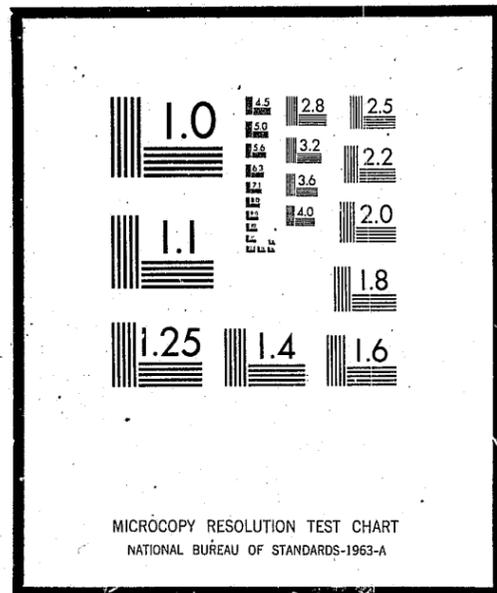


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PERFORMANCE MEASURES FOR THE ALLOCATION
OF POLICE PATROL FORCES:
ANNOTATED BIBLIOGRAPHY

compiled by
Suzanne Young

Working Paper

"Innovative Resource Planning in Urban Public Safety Systems"

National Science Foundation Grant GI38004
Research Applied to National Needs
Division of Social Systems and Human Resources

Operations Research Center
Massachusetts Institute of Technology
Cambridge, Massachusetts 02139

FOREWORD

The research project, "Innovative Resource Planning in Urban Public Safety Systems," is a multidisciplinary activity, supported by the National Science Foundation, and involving faculty and students from the M.I.T. Schools of Engineering, Architecture and Urban Planning, and Management. The administrative home for the project is the M.I.T. Operations Research Center. The research focuses on three areas: 1) evaluation criteria, 2) analytical tools, and 3) impacts upon traditional methods, standards, roles, and operating procedures. This report is associated primarily with category 1, in which current methodologies for measuring the performance of public safety systems are reviewed and new approaches explored. This preliminary annotated bibliography is issued at this time in order to provide a useful source of references to those interested in performance measures and resource allocation in urban police patrol forces and to solicit comments and suggested additions from readers. In a field of research as new as police patrol, it is especially difficult to be aware of all of the recent literature, much of which appears as technical reports, consultant's reports, and informal working papers; for this reason we would be especially appreciative of suggested additions, to be incorporated in our final report.

The work reported herein was supported by the National Science Foundation under grant GI38004.

Richard C. Larson
Principal Investigator

Adams, R., S. Kolodney, R. Marx, and P. Wormeli, Operational Analysis of Police Field Force Command and Control in San Jose, prepared for San Jose Police Department by Sylvania Electronic Systems-Western Division, Mountain View, CA, August 1968

Focusing on the uniformed patrol division, this report analyzes the command and control operations of the San Jose Police Department. The data used were the total dispatch records for the month of March 1968. The command control function was analyzed in three components: receipt of the complaint, selection and dispatching of the field unit, and field unit activity.

American Bar Association Project on Standards for Criminal Justice, Standards Relating to the Urban Police Function, recommended by the Advisory Committee on the Police Function, Frank J. Remington (Chairman), Baltimore, MD, June 1973

This report summarizes the findings and recommendations of the ABA's Advisory Committee on the Police Function.

Anderson, Dale W., Seaside Police Department Crime Prevention Program: Phase One/Burglary, Seaside Police Department, CA, 1973

An in-depth study of burglaries in Seaside, CA, preceded the development of a detection and prevention system which relied on probability instead of manpower. The report is a good example of methods used by a small police department with limited access to a computer. Funded by the California Council on Criminal Justice, the project was directed by Captain Anderson of the Seaside Police Department.

Arlington, MA, Police Department, Police Technical Assistance Service for the Town of Arlington, Massachusetts, Westinghouse Justice Institute, Boston, 1973

An evaluation focusing on the patrol function, this survey was prepared as a guideline for the Town Manager and the Chief of Police. Included is a summary of recommendations.

Ashworth, Ray, "Planning and Installing a Better Patrol System in a Police Department," The Police Yearbook, 1940, Proceedings of the Forty-Sixth Annual Conference of the International Association of Chiefs of Police, San Francisco, CA, September 1939.

In this paper, Police Chief Ashworth explains the redistribution of his San Antonio patrol force on a need-for-service basis.

Aspden, P. and M.L. Chambers, Determination of Optimal Police Patrol Deployments, paper presented at the International Conference of the Institute of Management Sciences, London, England, 1970

Avison, N.H., "Criminal Statistics as Social Indicators," Social Indicators and Social Policy, Andrew Shonfield and Stella Shaw, eds., Heinemann Educational Books, London, England, 1972

This paper discusses criminal statistics as indicators of trends in society. Studying British Criminal Statistics, the author comments on the validity and significance of these data as barometers of social morality.

Baran, P., "Some Caveats on the Contribution of Technology to Law Enforcement," The Rand Corporation paper P-3550, Santa Monica, CA, April 1967

Research and development in newer and better technological aids and techniques for law enforcement is desirable to cope with the increased mobility of the criminal, but caution and adequate safeguards are needed to ensure that technology is not misused to create an oppressive police state. Probably the greatest long-range danger is the excessive accumulation of police power by mere access to information. Tight restrictions should also be placed upon the development of new equipment and its distribution. Above all, institutional safeguards are needed to insure that haste is not confused with progress. (The Rand Corporation, Selected Rand Publications: Public Safety)

Bates, Timothy, Police Deployment: A Case Study of New York's Fourth Platoon, Institute of Politics, John F. Kennedy School of Government, Harvard University, Cambridge, MA, (nd)

Beck, R., The Application of a Teleprinter System to Law Enforcement Communications, Phoenix Police Department, AZ, 1970

The experimentation with teleprinters discussed in this report utilized a squad of 10 patrol units on a 24-hour basis for a period of 30 days in a geographical area covering approximately 15 square miles. Evaluation considered officers' subjective attitudes and opinions, as well as the technical performance of the equipment. The report's value is enhanced by a rather thorough history and description of the dispatch-patrol system in Phoenix, indicating for instance a rather novel procedure for assigning two patrol units to each beat. R. Beck was the project director. (RCL, Urban Police Patrol Analysis)

Bennett, Wayne and John R. DuBois, The Use of Probability Theory in the Assignment of Police Patrol Areas, Edina Police Department, MN, (nd)

Bergstrom, K.R., The Fluid Patrol System, Traffic Police Paper prepared for Administration Training Program, Traffic Institute at Northwestern University, Chicago, IL, 1966

This report was written by Bergstrom while he was a sergeant of the Tucson (AZ) Police Department. It describes a patrol allocation method (fluid patrol) that does not use traditional fixed sector boundaries, but that allocates personnel dynamically, as the need develops. (RCL, Urban Police Patrol Analysis)

Berkley, George E., The Democratic Policeman, Beacon Press, Boston, MA, 1969

Bingham, Theodore, "How to Give New York the Best Police Force in the World," The North American Review, Vol. 187, May 1908

NY Police Commissioner Bingham offers his views of particular requirements for the Department, among them are having one patrolman for every 400 residents and at least 10 years for term of Police Commissioner.

Bloch, Peter B., "Evaluation Design: Use of Women in Patrol in D.C. Police Department," (working draft) The Urban Institute/Police Foundation, Washington, DC, January 1972

This is a proposal for the Police Foundation to evaluate the DC Police Department's experiment of using women for uniformed patrol duty. Evaluation techniques are discussed.

Bloch, Peter B., Neighborhood Team Policing, The Urban Institute, Washington, DC, 1973

This project will develop a model program for neighborhood team policing. The product will be in the form of a prescriptive program package for use by police administrators who presently have or who are interested in developing a neighborhood team policing program. The prescriptive program package will contain a summary and review of current neighborhood team policing programs, detailed guidelines for implementing the model program and steps which can be taken to improve existing team policing operations. (Cheilik and Perlaky, 1970, NILECJ project 72-TA-99-0023)

Bloch, Peter B. and David I. Specht, Evaluation of Operation Neighborhood, The Urban Institute, Washington, DC, December 1973

This report is an evaluation study of New York City's experiment with neighborhood team policing. Included is a discussion of the goals of the neighborhood police teams and conclusions and recommendations of the Urban Institute.

Bloch, Peter B., Equality of Distribution of Police Services--A Case Study of Washington, D.C., The Urban Institute, Washington, DC, February 1974

This paper examines a variety of measures which may be used to determine whether police services are being distributed equally to two sections of the District of Columbia. The approach developed for this study is believed applicable to most large cities. Measures that are discussed include input measures, which relate the number of police officers to the demand for their services, and effectiveness measures, which indicate whether police are accomplishing their objectives of controlling crime and providing police services. In the absence of sufficient accurate effectiveness measures, the paper infers police effectiveness from some imperfect indicators of effectiveness. (author)

Blumstein, A. and R.C. Larson, "A Systems Approach to the Study of Crime and Criminal Justice," in Operations Research for Public Systems, P.M. Morse and L.S. Bacon, eds., The MIT Press, Cambridge, MA, 1967.

