ATTITUDES ASSOCIATED WITH SUCCESSFUL SOCIAL SERVICE WORKERS MORE OFTEN THAN DO PAROLE OFFICERS. THE IN-DEPTH INTERVIEWS FOUND AIDES VERY SATISFIED WITH THEIR WORK. THE FIELD WORK REPORTS BY STUDENTS INDICATED PAROLE OFFICERS SAW MORE PAROLEES PER DAY AND SPENT A GREATER PERCENTAGE OF THEIR WORK TIME WITH PAROLEES THAN DID AIDES. HOWEVER, FIELD WORKERS EVALUATED AIDES AS HAVING A BETTER RELATIONSHIP WITH BOTH PAROLEES AND FELLOW WORKERS. UNIT PAROLE SUPERVISORS RATED PAROLE OFFICERS AND AIDES ON SEVERAL DIMENSIONS, INDICATING THAT IN MOST RESPECTS PAROLE OFFICERS WERE SUPERIOR TO AIDES. THE ONLY TWO CRITERIA ON WHICH SUPERVISORS RATED AIDES SUPERIOR WERE GETTING JOBS FOR PAROLEES AND BEING WILLING TO 'GO THE EXTRA MILE' TO HELP PAROLEES. INMATES AND PAROLEES RATED AIDES SUPERIOR TO PAROLE OFFICERS ON EVERY INDICATOR. THE MAJORITY OF INMATES FELT PAROLEES SUPERVISED BY AN AIDE WOULD BE MORE LIKELY TO SUCCEED ON PAROLE. AN OVERWHELMING MAJORITY OF INMATES (86 PERCENT) INDICATED THEY WOULD PREFER BEING SUPERVISED ON PAROLE BY AN AIDE RATHER THAN A PAROLE OFFICER. (AUTHOR ABSTRACT MODIFIED) (SI ABSTRACT)

0.1

DOCUMENT 1

ACCESSION NUMBER: . . . 09900.00.012435
 TITLE: POLICE-COMMUNITY ACTION - A PROGRAM FOR CHANGE IN
 POLICE-COMMUNITY BEHAVIOR PATTERNS
 PUBLICATION DATE: 73 PAGES: 217
 PUBLICAT NUMBER(S): U
 AUTHOR(S): EISENBERG, T FOSEN, R H
 SALES AGENCY: PRAEGER PUBLISHERS
 C/ O HOLT, RINEHART, WINSTON
 383 MADISON AVENUE
 NEW YORK NY 10017

ANNOTATION:

DISCUSSION AND EVALUATION OF PROJECT PACE, A TWO-YEAR PROGRAM INVOLVING THE OVERALL SCOPE OF POLICE-COMMUNITY RELATIONS WITHIN THE CITY OF SAN FRANCISCO.

ABSTRACT:

THE GOALS OF PROJECT PACE (POLICE AND COMMUNITY ENTERPRISE) WERE TWO-FOLD - TO REDUCE ANTAGONISMS AND POLARIZATION WHICH HAD DEVELOPED BETWEEN THE POLICE AND THE SAN FRANCISCO COMMUNITY, AND TO CREATE A MORE COOPERATIVE ATMOSPHERE FOR CRIME PREVENTION AND CONTROL AND THUS REDUCE VARIOUS KINDS OF CRIME. THE INITIAL FOCUS OF THE PROGRAM, WHICH WENT INTO OPERATION IN APRIL 1969, WAS ON RELATIONS BETWEEN POLICE AND MINORITIES, ESPECIALLY BLACKS. THE FOUR PHASES COMPRISING THE PROGRAM INCLUDED ATTITUDE SURVEY AND CURRICULA DEVELOPMENT, POLICE AND RESIDENT DISCUSSION SESSIONS, ACTION PROGRAMMING, AND PROGRAM IMPLEMENTATION. THIS VOLUME IS ORGANIZED INTO TWO PARTS, THE FIRST OF WHICH PRESENTS CHAPTERS DESCRIBING THE PROJECT'S EARLY DESIGN AND DEVELOPMENTAL EFFORTS AS WELL AS THE APPROACHES EMPLOYED AND THE RESULTS OBTAINED IN EACH OF THE FOUR PROGRAM PHASES. IN PART TWO A NUMBER OF POLICE-COMMUNITY RELATIONS PROGRAMS ARE DESCRIBED. THE FINAL CHAPTER DISCUSSES SOME PRACTICAL ISSUES AND IMPLICATIONS FOR THOSE CONSIDERING IMPLEMENTING OR PRESENTLY ENGAGED IN SUCH COMMUNITY RELATIONS PROGRAMS. THE APPENDIX CONTAINS INTERVIEW SCHEDULES, PROJECT PROPOSALS, POLICE AND RESIDENT ATTITUDE COMPARISONS, AND EVALUATION FORMS.

