
Frank E. Walton
POLICE SCIENCE

“SELECTIVE DISTRIBUTION” OF POLICE PATROL FORCE

History, Current Practices, Recommendations

FRANK E. WALTON

Deputy Chief Frank E. Walton was assigned to his present post as Commander, Patrol Bureau, Los Angeles Police Department in January 1956. He was promoted to his present rank in May 1955 having previously served as Patrol Bureau Inspector and Traffic Bureau Inspector. Chief Walton has served with the Los Angeles Police Department for over twenty years and has taught Police Planning and Traffic Regulation at Los Angeles State College. Recently, he received a Masters Degree in Government with a major in Police Administration. In addition to his service with the Los Angeles Department Chief Walton saw duty during World War II as an Intelligence Officer with the U.S. Marine Corps Aviation Unit and during the Korean War was recalled to active duty as a Staff Officer.—EDITOR.

Suppose that you are a fisherman and the stream which you fish contains 26 beautiful trout pools, equal in size, depth, contour, shade; to all outward appearance they are identical. However, over the years, you have discovered that so far as the fishing goes, these pools are by no means identical. You have found that the biggest, the best, and the most fish come from pools K, P, and X. You can always catch trout in these three pools, while in the other pools, although you occasionally catch a fish, you are usually skunked. So, when you go fishing, do you spend an equal amount of time fishing each of the 26 pools? Of course not! You head directly for pool K, P, or X and soon have your limit of trout.

Now then, as Chief of Police of a city containing 26 radio car districts, you have learned over the years that most of the crimes, most of the demand for police service, most of your police problems, occur in districts K, P, and X. As an alert police administrator, do you spread your patrol force equally over these 26 radio car districts? Of course not! Just like the fisherman who drops his line into the pools which past experience shows will produce the most trout, so do you concentrate your patrol strength in the districts which will be most productive in terms of reduced crime, criminals captured, calls answered, and community service.

If 50% of your problems occurred on the night watch (4 p.m. to 12 p.m.), 25% on graveyard (12 p.m. to 8 a.m.), and 25% on days (8 a.m. to 4 p.m.), it would be a serious dissipation of your manpower to assign one-third of your strength to each watch. If twice as many police problems occurred on Friday and Saturday as on any other days of the week, you would certainly detail twice as many men to duty on those days as on the lighter days, wouldn’t you?

You might, but don’t bet on others. As a matter of fact, the assignment of police manpower in relation to police problems, in terms of day of week, time of day, and area (we shall call this “Selective Distribution”) is by no means widespread. In these days of rising taxes, coupled with continual manpower shortages and the properly-jaundiced eye with which all legislators view requests for additional budget money, it is imperative that the administrator get the maximum efficiency from what manpower he has.

By studying past experiences, the scientist can predict future occurrences. So, too, can the alert police administrator anticipate the distribution of the need for his patrol force on the basis of the past distribution of the problem. This scientific approach is not only efficient and intelligent; it is defensible! It is the administrator’s best defense against pressure groups in one area who demand more police service, which would have to be provided at the expense of another area.

HISTORICAL

Actually, Selective Distribution of the patrol force is not new. Fosdick implies the practice, although he does not use the phrase, in his European Police Systems.¹

Again in his *American Police Systems*, Fosdick points out that the same method of patrol had been employed for thirty or forty years, and that "...it is not at all uncommon to find the boundaries of posts remaining unaltered for years..." and that "...there are many districts in which the night problem, from a police point of view, is entirely different from the day problem; yet the posts in such districts are often policed in exactly the same way during all hours of the day and night."\(^2\)

Even as early as 1920, Fosdick recognized the decreasing importance of the foot beat, pointing out "...the extensive use of automobiles has rendered foot patrol a handicapped method of defense, if not actually made it obsolete in many situations..."\(^3\) He also pointed out the increasing area of residential districts in large cities, which make the cost of foot patrol prohibitive, and adds that even if cost were not a factor, this type of patrol is ill adapted to new conditions. It may be noted that the percentage of the United States population residing in the large cities (metropolitan areas) increased from some 32% in 1900, to 59% in 1955.\(^4\) Recent samples indicate that this trend is not only continuing but accelerating.