This is an overview of some of the authors' work while they were members of the Science and Technology Task Force of the President's Commission on Law Enforcement and Administration of Justice. (RCL, Urban Police Patrol Analysis)

Blumstein, A., L. Curtis, J. Kiernan, R.C. Larson, J. Navarro, M. Schankman, J. Taylor and E. Webb, A National Program of Research, Development, Test, and Evaluation on Law Enforcement and Criminal Justice, prepared for Law Enforcement Assistance Administration, U.S. Department of Justice, at the Institute for Defense Analyses, Arlington, VA, 1968

This report was funded by the U.S. Justice Department to follow up on the general recommendations of the Science and Technology Task Force. It details ongoing research projects and outlines promising future projects. (RCL, Urban Police Patrol Analysis)

Blumstein, A. and R.C. Larson, "Models of a Total Criminal Justice System," Operations Research, Vol. 17, No. 6, 1969

Brinton, John H., Irving Slott and Michael Janoff, Analysis and Evaluation of Philadelphia Police Department Operations, Vols. I and II, The Franklin Institute Research Laboratory, Philadelphia, PA, March 1969

Bristow, Allen P., Effective Police Manpower Utilization, Charles C Thomas Publisher, Springfield, IL, 1969

Bryant, J. W., M.L. Chambers, and D. Falcon, Patrol Effectiveness and Patrol Deployment, report on Home Office Project in Lancaster Division of Lancashire Constabulary, University of Lancaster, Department of Operational Research, Lancaster, England, 1968

These authors have been formulating some of the patrol problems related to the Lancaster Division of Lancashire Constabulary. One of their models, the readiness model, may be of interest. Apparently they observed in the Lancaster Division that a large fraction of time that a patrol unit was unavailable was caused by patrol-initiated activities. Thus, their readiness model, which predicts unavailability probability, incorporates a parameter indicating the rate at which a patrolling unit will engage in patrol-initiated activities. (RCL, Urban Police Patrol Analysis)

Buby, Grant H., "Use of One-Man Police Cars in Large Cities," Public Management, August 1956

Budnick, Frank S., The Crime-Correlated Area Model: An Application in Evaluating Intensive Police Patrol Activities, University of Rhode Island, NTIS Report PB-220 716, Springfield, VA, October 1972

This report presents a discussion of the development and potential uses of a statistical model designed to estimate crime levels in one section of a city from the knowledge of the levels in statistically similar areas elsewhere in the city. The author postulates that since there are a number of crime-related influences which operate in a city as a whole, the level of crime in one area of the city might be the function of the crime level within another area. The estimates of crime derived from the "crime correlated area model" can be used as a base line against which to evaluate in a retrospective fashion the effect of different patrol strategies. (author)

Bussard, David L., Los Angeles Police Department Operations Simulation, Hughes Aircraft Co., Fullerton, CA, 1969

Campbell, Harmon M., John J. Flynn, and Elton Lower, Final Report of the Civil Service Commission: City of Chicago Police Investigation 1911-1912, Chicago, IL, March 1912

This is a comprehensive report of crime conditions and the Police Department in Chicago in 1912. The survey was authorized by Mayor Harrison and includes recommendations of the commission.

Campbell, James S., Joseph R. Sahid and David P. Stang, Law and Order Reconsidered, Report of the U.S. Task Force on Law and Law Enforcement to the National Commission on the Causes and Prevention of Violence, Praeger Publishers, New York, 1970

Capaul, J., N. Heller and E. Meisenheimer, "A Stochastic Model for Allocating Police Patrol Units to Districts which Reflects each District's Rates of Injury, Property Loss, and Fear," paper presented at 38th National Meeting of the Operations Research Society of America, Detroit, MI, October 28-30, 1970

St. Louis data from 1967 are used with a simulation model to illustrate how queuing concepts applied to resource allocation can be adapted to incorporate the relative importance of various types of calls. (RCL, Urban Police Patrol Analysis)

Carlin, J.L. and C.L. Moodie, "Comparison of Some Patrol Methods," Police, Vol. 16, No. 12, August 1972

Carte, Gene E., "Changes in Public Attitudes Toward the Police: A Comparison of 1938 and 1971 Surveys," Journal of Police Science and Administration, Vol. 1, No. 2, Northwestern University School of Law, Chicago, IL, 1973

This paper discusses two surveys on what the public expects from police. Results show that significant changes in the way the public views their police have occurred over the years.

Carte, Gene E., "August Vollmer and the Origins of Police Professionalism," Journal of Police Science and Administration, Vol. 1, No. 3, Northwestern University School of Law, Chicago, IL, 1973

A good history about the crusader for "professional policing" with discussion on the national trends that were affecting municipal employees in the early 1900's.

Casey, Patrick J., Determining Police Patrol Car Requirements by Computer Simulation, Master's Thesis, Arizona State University, Flagstaff, January 1968

This is a preliminary simulation study of the police patrol force. (RCL, Urban Police Patrol Analysis)

Chaiken, Jan M., The Number of Emergency Units Busy at Alarms Which Require Multiple Servers, New York City-Rand Institute, Report R-531-NYC/HUD, New York, March 1971

Calls for service arrive at an infinite-server queue according to a mixture of Poisson processes. Service for each process occurs in a number of independent stages; stages are identified by the number of emergency units busy serving the call. Assuming arbitrary finite mean-service-time distributions, the distribution of the number of busy units at any time is determined, and the approach to a steady-state distribution is proved. (The Rand Corporation, Selected Rand Publications: Public Safety)

Chaiken, Jan M. and Richard C. Larson, Methods for Allocating Urban Emergency Units, Rand Corporation Report R-680-HUD/NSF, Santa Monica, CA, May 1971

This report is a survey of ongoing research on allocation in municipal emergency service systems, with the emphasis on police patrol units and fire engines and ladders. In addition, it attempts to provide a general structure for a number of allocation problems commonly shared by many urban emergency service systems. (RCL, Urban Police Patrol Analysis)

Chaiken, Jan M., Allocation of Emergency Units: Response Areas, Rand Corporation Paper P-4745, Santa Monica, CA, December 1971

The average travel time for emergency units such as fire engines, ambulances, and police patrol cars, which respond to spatially distributed incidents, is not necessarily minimized by always dispatching the units closest to each incident. Methods are described for changing response areas to reduce both average travel time and the imbalance of workload among units. (Rand Corporation, Selected Rand Publications: Public Safety)

Chaiken, Jan M., Michael W. Lawless and Keith A. Stevenson, Impact of Police Activity on Crime: Robberies on the New York City Subway System, New York City-Rand Institute Report R-1424-NYC, New York, January 1974

This report presents and analyzes an 8-year history of subway robbery in New York, which has unique qualities for establishing the relationship between police activity and crime rates. Robbery incidence patterns are reviewed, along with characteristics of such crimes and the men who commit them. Many of the findings are applicable to some felony crimes other than robbery. (authors)

Chapman, Samuel G., Police Patrol Readings, 2nd ed., 2nd printing, Charles C Thomas Publisher, Springfield, IL, 1972

An updated version of the 1964 edition, this book contains numerous articles concerning various aspects of the police patrol force and presents an excellent tour of more traditional approaches to police patrol problems. (RCL, Urban Police Patrol Analysis)

Cheilik, Philip and Sheila Perlaky, The Institute's Program on Police Patrol and Its Relation to Previous Work in the Field, National Institute of Law Enforcement and Criminal Justice, Center for Criminal Justice Operations and Management, Washington, DC, June 1970

The report discusses what has--or has not--been done in studying police patrol activity and presents a comprehensive bibliography on police patrol.

Chelst, Kenneth, An Interactive Approach to Police Sector Design, (working paper WP-03-74) Massachusetts Institute of Technology Operations Research Center, Cambridge, MA, March 1974

Chelst formulates interactive computer models to aid a police planner design patrol sectors which represent a good balance among often conflicting goals such as response times and workloads. The report contains alternative sector designs with information about related performance measures such as workloads, response times, intersector dispatches, and sector size. This paper is a product of the "Innovative Resource Planning in Urban Public Safety Systems" project, supported by National Science Foundation's Division of Social Systems and Human Resources, Research Applied to National Needs.

Chicago Police Department, One-Man Patrol Cars, Chicago, IL, 1963

Chicago Police Department, Manpower Distribution: Patrol Division, prepared by the Planning Division, Chicago, IL, December 1965

This paper explains the method and reasoning behind allocating manpower to the reorganized Patrol Division "in sufficient number to provide approximately four hours for preventive patrol to each unit per tour of duty."