PROJECT LIBRARY - PUBLICATIONS RECEIVED

January, February, and March, 1978

1. Evaluation for Decisions in Social Programmes, by Mark Thompson, D.C. Heath, London, 1974.
2. Local Government Police Management, edited by Bernard L. Garmire, ICMA, Washington, D.C., 1977.
3. Alternatives to Conventional Criminal Adjudication: Guidebook for Planners and Practitioners, David E. Aaronson, Nicholas N. Kittrie, David J. Saari, NCJRS, G.P.O., November 1977.
4. San Diego Community Profile Final Report, by John E. Boydston and Michael E. Sherry, Police Foundation, August 1975.
5. Patrol Staffing in San Diego (One- or Two- Officer Units), by John E. Boydston, Michael E. Sherry, and Nicholas P. Moetler, Police Foundation, Washington, D.C., 1977.
6. Court Planning and Research: The Los Angeles Experience, by Daniel McGillis and Lake Wise, LEAA, G.P.O., March 1976.
7. Techniques for Project Evaluation (Selected Bibliography), by Guy D. Boston, LEAA, August 1977.
8. How Effective are Your Community Services? (Procedures for Monitoring the Effectiveness of Municipal Services), by Harry P. Hatry, et. al. ICMA, Washington, D.C., 1977.
9. "Direct Deterrence-An Analysis of the Effectiveness of Police Patrol and Other Crime Prevention Technologies," by Lucius J. Riccio, Journal of Criminal Justice, Vol. 2, Pergamon Press, pp. 207-217.
10. High Impact Anti-Crime Program (Executive Summary, Volume 1, National Level Evaluation) by Eleanor Chelimsky, prepared for LEAA by the MITRE Corporation, January 1976.
11. Evaluation Research in Corrections (A Practical Guide) by Stuart Adams for LEAA, March 1975.
12. Policewomen on Patrol (Final Report), by Peter B. Bloch and Deborah Anderson of The Urban Institute, Police Foundation, Washington, D.C., 1974.
13. Project New Pride, Denver, Colorado (An Exemplary Project), by Carol Holiday Blew, Daniel McGillis and Gerald Bryant, LEAA, July 1977.
14. How to Set Up Shop for Use of the Hypercube System, Institute for Public Program Analysis, October 1977.

Publications (continued)