In 1929, Bruce Smith deplored the dissipation of the patrol force by its assignment to an increasing number of unimportant duties, until "...the thin blue line has been stretched to the breaking point."\(^5\)

In 1930, Bruce Smith made the first great police survey, when he was employed by the Chicago Citizens' Police Committee to survey the Chicago Police Department. Leaning heavily on the need for vastly increased uniformed foot patrol, Smith recommended institution of an expansion program which would increase the force from its 1929 strength of 6,712, to an eventual complement of 14,700! In this survey, Smith pointed out that "...city police forces waste a part, and some times a considerable part, of their available manpower on...distribution of uniformed patrols...without regard to established need..." "It is a matter of general observation that (patrols) are usually distributed on an equal, or nearly equal, basis throughout the 24 hours of the day, despite the fact that the crime curve shows a marked peak between 6 p.m. and 2 a.m...."

In 1933, the late August Vollmer submitted a paper, on the subject of police beat determination, to the International Association of Chiefs of Police Convention.\(^6\)

In 1936, the Los Angeles Police Department developed a "Tactical Area Plan," which set forth selective distribution of radio units at major crime scenes.\(^7\)

With the advent of the Works Progress Administration, when almost any project which required manpower was looked upon with favor, a whole flood of data became available. Heretofore, the cost of gathering it had been considered prohibitive. *The Cincinnati Police Beat Survey* reports a survey carried on as a W.P.A. project in 1935.\(^8\)

In 1937, the W.P.A. published a booklet which set forth the methods to be employed in conducting a survey of the distribution needs of a patrol force. This publication stated: "...The objective of the distribution of uniformed patrolmen throughout a municipality is to attain a maximum of protection to persons and property, with the available force. However, the effective distribution of available force is probably one of the most troublesome problems confronting police administrators."\(^9\)

In 1938, the City of Wichita carried out a Works Project Administration project which gathered the data which served as the basis for the redistribution of the patrol force in that city. O. W. Wilson, then Chief of Police at Wichita, established the

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\(^3\) op. cit., note 2.


\(^11\) Definition of Police Beats, Works Progress Administration, Division of Women's and Professional Projects, Washington, D. C. August 28, 1937. 38 pages.
"relative need" approach to that redistribution. Wilson utilized the same approach as a member of the Staff of the Public Administration Service in the survey and redistribution of the patrol force in San Antonio, Texas, in 1939.

About this same time, Frank M. Kreml, Director of the Northwestern University Traffic Institute, developed his principle of "Selective Enforcement": the application of traffic law enforcement to the locations, during the times, and toward the particular violations which represent the major contribution to the accident problem. Through the series of long courses at the Traffic Institute, and other courses conducted under its sponsorship, Kreml's principle spread rapidly throughout the country and is in general use today in traffic law enforcement as it has been for many years.

In 1941, the Public Administration Service published Wilson's pamphlet, Distribution of Police Patrol Force. Here, for the first time, were set forth the actual factors to be considered in determining the distribution of the patrol force. Here, probably for the first time, was the principle of "Proportionate Need" for police service pointed up.

In 1947, the Los Angeles Police Department formalized its method of distributing its patrol force on a proportionate need basis. Twelve factors were utilized in this distribution.

Wilson's Police Administration, published in 1950, had a 39-page appendix devoted to the distribution of the patrol force. Much of this was taken from the Public Administration Service pamphlet.

V. A. Leonard devotes some twenty-seven pages to a discussion of patrol force distribution in his Police Organization and Management. "How to distribute the patrol force equitably and strategically on the basis of soundbeat construction has given conscientious police executives, concern for many years... A small minority of professionally trained police executives in the United States are conscious of the administrative necessity for derivation of a formula that will serve as a basis for the scientific distribution of the force. For the most part, however, the significance of this administrative problem is not widely recognized."

In 1953, the Planning and Research Division of the Los Angeles Police Department published an excellent pamphlet on patrol force deployment procedures. This 54-page pamphlet set forth a scientific method for:

1. Distributing patrol personnel among various divisions or precincts of a police department.
2. Determining the watch hours which should be established in a particular division or precinct.
3. Distributing personnel to the various watches within a division or precinct.
4. Assigning of days off to division or precinct personnel, in order to match the number of men on duty with the proportionate police need.
5. Distributing personnel geographically within a division or precinct on a particular watch.

Primarily, because of the cost of gathering the data, the practice of solving the five problems listed above by this particular system has not been adopted, although a new type of Officer's Daily Log, which was instituted in the Los Angeles Police Department in January of 1958, may make the information readily available.

In 1953, 1954, and 1956, the Cincinnati Police Department made surveys directed toward redistribution of the workload on a more equitable basis.

In 1955, the Oakland, California, Police Department conducted a survey intended "... to serve as a guide to the distribution of available manpower ..." In 1957, Donald S. Leonard conducted an excellent survey of the San Antonio, Texas, Police Department. Considerable space was given in this report to the need for redistribution in accordance with the workload.