Chicago Police Department, Quarterly Progress Reports, Operations Research Task Force, Chicago, IL, 1968, 1969

A. Bottoms, E. Nilsson, and D. Olson directed the work of the Chicago Police Department Operations Research Task Force for 12 months during 1968, 1969. The work was federally funded and was reported in quarterly progress reports. (RCL, Urban Police Patrol Analysis)

Chicago Police Department, Allocation of Resources in the Chicago Police Department, Vols. I and II, Chicago, IL, November 1969

Chicago Police Department, Allocation of Resources in the Chicago Police Department, Report of the Operations Research Task Force, Chicago, IL, March 1972

Chino (CA) Police Department, Automated Status Reporting Police Communications Study: Final Report, Applied Technology, NTIS Report PB-204 538, Springfield, VA, August 1971

This is the final report for a project to eliminate the problem of congested radio traffic that delayed or interfered with communications of field officers and the dispatcher in the Chino Police Department. The project developed an automated status reporting system that provided for the transmission of basic messages digitally.

Christian, Charles, A Brief Treatise on the Police of the City of New York, by A Citizen, Southwick and Pelsue, New York, 1912

Thoughts and observations of "A Citizen" in New York, this paper is a good document of law enforcement conditions in the city at the turn of the century. Christian also offers some suggestions for reform and some theories for dealing with "those dangerous and incorrigible characters."

Cleveland Will Survive and Thrive: Master Plan, 1972, Cleveland Impact Program, OH, 1972

Cohen, Bernard and Jan M. Chaiken, Police Background Characteristics and Performance, New York City Rand Institute, D.C. Heath and Company, Lexington, MA, 1973

Background characteristics of officers who entered the New York City Police Department in 1957 were compared with available measures of their performance over 11 years. The study found that the strongest predictors of performance are available only after the officer has been on the force for several months; these are his grades in the police academy and his probationary evaluation. Includes recommendations to the NYCPD. (Rand Corporation, Selected Rand Publications: Public Safety)

Colton, Kent W., "Use of Computers by Police: Patterns of Success and Failure," Urban Data Service, Vol. 4, No. 4, April 1972

This paper addresses three basic issues: (1) how and why police departments use computers, (2) the benefits and costs of these computer applications, and (3) characteristics and approaches that seem important in influencing the effective use of computers by police.

Colton, Kent W., "The Dedicated Police Computer--Does It Really Make a Difference?" The Bureaucrat, Vol. 1, No. 4, Winter 1972

Colton explores the question of whether the police department or the city should own and control the use of the computer. Included is a brief discussion of a 1971 ICMA questionnaire, designed by Colton, sent to 498 police departments around the country.

Cordrey, J.B., Crime and Community, Crime Prevention Policies, Community Research Inc., NTIS Report PB-223 450, Springfield, VA, January 1973

The contents of this project report concern estimating the reduction of five crimes by changing selected community characteristics, identifying crime prevention programs to achieve this desired crime reduction, and determining the costs of the preventive programs. The crimes are assault, robbery, burglary, larceny and auto theft. Suggested program areas include increasing the number of home owners, increasing income levels, and increasing the number or effectiveness of drug programs.

Crabtree, Charles T., Investigation Control and Management System, Department of Public Safety, City of Sunnyvale, CA, October 1973

Investigation, Control and Management (ICAM) is an improved, practical operational tool for measuring, monitoring and managing the productivity of the police manpower assigned to the work of apprehending criminals. ICAM is currently in operation in the Department of Public Safety, Sunnyvale, CA--the city that has developed and tested the technique. This report describes ICAM and its use. (author) Captain Charles T. Crabtree was project director.

Crawley, F.J., "Decentralization and the Police Box System," The Police Journal, Vol. I, London, England, 1928

Crowther, R.F., The Use of Computer System for Police Manpower Allocation in St. Louis, Department of Police Administration, Indiana University, Bloomington, June 1964

Crowther, R.F., Technical Notes on the Police Manpower Resource Allocation System, Systems Science Corporation, Silver Spring, MD, November 1965

Cruse, Daniel and Jesse Rubin, Determinants of Police Behavior, Psychiatric Institute Foundation, NTIS Report PB-220 539, Springfield, VA, 1972

Researched at the Miami Police Department, this report concerns the examination and identification of factors which determine variations in police patrol behavior. Factors included stress, fatigue, type of call, citizen behavior, neighborhood, shift and day of week. Included are recommendations for recruit training and manpower deployment to reduce or alleviate undesirable behavior or anxiety.

Day, Frank D., "The Use of One-Man vs. Two-Man Patrol Cars," Journal of Criminal Law and Criminology, Vol. 46, 1955-56

Dean, Burton V., Arnold Reisman, Andrew Daughety, Ronald Ehresman, Vaughn Huckfeldt, Marylou Kiley, and Coskun Pekmezciyar, A Preliminary Systems and Allocation Study of the Cleveland Police Department, Case Western Reserve University School of Management, Cleveland, OH, January 1970

In an Operations Research approach, Dean et al. develop a "highly aggregated (macro) systems description of the Cleveland Police Department." In a second section is developed a "feasible solution methodology to the problem of allocation of police patrol forces in Cleveland."

Detroit Police Department, Accelerating the Allocation of Technology and Law Enforcement, Wayne State University, Detroit, MI, 1969

Detroit Police Department, Resource Allocation System, Volume II, Touche-Ross & Company, Detroit, MI, June 1972

This report summarizes the results of an evaluation of the Detroit Police Department. It also includes recommendations for more effective manpower and vehicle utilization.

Detroit Police Department, Emergency Communications and Information Systems: Highlights and Status, Detroit, MI, October 1973

This report describes innovative changes and equipment effecting the DPD's Communications and Information Systems.

Dowas, A., "Round Table on Allocation of Resources in Law Enforcement," American Economic Review, Vol. 59, May 1969

Eastman, George D. and Esther M. Eastman, eds., Municipal Police Administration, International City Management Association, Washington, DC, 1969

This is a classic text in police administration, prepared for police administrators, educators and students. Focusing on general aspects of police organization and management, it provides few quantitative guidelines to assist police administrators in improving operations. However, it provides a comprehensive treatment of issues pertaining to organizational principles, changes in police service during the 1960's, general police functions, police-community relations, personnel management, and certain auxiliary services. (RCL, Urban Police Patrol Analysis)

Elliott, J.F., "Concept of an Offensively Deployed Police Force," Police, September/October 1968

Elliott, J.F., "Random Patrol," Police, November/December 1968

Elliott, J.F., Crime Control Team and the Police: How Effective Are They, General Electric Electronics Laboratory, Syracuse, NY, 1969

Elliott, J.F. and J.P. O'Connor, "Detection and Interception Capability of One- and Two-Man Patrol Units," Police, November/December 1969

Elliott, J.F. and T.J. Sardino, "Experimental Evaluation of the Crime Control Team Organization Concept," Police, May/June 1970

Elliott, J.F. and Thomas J. Sardino, Crime Control Team: An Experiment in Municipal Police Department Management and Operations, Charles C Thomas Publisher, Springfield, IL, 1971

This book examines present police goals, strategy and organizational structure. It then describes an offensive deployment scheme. The Syracuse (NY) Police Department was used for a preliminary study. Included are details of how a crime control team experiment can be implemented.

Elliott, J.F. and T.J. Sardino, Time Required to Commit a Crime, General Electric Electronics Laboratory, Syracuse, NY, June 1971

Elliott, J.F., Interception Patrol, Charles C Thomas Publisher, Springfield, IL, 1973

Fath, A. Frederick and Joseph T. Muldoon, Callboxes to Computers-- A Computerized Emergency Dispatch System Specification for the Tacoma-Pierce County Law Enforcement Communication Center, Boeing Aerospace Company, NTIS Report PB-224 073, Springfield, VA, September 1973

This is a descriptive report of a comprehensive, multi-departmental, inter-agency communications system, developed for the City of Tacoma and Pierce County.

Federal Bureau of Investigation, Crime in the United States: Uniform Crime Reports, Vols. 1958-1973, U.S. Department of Justice, Washington, DC

Feeney, Floyd, The Prevention and Control of Robbery, University of California, Davis, 1973

Fennessy, E.F., et al, Resource Allocation in Three Municipal Police Agencies, Final Report to the New Jersey SLEPA, The Travelers Research Center, Inc., Hartford, CT, October 1969

Fisk, Donald M., The Indianapolis Police Fleet Plan, The Urban Institute, Washington, DC, October 1970

There are two purposes to this report, the first of which is to provide information for evaluating the Indianapolis Police Fleet Plan in ways that are useful to the city and other local governments. The second purpose is to illustrate an approach that cities can use to evaluate their ongoing activities. (author)

Flynn, John J., History of the Chicago Police, Police in America series, Arno Press, NY, 1971

Written in 1887, this document describes the political battles and civil rights aggravating law enforcement problems in early Chicago. Included also are descriptions of the Chicago patrol force, the early signal system and the introduction of patrol wagons.