15. Instructional Materials for Learning to Use the Hypercube Programs for the Analysis of Police Patrol Operations, The Institute for Public Policy Analysis, October 1977.
16. Field Evaluation of the Hypercube System for the Analysis of Police Patrol Operations: Executive Summary, The Institute for Public Program Analysis, October 1977.
17. Field Evaluation of the Hypercube System for the Analysis of Police Patrol Operations: Final Report, The Institute for Public Program Analysis, October 1977.
18. The Major Offense Bureau, Bronx County District Attorney's Office New York, An Exemplary Project, LEAA, February 1977.
19. Controlled Confrontation, The Ward Grievance Procedure of the California Youth Authority, An Exemplary Project, LEAA, August 1976.
20. The Dallas Police Legal Liaison Division, An Exemplary Project, LEAA, G.P.O., 1976.
21. Rural Legal Research, Creighton Legal Information Center, Omaha, Nebraska, An Exemplary Project, LEAA, March 1977.
22. Exemplary Projects, 25 as of September 1977, LEAA, G.P.O., 1977
23. A Comprehensive Field Test and Evaluation of an Electronic Signpost AVM System, Volume II: Appendix, by G. W. Gruber, U.S. Department of Transportation, Washington. D.C., August 1977.
24. Designing Statewide Criminal Justice Statistics Systems- The Demonstration of a Prototype, Project Search, Technical Report No. 3, November 1970.
25. Implementing Statewide Criminal Justice Statistics Systems- The Model and Implementation Environment, Technical Report No. 4, Project Search, January 1972.
26. An Experiment to Determine the Feasibility of Holographic Assistance to Fingerprint Identification, Technical Report No. 6, Project Search, June 1972.
27. What Happens After Arrest?, by Brian Forst, Judith Lucianovic, Sarah J. Cox, Institute for Law and Social Research, LEAA, August 1977.
28. Evaluation in the Planning Process, by Nathaniel Lichfield, Peter Kettle, and Michael Whitbread, Pergamon Press, 1975.
29. Issues in Team Policing: A Review of the Literature, National Evaluation Program, LEAA, September 1977.

Publications (continued)

30. Random Digit Dialing, Lowering the Cost of Victimization Surveys, by Alfred J. Tuchfarber and William R. Klecka, University of Cincinnati, Police Foundation, Washington, D.C., 1976.
31. "Finding Out How Programs are Working: Suggestions for Congressional Oversight," by The Comptroller General of The United States, GAO, November 22, 1977.
32. State of the States on Crime and Justice, LEAA, 1974.
33. Proceedings of a Symposium on the Use of Evaluation by Federal Agencies, Volume I, edited by Eleanor Chelimsky, LEAA, MITRE Corporation, March 1977.
34. An Analysis of the Proceedings of a Symposium On the Use of Evaluation by Federal Agencies, Volume II, by Eleanor Chelimsky, LEAA, MITRE Corporation, July 1977.
35. "Crime Analysis in Support of Patrol," Phase 1 Report, National Evaluation Program, LEAA, August 1977. (G.P.O.)
36. "Specialized Patrol Projects," Phase 1 Report, National Evaluation Program, LEAA, January 1977. (G.P.O.)
37. "Halfway Houses," Phase 1 Report, National Evaluation Program, LEAA, January 1977. (G.P.O.)
38. "Citizen Patrol Projects," Phase 1 Report, National Evaluation Program, LEAA, January 1977. (G.P.O.)
39. "Pretrial Release Programs," Phase 1 Report, National Evaluation Program, LEAA, April 1977. (G.P.O.)
40. "Neighborhood Team Policing," Phase 1 Report, National Evaluation Program, LEAA, February 1977. (G.P.O.)
41. "Court Information Systems," Phase 1 Report, National Evaluation Program, LEAA, March 1977. (G.P.O.)
42. "Evaluation of Intensive Special Probation Projects," Phase 1 Report, National Evaluation Program, LEAA, September 1977. (G.P.O.)
43. "Crime Prevention Security Surveys," Phase 1 Report, National Evaluation Program, LEAA, January 1977. (G.P.O.)
44. "Traditional Preventive Patrol," Phase 1 Report, National Evaluation Program, LEAA, June 1976. (G.P.O.)
45. Supplemental Material to The National Institute's Information Machine, Annex A, B, C, and E, The Urban Institute, Washington D.C., 1977.