The 1956 Police Yearbook carries an article by Commissioner Piggins of the Detroit Police Department on the distribution of police personnel. He points out that "... our most selective system of recruiting... the most brilliant type of academy... would be of comparatively little value unless the personnel... is so properly assigned.

signed... as to obtain the very maximum of effective coverage.\textsuperscript{19}

**Premises**

It may be readily seen that it is imperative that some plan for Selective Distribution of the police patrol force be developed. It should be agreed that any plan is better than no plan at all. Patrol personnel should be distributed on a "proportionate need" basis—that is, the time or area which presents 25\% of the problem should be assigned 25\% of the personnel, etc. Finally, once these premises are accepted—and the factors to be included are determined—Selective Distribution then becomes merely an arithmetic problem.

**Current Practices**

It is still common throughout the country for police departments to assign an equal number of patrol personnel to each of three basic watches, without regard for the predictable hourly fluctuating nature of the demand for police services. It is even more common for police departments to assign days off to patrol personnel without consideration for the day to day predictable variation in the demands for police services. Some departments make surveys which point up the fluctuations in their problem and then proceed to ignore the surveys!

It is extremely common to have the entire patrol force change shifts at one time, leaving the community dangerously vulnerable three times daily during the fifteen to forty-five minute period required to make the changeover.

**Selective Distribution Factors**

Once you have decided that you are going to distribute your personnel on a "proportionate need" or "selective basis," the next step is to determine what "factors" to include in effecting such distribution.

Many factors affect the demand for uniformed police service. A partial list might include:

- Area.
- Population.
- Miles of Streets.
- Crimes.
- Arrests.
- Juvenile delinquency.


Property loss.
- Felon residence.
- Traffic accidents.
- Radio calls.
- Industrial establishments.
- Business establishments.
- Attractive nuisances.
- Public gathering places.
- Liquor establishments.
- Auto recoveries.

The decision as to what factors to include will be made on the basis of your experience in your city; however, the larger the number of factors, the more you will be taking into consideration the compound demands for police service.

The City of Wichita originally used just three factors:\textsuperscript{20}

1. Number of complaints.
2. Number of arrests.
3. Amount of property loss.

The use of the "property loss" factor was considered fallacious by Wilson because it is often difficult to determine the time of day of such loss and because of the wide fluctuations in the losses sustained from serious crimes. In small communities such as Wichita, a single large loss might very well cause such a fluctuation; however, in larger communities, it is believed that the property loss factor should definitely be included.

In his redistribution of the Wichita force, Wilson used the following factors for geographical distribution:\textsuperscript{21}

- Part I Crimes
- Part II Offenses
- Miscellaneous Reports
- Accidents
- Arrests
- Stores
- Miscellaneous Inspections
- Area

In determining chronological distribution all but the last three, stores, miscellaneous inspections, and area, were considered.

In 1948, the Los Angeles Police Department used the following factors in the geographical distribution of patrol personnel to its twelve patrol divisions:

1. Robbery, felonious assault, purse snatching, and murder.
2. Robbery, felonious assault, purse snatching, murder, and burglary.

\textsuperscript{20} op. cit. at note 12
\textsuperscript{21} op. cit. at note 12
3. All crimes.
4. Property loss.
5. Recovered autos.
6. Residence of juveniles arrested.
7. Felony arrests.
8. All arrests.
9. Injury and fatal traffic accidents.
10. Radio calls.
12. Area (minus unpatrolled areas; e.g. mountains).

It may be noted that, by separate listings, robberies, felonious assaults, purse snatchings, and murders, were given triple weight, while burglaries were given double weight. Thus, major police personnel were concentrated on those crimes which are most dangerous to the community. In a similar manner was police effort concentrated on felony arrests.

Considerable variation was noted in the distribution of these various factors. For example, Central Division had accounted for 55% of all arrests, but only 39% of the felony arrests and 27% of all crimes. Newton Street Division, with only 1.5% of the area, accounted for 9.5% of all crime and 16% of the robberies, felonious assaults, purse snatchings, and murders.

The Cincinnati Police Department utilizes the following factors in determining the geographical distribution of its force:

1. Part I Offenses multiplied by 4.
2. Part II Offenses multiplied by 2.
3. Arrests.
4. Accidents.
5. Miscellaneous incidents and service.

These raw figures are totaled and their percentage distribution by census tract calculated. These percentages are each multiplied by six and then each is added to the percentage of area in that tract. The percentage distribution of this new figure is then found. From these basic figures the distributions of the demand by district and beat are determined.