Folley, Vern L., Police Patrol Techniques and Tactics, Charles C Thomas Publisher, Springfield, IL, 1974

Divided into four broad areas--Criminal Patrol Activities, Traffic Patrol Activities, Juvenile Patrol Activities, and Services and Assistance Patrol Activities--this book is designed to improve police patrol services within the municipal police organization. Standard approaches to frequently-encountered situations are offered for patrol officers and students who wish to increase their professional knowledge and effectiveness. (Charles C Thomas Publisher blurb)

Forst, Brian E., Crime Prediction Within and Between Police Jurisdictions, paper presented at the 44th meeting of Operations Research Society of America, San Diego, CA, November 1973

This paper reports an investigation of two separate bodies of recent data to explain variation in crime rates. The first body consists of observations at the state level; the second at the census tract level. Taken together, these data enable inferences as to the relationship between crime and both demographic and policy variables. The policy variables analyzed include police expenditures, probability that an offender will go to prison, average term in prison, and quality of prison. The findings are compared with earlier work, and the policy implications are discussed. (author)

Fosdick, Raymond B., American Police Systems, The Century Company, NY, 1920

A good commentary on policing in the early 1900's, this book discusses the need for equitable manpower deployment. The author recommends using the automobiles, the booth system and signal devices as the latest innovations for patrol duty. He also sites Vollmer's Berkeley Police Department as a progressive example of patrol techniques.

Fremont (CA) Police Department, Use of Manpower in a City Police Force, Social Development Corporation, January 1973

Using the Fremont Police Department, Social Development Corporation studied this medium-sized department to see how its manpower is used and to examine and recommend alternative manpower used for improved services.

Furr, R.P. and W.O. Dwyer, Patrol Car Selection--A System-Analysis Approach, Charles C Thomas Publisher, Springfield, IL, June 1972

Gammage, Allen Z. and Stanley L. Sachs, Police Unions, Charles C Thomas Publisher, Springfield, IL, 1972

In this book, the authors give a history of the union movement in the U.S. in general and discuss police unions specifically. Police strikes in Vallejo (1969) and Antioch (1970), CA, are examined. Conclusions and recommendations are included.

Gamire, B.L., Future Model for the Miami Police Department, International Association of Chiefs of Police, FL, November 1970

Gass, Saul I., "On the Division of Police Districts into Patrol Beats," Association for Computing Machinery, Proceedings of the 23rd Conference, Las Vegas, NV, 1968

Gass applies a heuristic algorithm first used for political redistricting to divide police districts into patrol beats (sectors). The suggested method is applied to the city of Cleveland, apparently resulting in a very satisfactory beat structure. (RCL, Urban Police Patrol Analysis)

Gems, S. and R. Datz, National Impact Program Evaluation: Example Evaluation Components, NTIS Report, Springfield, VA, September 1972

Gifford, Bernard R., Analysis and Urban Government: Experience of the New York-Rand Institute-II, NTIS Report AD-768 012, Springfield, VA, April 1972

This paper discusses the New York City-Rand Institute--its beginnings, its work and its methods of operation.

Gourley, G.D. and A.P. Bristow, Patrol Administration, Charles C Thomas Publisher, Springfield, IL, 1961

This is a comprehensive text on developments in the patrol force including discussions, experiments and innovations throughout police history. Included are the authors' recommendations for effective and efficient manpower distribution.

Gourley, G.D., Effective Police Organization and Management: Specialization vs. Generalization, California State College at Los Angeles, October 1966

Gourley, G.D., Effective Police Organization and Management: Final Report, California State College at Los Angeles, October, 1966

Grafer, Elmer D., American Police Administration, The Macmillian Company, NY, 1921

This is one of the early texts focusing on police organization, personnel management, and supervision and control. The chapter on patrol provides interesting historical insights: Vollmer's "novel system" of automobile patrol in Berkeley, CA, is cited as a "radical departure from the ordinary methods of patrol," indicating "that in some cities at least, new methods are being tried and attempts are being made to lift police service to a higher state of efficiency." (p. 133) Footpatrol on linear or "straightaway" beats was the most prevalent type of patrol at that time. (RCL, Urban Police Patrol Analysis)

Greenwood, Peter W., An Analysis of the Apprehension Activities of the New York City Police Department, New York City-Rand Institute Report R-529-NYC, September 1970

This report describes a set of criteria for evaluating apprehension efforts that are consistent with the overall objectives of the criminal justice system, and the application of these criteria to existing programs. Focus is on programs leading to the arrest of Part I offenders: homicide, rape, robbery, assault, burglary, grand larceny, auto theft. "Probability of arrest" was adopted as the measure of program effectiveness. (Rand Corporation, Selected Rand Publications: Public Safety)

Grizzle, Gloria A., Predicting the Crime Pattern as a Guide to Deploying Manpower, Mecklenburg Criminal Justice Pilot Project, Chapel Hill, NC, August 1971

Outlines and raises questions about an approach to police manpower allocation which takes advantage of the unique knowledge of the officer in the field. (Virginia Rolett, "Annotated List of Publications," The Mecklenburg Criminal Justice Pilot Project)

Grizzle, Gloria A., Using Time Series Analysis to Evaluate the Impact of Team Policing, Mecklenburg Criminal Justice Pilot Project, Chapel Hill, NC, December 1973

Discusses issues involved in deciding whether time series should be used as the basis for evaluating the impact of team policing and concludes that the results will not be clear-cut as they would be if experimental and control groups were used. (Virginia Rolett, "Annotated List of Publications," The Mecklenburg Criminal Justice Pilot Project)

Hahn, Harlan, ed., Police in Urban Society, Sage Publications, Beverly Hills, CA, 1970

This text contains various articles on police functions, especially concerning community attitudes and minority relations.

Hauser, Norbert, Gilbert R. Gordon and Julius Surkis, Computer Simulation of a Police Emergency Response System, Polytechnic Institute of Brooklyn, NY, September 1969

This report describes three simulation programs which emphasize police communications and response. Data and records were provided by the New York City Police Department. The programs indicate how computer simulation can be used in resource allocation and are not meant as completed programs for immediate implementation.

Hearle, E.F.R., Can EDP be Applied to All Police Agencies?, Rand Corporation Paper P-2454, Santa Monica, CA, October 1961

An attempt to determine the value of electronic data processing in police agencies. The author discusses the nature of the data-processing job facing law enforcement agencies, the equipment available now and in the future for handling this job, and what police departments can and should do now about EDP. (Rand Corporation, Selected Rand Publications: Public Safety)

Heller, Nelson B., Proportional Rotating Schedules, Ph.D. Dissertation, University of Pennsylvania, Philadelphia, 1969

Heller devises some easily implemented algorithms for assigning patrolmen to tours in such a way that all patrolmen are treated equally and that the total assignment at any time equals a desired prespecified number. (RCL, Urban Police Patrol Analysis)

Heller, N.B., 1967 Service Time Histograms for Police Patrol Activities in St. Louis, St. Louis Metropolitan Police Department Computer Center, MO, 1969

This valuable reference provides histograms for the total time spent by a patrol unit on a call for service (including travel time, on-scene service time and any additional time spent for report writing, arrest processing, and so forth) for each of 145 types of calls. It provides similar histograms for various types of patrol-initiated activities that remove the patrol unit from dispatchable status and that are reported to the dispatcher; these include building check, car check, meal, notification to a citizen, and auto repair. (RCL, Urban Police Patrol Analysis)

Heller, N.B. and R.E. Markland, "A Climatological Model for Forecasting the Demand for Police Services," Journal of Research in Crime and Delinquency, Vol. 7, 1970

This paper provides a methodology for determining correlations between rates of calls for service and meteorological variables such as average daily temperature and hours of daylight. Data from St. Louis, Chicago and Detroit indicate high correlations that may prove beneficial to police planners for scheduling patrol deployments and officer's vacations. (RCL, Urban Police Patrol Analysis)

Heller, N.B., R.E. Markland and J.A. Brockelmeyer, Partitioning of Police Districts into Optimal Patrol Beats Using a Political Districting Algorithm: Model Design and Validation, paper presented at the Operations Research Society of America meeting, Anaheim, CA, 1971

As the same criteria are important to police districts as political districting the algorithm due to Garfinkel and Nemhauser (1970) was modified. The maximum deviation from the average of any district's work-load is minimized. As in a similar approach by Gass (1968) several demand for service variables were used. The empirical test of the algorithm is to police districts in St. Louis. (A.C. Lea, Location-Allocation Systems: An Annotated Bibliography, University of Toronto Department of Geography)

Heller, Nelson B., Computerized Scheduling of Police Manpower, Metropolitan Police Department, St. Louis, MO, 1973

This project will develop a flexible, generalized computer program for the scheduling of field personnel. The program will perform a mass scheduling of all police with patrol functions. Scheduling will be based on the demands for service. The resulting schedule should prevent overload conditions as well as equalize work loads in the field units of police departments. (Cheilik and Perlaky, 1970, NILECJ project 72-018)

Hirsch, Gary B. and Lucius J. Riccio, "Measuring and Improving the Productivity of Police Patrol," Journal of Police Science and Administration, Vol. 2, No. 2, Northwestern University School of Law, Chicago, IL, 1974

This paper deals with a set of measures that address themselves directly to goals, objectives, and activities of the patrol force, thereby providing a practical guide to the police manager for productivity improvement. (authors)

Holzer, Marc, "Police Productivity: A Conceptual Framework for Measurement and Improvement," Journal of Police Science and Administration, Vol. 1, No. 4, Northwestern University School of Law, Chicago, IL, 1973

This paper presents a conceptual overview of police productivity. One of the author's objectives was to translate the general productivity theories into terms that a police administrator can gear to his own special policing situation.