Publications (continued)

46. The National Institute's Information Machine, A Case Study of the National Evaluation Program, by Joe N. Nay, John S. Scanlon, Lucile Graham, and John D. Waller, The Urban Institute, Washington, D.C., August 15, 1977.
47. The Development and Use of Measurement Models: A Short Feasibility Study Based Upon Four Completed Phase I Reports, (Annex D to The National Institute's Information Machine), The Urban Institute, Washington, D.C.
48. The Cincinnati Team Policing Experiment, A Summary Report, by Alfred Schwartz and Sumner N. Clarren, The Urban Institute, Police Foundation, Washington, D.C., 1977.
49. Managing Investigations: The Rochester System, by Peter B. Bloch and James Bell, The Urban Institute, Police Foundation, Washington, D.C. 1976.
50. The Kansas City Preventive Patrol Experiment, A Summary Report, by George L. Kelling, Tony Pate, Duane Dieckman, and Charles E. Brown, The Police Foundation, Washington, D.C., 1974.
51. "A Preliminary Guideline Manual for Patrol Operations Analysis," Integrated Criminal Apprehension Program, LEAA, U.S. Department of Justice, June 30, 1977.
52. Police Response Time, its Determinants and Effects, by Tony Pate, Amy Ferrara, Robert A. Bowers, and Jon Lorence, Midwest Research Institute, Police Foundation, Washington, D.C., 1976.
53. "Evaluation of Experiments in Policing: How do you Begin?" by Joseph H. Lewis, A Police Foundation Paper, Washington, D.C., December, 1972.
54. San Diego Field Interrogation, Final Report, by John E. Boydston, System Development Corporation, Police Foundation, Washington, D.C., August 1975.
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Evaluating the Effectiveness of One-versus Two-Officer Patrol Units

Recent years have witnessed an increase in the amount of attention paid to logistical problems of urban police patrol. Current areas of inquiry in the police field range over a wide variety of topics, including beat design, dispatching strategies, manpower allocation, preventive patrol, and advanced vehicle-locator technologies, to name a few. Some large-scale social experiments have been designed to aid in this research; most notable among these is the Kansas City Preventive Patrol Experiment (Oct. 1, 1972 - Sept. 30, 1973).

One particular issue that has been the subject of controversial debate among police scientists is a patrol staffing problem: should patrol units be staffed with one or two officers? The obvious implication of a switch to one officer units is, holding manpower constant, a doubling of patrol units. However, it is also believed by many that a one-man patrol car is more dangerous to the police officer than a two-man patrol car.

While this problem is an important one worthy of research, most statements made on the subject have been purely speculative in nature. Little empirical research has been done, and even less analytical attention has been paid to this particular staffing issue. Thus, it is not known what the implications of using one-versus two-officer patrol units are, let alone which of the two methods of patrol should be adopted under different circumstances.

Ed Kaplan, a dual master's degree candidate in Urban Studies and Operations Research at MIT and a research assistant on the project, is planning to attack this problem from an analytical point of view. His approach will utilize simple probabilistic models to study the operational aspects of the two staffing strategies. These models have the ability to highlight some of the salient features of police patrol. In particular, the following performance measures may be modeled for each patrol strategy under various conditions:

- 1) expected area "covered" by patrol;
- 2) expected frequency of patrol;
- 3) visibility of patrol;
- 4) probability of intercepting a randomly occurring crime in progress;
- 5) response time from the nearest patrol vehicle to a randomly occurring incident.

Other important measures must be taken into account, such as:

- 6) probability of officer injury;
- 7) patrol unit workload;
- 8) comparative costs.

The insights gained from these models may be illustrated using actual data from patrol experiments. In particular, the recent Police Foundation study Patrol Staffing in San Diego: One-or Two-Officer Units will be called upon to serve as a data source for the models. It is hoped that through careful analysis, expectations of comparative strategic performance under varying circumstances may be formalized. Such expectations may then be utilized by police administrators to aid in their policy decisions with respect to one-versus two-officer patrol staffing issues.