The Oakland Police Department uses the following factors:

1. Part I Offenses.
2. Part II Offenses.
3. Assignment reports.
4. Arrests.

The Los Angeles Police Department presently uses the following factors in determining the distribution of patrol personnel to its thirteen geographic divisions:

1. Percentage of all Part I Crimes and attempts multiplied by 4.
2. Percentage of radio calls multiplied by 3.
3. Percentage of time consumed on radio calls.
4. Percentage of amount of property loss.
5. Percentage of recovered autos, division of recovery.
6. Percentage of adult and juvenile felony arrests made by patrol.
7. Percentage of all adult and juvenile arrests made by patrol.
8. Percentage of traffic accidents investigated by patrol.
9. Percentage of population multiplied by 2.
10. Percentage of street miles.

Each of the factors included in making the determination of patrol personnel assignment was included only after careful consideration. Many other factors were considered before the present list was established.

The first item is quadruple weighted because of the severity of the crimes involved and because these crimes are considered most preventable by uniformed patrol. "Radio calls" were triple weighted because they represent a clear-cut and tangible demand for police service which can be readily determined. The factor of the "amount of time consumed" on radio calls tends to give consideration to those areas where longer time is required on calls because of distances involved, inordinate number of complex calls, or other time-consuming factors.

The amount of property loss is included for geographical distribution purposes, because Los Angeles is large enough that the figures are not subject to the "wide fluctuations" which caused Wilson to discontinue the use of this factor in Wichita. The "division of recovery of recovered autos" was included because such inclusion tends to assist in picking up the stolen car rolling within the "drop" area. Separate factors of "felony" and "all" arrests tend to give additional weight to felony arrests.

The Los Angeles Police Department has a separate Traffic Bureau; therefore, only those "traffic accidents investigated by Patrol Bureau officers" are included for patrol distribution purposes.

"Population" is double weighted because sheer numbers of people cause problems of service and workload which are not represented in other
TABLE I

Percentage Distribution of Various Factors Utilized in Determining Geographical Patrol Force Distribution in the Los Angeles Police Department

<table>
<thead>
<tr>
<th>Patrol Divisions</th>
<th>% of Total Part I Crimes &amp; Attempts Multiplied by 4</th>
<th>% of Radio Calls Multiplied by 3</th>
<th>% of Minutes Consumed on Radio Calls</th>
<th>% of Amount of Property Less</th>
<th>% of Recovered Autos, Division of Recovery</th>
<th>% of Adult &amp; Juvenile Felony Arreets Made by Patrol</th>
<th>% of All Adult &amp; Juvenile Arreets Made by Patrol</th>
<th>% of Traffic Accidents Investigated by Patrol</th>
<th>% of Los Angeles City Population</th>
<th>Total Percent</th>
<th>Average Percent</th>
<th>Number of Patrol Officers Assigned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central</td>
<td>56.8</td>
<td>61.5</td>
<td>18.9</td>
<td>14.6</td>
<td>12.6</td>
<td>26.7</td>
<td>46.9</td>
<td>9.4</td>
<td>14.0</td>
<td>5.3</td>
<td>266.7</td>
<td>16.7</td>
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<tr>
<td>University</td>
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<td>28.5</td>
<td>9.6</td>
<td>9.5</td>
<td>10.5</td>
<td>11.3</td>
<td>8.5</td>
<td>9.6</td>
<td>15.2</td>
<td>5.3</td>
<td>153.4</td>
<td>9.6</td>
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<tr>
<td>Hollenbeck</td>
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<td>18.0</td>
<td>5.8</td>
<td>3.1</td>
<td>9.4</td>
<td>5.0</td>
<td>3.3</td>
<td>3.1</td>
<td>7.2</td>
<td>2.3</td>
<td>75.2</td>
<td>4.7</td>
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<td>Harbor</td>
<td>17.2</td>
<td>12.3</td>
<td>4.0</td>
<td>3.4</td>
<td>5.7</td>
<td>3.7</td>
<td>3.9</td>
<td>4.1</td>
<td>8.6</td>
<td>5.7</td>
<td>68.6</td>
<td>4.3</td>
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<td>21.0</td>
<td>6.9</td>
<td>10.4</td>
<td>6.0</td>
<td>4.5</td>
<td>3.5</td>
<td>7.9</td>
<td>13.8</td>
<td>7.4</td>
<td>111.0</td>
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<td>23.1</td>
<td>7.2</td>
<td>13.0</td>
<td>6.7</td>
<td>5.0</td>
<td>3.5</td>
<td>11.0</td>
<td>21.4</td>
<td>6.9</td>
<td>136.2</td>
<td>8.5</td>
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<td>West L. A.</td>
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<td>9.1</td>
<td>3.6</td>
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<td>1.8</td>
<td>7.1</td>
<td>17.0</td>
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<td>5.6</td>
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<td>48.0</td>
<td>32.4</td>
<td>14.0</td>
<td>12.1</td>
<td>12.6</td>
<td>7.5</td>
<td>4.2</td>
<td>17.5</td>
<td>37.4</td>
<td>23.4</td>
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<td>67.1</td>
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<td>3.8</td>
<td>4.6</td>
<td>5.3</td>
<td>3.6</td>
<td>4.9</td>
<td>13.4</td>
<td>7.4</td>
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<td>5.5</td>
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<td>7.5</td>
<td>8.7</td>
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<td>12.6</td>
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<td>11.6</td>
<td>18.6</td>
<td>8.1</td>
<td>153.4</td>
<td>9.6</td>
</tr>
<tr>
<td>Newton Street</td>
<td>32.4</td>
<td>24.9</td>
<td>8.1</td>
<td>7.0</td>
<td>8.8</td>
<td>12.4</td>
<td>11.0</td>
<td>5.3</td>
<td>7.0</td>
<td>2.5</td>
<td>119.4</td>
<td>7.5</td>
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<td>2.4</td>
<td>3.8</td>
<td>2.3</td>
<td>2.2</td>
<td>4.0</td>
<td>10.8</td>
<td>5.2</td>
<td>61.6</td>
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<td>Total</td>
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<td>300.0</td>
<td>100.0</td>
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<td>1600.0</td>
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TABLE II