Institute of Criminal Justice and Criminology, Deterrence of Crime In and Around Residences, papers presented at the Fourth National Symposium on Law Enforcement Science and Technology, University of Maryland, May 1-3, 1972, NILECJ Monograph, Washington, DC, June 1973

This monograph discusses the results of a series of studies that have examined the problem of controlling residential crime. Topics discussed include preventative measures such as building codes, architectural design, police patrol, and citizen education. In addition there is a discussion of burglary as a pattern of behavior.

Institute of Criminal Justice and Criminology, The Change Process in Criminal Justice, papers presented at the Fourth National Symposium on Law Enforcement Science and Technology, University of Maryland, May 1-3, 1972, NILECJ Monograph, Washington, DC, June 1973

This monograph considers the process of criminal justice change, with emphasis on the interchange between managers of change and research organizations or other groups attempting to act as "change agents." A discussion of two major LEAA attempts to introduce systematic change--the Pilot and Impact Cities Programs--is included. (Martin B. Danziger, Assistant Administrator, NILECJ)

Institute of Criminal Justice and Criminology, Innovation in Law Enforcement, papers presented at the Fourth National Symposium on Law Enforcement Science and Technology, University of Maryland, May 1-3, 1972, NILECJ Monograph, Washington, DC, June 1973

This monograph considers the practical problems of introducing change into law enforcement agencies. Also discussed is the concept of demonstration projects as a strategy for inducing change in police institutions. (Martin B. Danziger, Assistant Administrator, NILECJ)

Institute of Criminal Justice and Criminology, Research on Street Crime Control, papers presented at the Fourth National Symposium on Law Enforcement Science and Technology, University of Maryland, May 1-3, 1972, NILECJ Monograph, Washington, DC, June 1973

International Association of Chiefs of Police, Chicago Survey Report, Chicago Police Department, IL, June 1970

This report contains the findings and recommendations resulting from an IACP evaluation of the Chicago Police Department.

International City Managers' Association, The Municipal Yearbook, Vols. 1958-1973, Chicago, IL

International City Managers' Association/The Urban Institute, Proposed Public Safety Effectiveness and Productivity Measurement for the City of St. Petersburg (discussion draft), Washington, DC, July 1973

The ICMA and The Urban Institute examine the Public Safety sector of St. Petersburg in terms of its effectiveness and productivity. This report contains their findings and recommendations.

Jarvis, James P., Optimal Dispatch Policies for Urban Server Systems, Technical Report TR-02-73, Massachusetts Institute of Technology, Operations Research Center, Cambridge, MA, September 1973

This report applies Markov decision theory to the choice of dispatch policies to minimize expected travel costs assuming steady-state system operation. When compared to the strategy which dispatches the closest available unit to each call for service, the travel cost minimization yields substantial improvement in a second key performance measure--the imbalance in workloads among units. (author) This report is a product of the "Innovative Resource Planning in Urban Public Safety Systems" project, supported by National Science Foundation's Division of Social Systems and Human Resources, Research Applied to National Needs.

Jarvis, James P. and Richard C. Larson, Optimal Server Assignment Policies in M/M/N/O Queuing Systems with Distinguishable Servers and Customer Classes, Working Paper WP-06-74, Massachusetts Institute of Technology, Operations Research Center, Cambridge, MA, April 1974

Juris, Hervey A. and Peter Feuille, Police Unionism: Power and Impact in Public-Sector Bargaining, Lexington Books, D.C. Heath and Company, Lexington, MA, 1973

In this book, the authors relate and interpret the activities and impact of police unions in 22 cities. Included is background information on unions and a history of police organizations.

Kakalik, James S. and Sorrel Wildhorn, Criteria for Evaluating Police Patrol Services and Policies, Rand Corporation Report D-20331-HUD, Santa Monica, CA, June 1970

Kakalik, James S. and Sorrel Wildhorn, Aids to Decisionmaking in Police Patrol, Rand Corporation Report R-593-HUD/RC, Santa Monica, CA, February 1971

Overview of major findings of a study of aids to police patrol decisionmaking. With increasing demands on limited local government funds, there is a growing need for effective aids to decisionmaking in determining proper patrol force strength, equitable distribution of patrol services by police district and tour of duty, and effective operational policies and tactics for police patrol. In addressing these major issues, this study suggests that police departments (1) use certain multiple criteria in decisionmaking, (2) develop improved methods in allocating patrol resources, (3) collect certain management-oriented data, (4) hire competent civilian planners and give them ready access to top police management, and (5) undertake long-term research to bridge gaps in present relationships between police resources and police effectiveness. (Rand Corporation, Selected Publications: Public Safety)

Kakalik, James S. and Sorrel Wildhorn, Aids to Decisionmaking in Police Patrol: Survey Response, Rand Corporation Report R-594-HUD/RC, Santa Monica, CA, February 1971

A companion study to R-593, this report contains the detailed results of a survey of police patrol in 6 major U.S. police jurisdictions: L.A. City Police, L.A. County Sheriff's Department, Phoenix Police, St. Louis Metropolitan Police, and two other municipal police departments. Information was obtained by both questionnaire and personal interview on functions and activities of the patrol force; costs, manpower use and operation; patrol tactics and operations; deployment methodology; patrol-service demand; records and handling data; computer system services; internal planning and research; outside consultants; and the jurisdiction's view of important problems. Survey response is presented verbatim and in detail in this document. (Rand Corporation, Selected Rand Publications: Public Safety)

Kakalik, James S. and Sorrel Wildhorn, Private Police in the United States: Findings and Recommendations, Rand Corporation Report R-869/DOJ, Santa Monica, CA, February 1971

Kansas City Police Department, Annual General Administrative Survey, Kansas City, MO, 1958-1973

Kapsch, Stefan J., Minnesota Police Organization and Community Resource Allocation, for the Governor's Commission on Crime Prevention and Control, St. Paul, MN, January 1970

This paper discusses the law enforcement problems of small communities (less than 1,000 population), defines problems and offers some solutions.

Kelling, George L., David Hollister, Jack Ladinsky and Irving Piliavin, First Phase of Evaluation of Dallas Program (working draft), Police Foundation, Washington, DC, January 1972

This report discusses a scheme for evaluating the Dallas Police Department performance in terms of changes in organizational structure, human resource development, and citizen response.

Kelling, George L. and Thomas Sweeney, Kansas City South Patrol Division: Proactive-Reactive Patrol Deployment Project, Police Foundation/Midwest Research Institute, Washington, DC

This document describes the methodology of the Kansas City experiment on preventive patrol. Evaluated by the Police Foundation, this project attempts to learn the effects of police patrol on the community.

Kenney, John P. and John B. Williams, Police Operations: Policies and Procedures, Charles C Thomas Publisher, Springfield, IL, 1960

Kenney, John P., The California Police, Charles C Thomas Publisher, Springfield, IL, 1964

Kobetz, Richard W., ed., Crisis Intervention and the Police, Selected Readings, International Association of Chiefs of Police, Professional Standards Division, Gaithersburg, MD, 1974

This book has been prepared to provide assistance to law enforcement administrators and personnel who are planning to establish specialized units or who want to train several officers in crisis management techniques. (author)

Koverman, Robert B., "Team Policing: An Alternative to Traditional Law Enforcement Techniques," Journal of Police Science and Administration, Vol. 2, No. 1, Northwestern University School of Law, Chicago, IL, 1974

This paper describes the team policing experiment in the Dayton (OH) Police Department. It discusses the background, the methodology and the special problems involved in a team policing scheme.

Lane, Roger, Policing the City: Boston 1822-1885, Harvard University Press, Cambridge, MA, 1967

This is a complete history of law enforcement development in Boston to 1885, including background information dating back to the 1600's.

Lankes, George A., "Central Services for Police," Journal of Police Science and Administration, Vol. 2, No. 1, Northwestern University School of Law, Chicago, IL, 1974

This article concerns the local law which created the Erie County Department of Central Police Services. The author's purposes are to explain the steps involved in implementing a centralized police service and to establish a guideline for other interested communities.