Recommended Deployment of Patrol Bureau Policemen

<table>
<thead>
<tr>
<th>Divisions</th>
<th>Decreased by Tens</th>
<th>Present Strength</th>
<th>Increased by Tens</th>
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<tbody>
<tr>
<td>Central</td>
<td>156</td>
<td>157</td>
<td>159</td>
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<tr>
<td>University</td>
<td>90</td>
<td>91</td>
<td>91</td>
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<td>Hollenbeck</td>
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<td>44</td>
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<td>Harbor</td>
<td>40</td>
<td>40</td>
<td>41</td>
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<tr>
<td>Hollywood</td>
<td>64</td>
<td>65</td>
<td>66</td>
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<td>Wilshire</td>
<td>79</td>
<td>80</td>
<td>81</td>
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<tr>
<td>West Los Angeles</td>
<td>52</td>
<td>53</td>
<td>53</td>
</tr>
<tr>
<td>Valley</td>
<td>122</td>
<td>123</td>
<td>125</td>
</tr>
<tr>
<td>West Valley</td>
<td>39</td>
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<td>Highland Park</td>
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<td>52</td>
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<td>Newton Street</td>
<td>70</td>
<td>71</td>
<td>72</td>
</tr>
<tr>
<td>Venice</td>
<td>36</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>Division Totals</td>
<td>933</td>
<td>943</td>
<td>953</td>
</tr>
</tbody>
</table>

factors. “Street miles” is utilized rather than “area,” because it is the number of miles of streets to be covered which really represents the area patrol problem, rather than the sheer number of square miles involved.

In making this first distribution of patrol personnel, those individuals assigned to nonpatrol duties, such as vice, desk, jail, foot beats, and other such assignments, should be deleted from those to be distributed for patrol purposes. In the Los Angeles Police Department, this process left 983 men to be distributed for patrol. Table I shows the percentage breakdown of the various factors used for patrol purposes, their averages, and,
finally, the result of the simple arithmetic problems which split the 983 men into these percentages.

Utilization of this process enables a Chief of Police or a Patrol Bureau Commander to distribute his patrol manpower to the various divisions, precincts, or areas, on an equitable, defensible basis.

Because of the changing number of police officers due to retirements, resignations, recruiting, etc., the Personnel Division is provided with a table showing distribution of both additional and fewer personnel. (See Table II.) Such a table saves last minute queries as to where additional personnel should be assigned and from where the losses should come.

This first consideration, of course, in communities consisting of more than one police division, is the geographical distribution of the patrol force. The division commanders should take the ball from here, in terms of chronological distribution.

If we know historically the existing workload experience by area, we can, with reasonable accuracy, predict the future workload expectancy. Recognizing this, we can, by Selective Distribution, attempt to put the uniformed officer at the location where he is most needed. Our responsibility to the community requires that we do no less.

(A discussion of the factors influencing Chronological Distribution of patrols is discussed in part 2 of this article which will appear in a later issue of this Journal.—Editor.)