Larson, Richard C., Operational Study of the Police Response System, Technical Report No. 26, Operations Research Center, Massachusetts Institute of Technology, Cambridge, MA, December 1967

This report details the author's work with the Boston Police Department during 1966, 1967. It is a revision of a Master's thesis in electrical engineering. (author)

Larson, Richard C., Models for the Allocation of Urban Police Patrol Forces, Technical Report No. 44, Operations Research Center, Massachusetts Institute of Technology, Cambridge, MA, November 1969

Predecessor to Urban Police Patrol Analysis (Larson, 1972), this report is a revision of a Ph.D. dissertation in electrical engineering and operations research. (author)

Larson, Richard C., "On Quantitative Approaches to Urban Police Patrol Problems," Journal of Research in Crime and Delinquency, Vol. 7, No. 2, July 1970

This paper discusses in nonmathematical language the general approach taken in Urban Police Patrol Analysis (Larson, 1972), the insights gained by modeling operations, and the types of results that may be obtained. (author)

Larson, Richard C., "On the Modeling of Police Patrol Operations," IEEE Transactions on Systems Science and Cybernetics, Vol. 6, 1970

This paper provides a brief introduction to the types of models developed in Urban Police Patrol Analysis (Larson, 1972). (author)

Larson, Richard C. and Keith A. Stevenson, On Insensitivities in Urban Redistricting and Facility Location, The New York City-Rand Institute Report R-533-NYC/HUD, March 1971

The expected response time of vehicles, dispatched from fixed facilities to spatially distributed incidents, is shown to be insensitive to substantial changes in facility locations or response district design. Repositioning a set of randomly located facilities so that they are optimally located reduces mean response time by no more than 25%. Analysis of simple 2-facility models shows, in addition, that wide variations in the position of one facility imply relatively small variations in the position of the second facility for the minimization of mean response time. Accordingly, it is suggested that redistricting and facility location based on crude assumptions coupled with an awareness of the heuristic properties illustrated by simple analytic models may yield mean response times very near the minimum possible. (authors)

Larson, Richard C., Response of Emergency Units: The Effects of Barriers, Discrete Streets, and One-Way Streets, Rand Corporation Report R-675-HUD, Santa Monica, CA, April 1971

In realistic urban environments, emergency response vehicles may encounter one-way streets and barriers such as rivers that impede rapid response. Formulas are developed for the associated increase in mean travel distance, using a model in which both the demands for service and the locations of the vehicle are uniformly distributed over the response area. Barriers of even moderate size are found to increase average travel distance less than 10%, and a system of one-way streets increases the average distance by 2 block lengths. However, in 6.2% of responses on a one-way street grid, the vehicle has to travel an extra 6 block lengths. (author)

Larson, Richard C., Measuring the Response Patterns of New York City Police Patrol Cars, New York City-Rand Institute, NY, July 1971

A 2-week sample of patrol car activities and response patterns for Division 16 in Queens is analyzed. Included is an hour-by-hour breakdown of activities by category: dispatch assignment, station house assignment, auto repairs, and maintenance, fuel, meal break, preventive patrol, patrol initiated action. For each dispatch, initial and final patrol car positions and odometer readings are recorded, as well as the time required to respond to the scene. (author)

Larson, Richard C., Urban Police Patrol Analysis, MIT Press, Cambridge, MA, 1972

This book contains a wide range of quantitative models that bear on police patrol. These include models of the patrol and response functions that indicate the effectiveness of a particular patrol allocation and allow the comparison of different allocations, patrol strategies, and response strategies. Also included is the description of a recently implemented simulation model that allows the planner to predict the consequences of a wide variety of complex patrol procedures without having to disrupt current police operations. (author)

Larson, Richard C., "Decision-Aiding Tools in Urban Public Safety Systems," Sloan Management Review, Massachusetts Institute of Technology, Cambridge, MA, Winter 1972-73

The purpose of this paper is two-fold: first, to place the quantitative tools that recently have been developed into a larger context, relating to industrial and military applications of similar tools on the one hand, and to broader organizational and administrative problems of urban public safety services on the other; and second, to outline the logic of one recently developed tool--a simulation of urban police patrol and dispatching--and discuss recent implementations of this tool. (author)

Larson, Richard C., A Hypercube Queuing Model for Facility Location and Redistricting in Urban Emergency Services, Rand Corporation Report R-1238-HUD, Santa Monica, CA, March 1973

Larson, Richard C., "Illustrative Police Sector Redesign in District 4 in Boston," to appear in Journal of Urban Analysis, 1974

In this report, a newly developed computer program, based on a multiserver queuing model, is applied to the problem of police sector redesign in part of the City of Boston. Using commonly available data describing patterns of calls for service, travel times, dispatching strategies, and other factors, the model computes numerical values of several operational performance measures (e.g. travel times, workloads, fractions of cross-sector dispatches). Members of a Resource Allocation Task Force at the Boston Police Department utilized several concepts of this methodology in a massive manpower reallocation program. (author)

Law, Alfred, "Police Patrol Systems: Practice in an English County," The Police Journal, Vol. II, London, England, 1929

Law Enforcement Science and Technology I, Proceedings of the First National Symposium on Law Enforcement Science and Technology, Illinois Institute of Technology Research Institute, Chicago, IL, 1967

This and the next two references contain hundreds of pages from practitioners, manufacturers, and analysts. Along with the President's Commission reports, these present an excellent overview of current interest in the field of criminal justice and law enforcement. (RCL, Urban Police Patrol Analysis)

Law Enforcement Science and Technology II, Proceedings of the Second National Symposium on Law Enforcement Science and Technology, Illinois Institute of Technology Research Institute, Chicago, IL, 1968

Law Enforcement Science and Technology III, Proceedings of the Third National Symposium on Law Enforcement Science and Technology, Illinois Institute of Technology Research Institute, Chicago, IL, 1970

Law Enforcement Assistance Administration, First Annual Report of the Law Enforcement Assistance Administration, U.S. Government Printing Office, Washington, DC, 1969

This first annual report of LEAA concerns the details of the program, authorized by the Omnibus Crime Control and Safe Streets Act, to help reduce and prevent crime. It contains a complete list of the financial assistance given by LEAA, whose fiscal 1969 budget totaled \$63 million. Grants were provided to state and local governments, research and assistance projects, and an education program for law enforcement personnel. (RCL, Urban Police Patrol Analysis)

Law Enforcement Assistance Administration, LEAA 1970, U.S. Government Printing Office, Washington, DC, 1970

This is the second annual report of LEAA. During fiscal 1970, LEAA's budget totaled \$268 million. (RCL, Urban Police Patrol Analysis)

Law Enforcement Assistance Administration, LEAA 1970: Grants and Contracts, U.S. Government Printing Office, Washington, DC, 1970

This document contains a detailed list of LEAA grants and contracts during fiscal 1970.

Law Enforcement Assistance Administration, High Impact Anti-Crime Program, NTIS Report PB-223 590, Springfield, VA, 1972

This paper explains the rationale and objectives of LEAA's concentrated effort to reduce crimes against persons and property in eight target cities. The pamphlet discusses the selection of certain cities to be focused on by the program. Program includes defining the problem area, delineating groups of individuals most likely to engage in criminal acts, and determining areas likely to be settings for crime. Included is a description of how the High Impact program will be developed, implemented and evaluated. (LEAA abstract)

Leahy, F., Jr., A Literature Review of Police Planning and Research, Interim Report to the Connecticut Research Commission, The Travelers Research Center, Inc., Hartford, CT, 1968

A comprehensive literature review of police planning and research to 1968. F. Leahy, Jr., was the project director.

Leonard, V.A., Police Organization and Management, The Foundation Press, Inc., Brooklyn, NY, 1951

This book relies more on the scientific method than most other classic texts on police organization and management. The chapter on patrol recommends statistical procedures to help distribute the patrol force more effectively both geographically and chronologically. The suggested methods rely heavily on the works of Vollmer and Wilson. (RCL, Urban Police Patrol Analysis)

Leonard, V.A., Police Patrol Organization, Charles C Thomas Publisher, Springfield, IL, 1970

This short text deals with organizational and management issues pertaining to small patrol forces, ranging in size from one to seventy-five officers. (RCL, Urban Police Patrol Analysis)

Lewis, Joseph, Evaluation of Experiments in Policing: How Do You Begin? (Four Cases), Police Foundation, Washington, DC, December 1972

This document summarizes four evaluation projects with the view of informing interested persons as to what police departments are doing and of outlining evaluation techniques for police services.

Liguori, A., G. Kaplan and C. Haber, Automatic Vehicle Monitoring System: Final Report, RCA Government Communications Systems, Camden, NJ, March 1973

This report presents the technical performance characteristics and cost estimates of all major components of an x-band signpost vehicle and location system. In particular, it describes the x-band signpost transmitters, the vehicle x-band receivers, the command and control system between the vehicles and the control center as well as the central processor that drives the system. It also describes in some detail the demonstration tests conducted in the City of Philadelphia that established technical feasibility of the x-band signpost system. (authors)

Lipsett, F.R. and J.G. Arnold, "Computer Simulation of Patrol Operations of a Semi-Rural Police Force," Journal of Police Science and Administration, Vol. 2, No. 2, Northwestern University School of Law, Chicago, IL, 1974

Data used for this study was from the Gloucester Police Force in Ontario, Canada. The basis of the work was Richard C. Larson's report, "Models for the Allocation of Urban Police Patrol Forces" (1969).

Lombard, W.M., Study of the Tactical Communications System of the Rochester Police Bureau: Final Report, Phase I, Rochester Police Bureau/General Dynamics, NY, August 1969

This report analyzes the communications system in the Rochester Police Bureau. Included are a description of the present system and recommendations for improvements. Chief of Police Lombard was project director.

Lundman, Richard J., "Domestic Police-Citizen Encounters," Journal of Police Science and Administration, Vol. 2, No. 1, Northwestern University School of Law, Chicago, IL, 1974

This article discusses types of police-citizen encounters, both criminal and non-criminal. The author singles out domestic encounters for an in-depth view.

Malt, Harold L., An Analysis of Public Safety as Related to the Incidence of Crime in Park and Recreation Areas in Central Cities, Harold Lewis Malt Associates, Inc., NTIS Report PB-220 770, Springfield, VA, January 1972

This report studies risk of crime and perceived fear in 64 parks--four in each of 16 cities--including mini-parks, neighborhood parks and community parks. Facilities were inventoried and attitude surveys of users and nonusers were performed about crime in the parks. Besides the results and recommendations, the report includes a bibliography and demonstration project outline.

Maltz, Michael D., Evaluation of Crime Control Programs, Research Operations Division, National Institute of Law Enforcement and Criminal Justice, Washington, DC, April 1972

This paper discusses many of the problems that are faced by evaluators in determining the effectiveness of crime control programs. It bridges the gap between the theoretical considerations of concern in program evaluation and the practical problems facing the program administrator and evaluator. Concrete examples are given throughout the paper to tie theory to practice. (Martin B. Danziger, Assistant Administrator, NILECJ)

Massachusetts Committee on Law Enforcement and Administration of Criminal Justice, A Review of Information Systems Projects and Related Operations in the Boston Police Department, Touche Ross & Company, Boston, MA, April 1973

McCormack, Robert J. and James L. Moen, San Francisco's Mission Police District: A Study of Resource Allocation, Institute of Urban and Regional Development, University of California, Berkeley, 1968

This report involved the analysis of a 1-week sample of radio dispatches from the San Francisco Mission Police District. The authors were both law enforcement officers supported as Office of Law Enforcement Assistance Fellows. (RCL, Urban Police Patrol Analysis)

McEwen, J. Thomas, "A Mathematical Model for Prediction of Police Patrol Workload," presented at the TIMS/ORSA Joint National Meeting, San Francisco, CA, 1968

McEwen documents several of the details of the St. Louis deployment scheme in this paper. (RCL, Urban Police Patrol Analysis)

McEwen, J. Thomas and Nelson B. Heller, Use of An Incident Seriousness Index in Deployment of Police Patrol Manpower, Vol. II, Final Report, NI41-036G, January 1972

Misner, Gordon E. and Richard B. Hoffman, Police Resource Allocation, Working Paper 73, Institute of Urban and Regional Development, University of California, Berkeley, 1967

This paper discusses in a very general way some economic and demographic considerations relevant to the problem of police resource allocation. (RCL, Urban Police Patrol Analysis)

Modley, Phyllis and James Boczar, Plans and Projects for Fiscal Year 1973, National Institute of Law Enforcement and Criminal Justice, Washington, DC, March 1973

Morrow, William, B.M. Gray II and W. Anthony Fitch, Models for Police-Public Interaction and Police Policy Development Procedures in Portsmouth, Virginia (discussion paper), College of William and Mary, Metropolitan Criminal Justice Center, Williamsburg, VA, September 1973

This paper describes models affecting police-citizen communication and police policy-making within the Portsmouth Police Department. The first model involves establishment of a Portsmouth Crime Prevention Advisory Commission, designed to improve communication between the police and community. The second model outlines a systematic approach to decision-making within the Police Department proper and incorporates a Professional Advisory Committee as a key element. (authors)

Murray, W.S., and W.C. Scales, Overview of Automatic Vehicle Monitoring Systems, Mitre Corp., NTIS Report PB-223 509, Springfield, VA, August 1973

This report is an overview of AVM systems which automatically determine and make available to a central point the position of a group of vehicles. AVM systems used in urban applications are based upon, or are varieties of, four basic techniques--radio propagation time, proximity, dead reckoning, and triangulation. The relative merits of each of these systems are discussed and, where test or simulation data and cost information are available, these too are provided. Also included is a discussion of secondary systems' functions (polling, computation, telemetry, etc.) that must be addressed before a workable system can be implemented. (authors)

National Advisory Commission on Criminal Justice Standards and Goals, Police Report, U.S. Government Printing Office, Washington, DC, 1973

This document summarizes the work and recommendations of the Police Task Force for Criminal Justice Standards and Goals.

National Commission on Productivity, The Challenge of Productivity Diversity, Part I: Overall Summary and Recommendations, Urban Institute and International City Management Association, NTIS Report PB-223 115, Springfield, VA, June 1972

This report contains the overall findings and recommendations of a productivity study for local government improvement. The project was directed by Harry P. Hatry and Donald M. Fisk.

National Commission on Productivity, The Challenge of Productivity Diversity, Part III: Measuring Police-Crime Control Productivity, The Urban Institute, NTIS Report PB-223 117, Springfield, VA, June 1972

Authors for this part of the Productivity study were Philip S. Schaeffer, James Kalish, Pasquale A. DonVito and Peter Bloch. The report contains evaluation procedures and suggestions for improving police productivity.

National Commission on Productivity, Opportunities for Improving Productivity in Police Services, U.S. Government Printing Office, Washington, DC, 1973

This report is the work of an Advisory Group to the National Commission on Productivity to develop concepts, measures, and strategies by which police departments can improve productivity.

National Commission on Productivity, Improving Police Productivity: More for Your Law Enforcement Dollar, A Brief for Elected Officials, Washington, DC, 1974

This report makes suggestions for improving police productivity on the local level and is geared to the principal administrators.

National Institute of Law Enforcement and Criminal Justice, A Look at Criminal Justice Research, LEAA, Washington, DC, June 1971

This is a pictorial presentation of selected research projects of NILECJ.

New York Executive Committee, 1973 Criminal Justice Plan, Criminal Justice Coordinating Council, Office of the Mayor, New York City

This document summarizes the Mayor's Committee's report for criminal justice planning in 1973.

New York City's Productivity Program: The Police Department, Citizens' Budget Commission, Inc., NY, November 1973

The purpose of this Commission's report is to evaluate the progress of police productivity plans for recommendations for the future.

Nilsson, E., Police Systems Analysis, Ph.D. Dissertation, Northwestern University, Chicago, IL, 1969

Norrgard, David L., Regional Law Enforcement: A Study of Intergovernmental Cooperation and Coordination, Public Administration Service, Chicago, IL, 1969

This report deals with the development and problems facing the majority of U.S. police departments. Approximately 39,000 of the country's 40,000 police departments have personnel counts of less than 10. This document reviews one solution to the workload and economic problems--that of cooperation and coordination among law enforcement agencies.

North Dakota Combined Law Enforcement Council, Comprehensive Plan for Law Enforcement Radio Communications in North Dakota, Omnicom, Inc., Alexandria, VA, November 1972

This report is a summary of findings and recommendations concerning radio communications problems in North Dakota. Included also is a recommended plan for a combined radio communications system for the State's law enforcement agencies.

Omaha (NB) Police Department, A Realistic Approach to Innovation, Nebraska University, NTIS Report PB-224 276, Springfield, VA, May 1973

Part of the Omaha Police in-service training program was devoted to innovative approaches to solving police department problems and improving community relations. The sessions were an attempt to use the brainstorming technique to elicit new solutions to everyday problems faced by the rank and file of the police department. This report describes the training methodology which was followed and the suggestions offered by the officers. (report abstract)

Ostrom, Elinor, William Baugh, Richard Guarasci, Roger Parks, and Gordon Whitaker, Community Organization and the Provision of Police Services, Sage Publications, Beverly Hills, CA, 1973

Should police services be consolidated into centrally organized departments serving entire metropolitan regions --will this provide better coordinated, more effective and more efficient services? The authors study both the disadvantages and the benefits of centralization using data generated in a year-long project, and assess the consequences of local community control of the police. (Sage Publications abstract)

Ostrom, Elinor, "On the Meaning and Measurement of Output and Efficiency in the Provision of Urban Police Services," Journal of Criminal Justice, Vol. 1, June 1973

Parker, Alfred E., The Berkeley Police Story, Charles C Thomas Publisher, Springfield, IL, 1972

This text presents a history of the Berkeley Police Department from Vollmer to the youth riots of the 1960's.

Parks, Roger B., Measurement of Performance in the Public Sector: A Case Study of the Indianapolis Police Department, Master's Thesis, Department of Political Science, Indiana University, Bloomington, IN, June 1971

The Indianapolis Police Department is studied to illustrate the problems of measuring the performance of public agencies. The author states, "The measurement of performance is often restricted to how well we are doing without first asking what it is that we do; the argument presented [in this report] will attempt to show that when the first question is unanswered, or improperly answered, any answer to the latter question is not likely to be of great significance." (p. 1)

Pauly, G.A. and S.J. Finch, "Computer Mapping--A New Technique in Crime Analysis," Law Enforcement Science and Technology Proceedings of Symposium, March 7-9, 1967

Payton, George T., Patrol Procedure, Los Angeles Bookstore, Los Angeles, CA, 1966

Pendland, M.B. and W.G. Gay, "Foot Patrols: The Fort Worth Experience," Police Chief, Vol. 39, No. 4, April 1972

Phoenix Police Department, LEADS Project--Police Records and Data System Study: Final Report, Volume II--System Description and Implementation, City of Phoenix, AZ, February 1968

Piper, Alexander R., Report of an Investigation of the Discipline and Administration of the Police Department of the City of Chicago, Chicago, IL, March 1904

This book contains the results of an investigation into charges of police corruption in Chicago in the early 1900's.

Police in America series, Selected Police Surveys, Arno Press, NY, 1971

Police Foundation, Experiments in Police Improvement: A Progress Report, Washington, DC, November 1972

This brochure describes the creation of the Police Foundation and summarizes the work it has done since the summer of 1970.

Powell (WY), City of, Police Management Survey, City of Powell (Wyoming), Governor's Planning Committee on Criminal Administration, Cheyenne, WY, September 1972

This is a comprehensive study of the Powell Police Department with recommendations for improved services.

President's Commission on Law Enforcement and Administration of Justice, The Challenge of Crime in a Free Society, U.S. Government Printing Office, Washington, DC, 1967

This report and the following two entries summarize the work of the President's Commission. This publication deals with the Commission as a whole and contains chapters on the various task forces. The next two documents cover the findings and recommendations of the Police Task Force and the Science and Technology Task Force.

President's Commission on Law Enforcement and Administration of Justice, Task Force Report: The Police, U.S. Government Printing Office, Washington, DC, 1967

President's Commission on Law Enforcement and Administration of Justice, Task Force Report: Science and Technology, U.S. Government Printing Office, Washington, DC, 1967

Press, S.J., Some Effects of an Increase in Police Manpower in the 20th Precinct of New York City, New York City-Rand Institute, NY, October 1971

A study of the change in crime patterns in NYC's 20th Precinct after a 40% increase in police manpower in 1966. The study analyzes ten crime types including robbery, grand larceny, burglary, felonious assault, auto theft, total felonies, and total misdemeanors. After correcting data for seasonal variations, the author compared changes in 20th Precinct crime rates with changes in selected control precincts where there had been no manpower increase. The number of outside or street-visible robberies was found to be 33% lower than otherwise expected, while both outside grand larceny and auto theft were 49% lower. Misdemeanor rates were not affected significantly. During the experiment, there was some increase in major crime types in the Central Park district bordering the 20th Precinct on the east, but generally by an amount less than the crime decreases in the 20th Precinct. (Rand Corporation, Selected Rand Publications: Public Safety)

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This paper reviews recent algorithmic approaches to the problem of locating fixed-position facilities, such as warehouses, fire stations, hospitals and police precinct houses. (RCL, Urban Police Patrol Analysis)

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This article suggests measurement units which will provide an objective basis for administrative decisions and supplement rule-of-thumb methods in police administration. (Public Management, editor's comment)

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This paper gives an in-depth analysis of foot versus motorized patrol. It also briefly discusses the issue of specialization with examples of British experiences.

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This book develops a PPBS scheme, using Los Angeles Police Department as an example. PPBS relates resource concerns with objectives and activities.

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Smith, Dennis and Elinor Ostrom, "The Effects of Training and Education on Police Attitudes and Performance: A Preliminary Analysis," Problems in the Criminal Justice System, Vol. 3, Herbert Jacob, ed., Sage Publishers, Beverly Hills, CA, 1974

Smith, R.D., Random Patrol, Field Services Division, International Association of Chiefs of Police, Gaithersburg, MD, 1960

This paper by Smith (an accomplished administrator with a law enforcement background) applies in an elementary way some of the ideas of game theory to illustrate the need for randomness in patrol procedures. To the best of my knowledge, it is the first paper that uses the term random patrol applied to police problems. (RCL, Urban Police Patrol Analysis)

Smith, R.D., Computer Applications of Police Manpower Distribution, International Association of Chiefs of Police, Gaithersburg, MD, 1961

Smith discusses a preliminary computer algorithm for the geographical assignment of police manpower. (RCL, Urban Police Patrol Analysis)

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Sprecher, William M. and Edwin I. Golding, Productivity and Technology in Law Enforcement, discussion paper prepared for the Government Activities Working Group of the National Commission on Productivity, Washington, DC, September 1971

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Stone, Donald C., "Can Police Effectiveness Be Measured?" Public Management, Vol. XII, September 1930

This paper discusses crime rates as indicators of police effectiveness.

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Tenzer, A.J., J.B. Benton and C. Teng, Applying the Concepts of Program Budgeting to the New York City Police Department, The Rand Corporation Report RM-5846-NYC, Santa Monica, CA, 1969

This paper illustrates an application of program budgeting to the New York City Police Department, including a detailed program and cost structure, a cost-estimating method, a comparison to conventional methods, and a computerized cost model. (RCL, Urban Police Patrol Analysis)

Terrell, P. and L.L. Blank, Mathematical Formulation of a Police Precinct Design Problem, paper presented at the Operations Research Society of America meeting, New Orleans, LA, 1972

The problem is formulated so as to minimize the average response distance, but with a maximum distance constraint. Other restrictions are also considered. An algorithm is developed which considers all designs without violating constraints. The sensitivity of different deployment strategies is studied to determine the best design. (A.C. Lea, Location-Allocation Systems: An Annotated Bibliography, University of Toronto Department of Geography)

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Vollmer, August, Law Enforcement in Los Angeles: Los Angeles Police Department Annual Report, 1924, Arno Press, NY

A unique and hitherto unpublished volume, prepared by one of the nation's foremost police reformers, this report is at once a study of crime in Los Angeles and an analysis of the L.A. police department. Vollmer left the Berkeley police force, where he had gained nationwide reknown, to head the L.A. police force in the early 1920s. Once in office he proposed a series of structural, personnel, and functional reforms which, had they been implemented, would have completely transformed the force. Vollmer's report, which the L.A. City Council refused to publish, is a record of his reform proposals and his theories about crime (elucidated in a series of papers by doctors, psychologists, and others). (Arno Press blurb)

Vollmer, August, Survey of the Police Department, Minneapolis, Minnesota, Minneapolis City Council, MN, January 1930

This is one of Vollmer's consulting surveys and includes his recommendations on equal workloads, motorized patrol and the use of the latest technologies for police work.

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This report describes the criminal justice projects in Washington from 1968-72. The abstracts include program directors and/or agencies and amounts of funding.

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In this report, Wildhorn reviews some of the early work performed for the New York City Police Department by the New York City-Rand Institute. (RCL, Urban Police Patrol Analysis)

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A comprehensive text on the patrol force, Wilson includes descriptions of his three types of policing strategies--the Watchman Style, the Legalistic Style, and the Service Style. Wilson states, "What is the defining characteristic of the patrolman's role thus becomes the style or strategy of the department as a whole because it is reinforced by the attitudes and policies of the police administrator." (p. 140)

Wilson, O.W., Distribution of Police Patrol Force, Publication 74 Public Administration Service, Chicago, IL, 1941

This is Wilson's original document explaining his allocation procedures, now out of print. The material is contained in O.W. Wilson and McLaren (1972). His scheme (sometimes in modified versions) is the most widely used procedure for allocating police patrol manpower. (RCL, Urban Police Patrol Analysis)

Wilson, O.W. and Roy C. McLaren, Police Administration, McGraw-Hill Book Company, NY, 1972

Probably the best known book on police administration, this is a revised and updated version of O.W. Wilson's 1963 edition.

Wolf, Allan, Development Testing and Implementation of a Computer Simulation Model of Police Dispatch and Patrol Function, Metropolitan Police Department, Washington, DC, 1974

The overall objective of the project is the development of computer simulation techniques for determination of police patrol policy. Demographic data and crime statistic data from Washington, DC, formed the basis of the program design. Operating personnel of the DC Police Department will be involved in the actual use of the model for improving policy decisions relative to patrol and dispatch. (Cheilik and Perlaky, 1970, NILECJ project 71-090)

Woods, Arthur, Crime Prevention, Police in America series, Arno Press, NY, 1971

Former Police Commissioner in New York City, Woods describes his observations on policing in the City in 1918.

Woolley, G.W. and David G. Walsh, WALES--Washington Area Law Enforcement Terminal User's Manual, Metropolitan Police Department, Washington, DC

This manual describes the WALES system in general, the codes used and inquiry examples and explanations. WALES is a regional police information system which includes a computer-based file on people and items of interest to police.

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