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NATURE OF THE PROBLEM

A CHAPTER in quantitative political science and international relations was written in the spring of 1946 when the allied governments (British, American, and French) sent a mission to Greece to observe the parliamentary election of 31 March, obtaining quantitative information concerning compliance of that country's inhabitants with their own election laws. The organization, officially known as the Allied Mission to Observe the Greek Elections, was formed specifically to carry out provisions of the Varkiza Agreement. This agreement (signed 12 February 1945, a day after the publication of the Yalta Declaration) required in part that Greece should hold both a plebiscite (to determine whether it was to be a monarchy or a republic) and parliamentary elections, and stated that "representatives of both sides agree that for the verification of

the genuineness of the popular will at these elections, the great Allied Powers shall be requested to send observers." Basing its decision largely on its quantitative findings, the Mission reported to its governments (Great Britain, France, the United States, and the Union of South Africa) "that the election proceedings were on the whole free and fair, and that the general outcome represents a true and valid verdict of the Greek people."

Incidentally, there was no intention on the part of the Mission to enforce the election laws, to change them, or to pass judgment on them; neither was it a part of the purpose of the Mission to conduct an opinion poll predicting the election.

A second Allied Mission was sent to Greece in the summer of 1946 at the request of the Greek government to observe the revision and recompilation of the electoral lists, which was undertaken at the recommendation of the first Mission. This second Mis-

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sion completed its work on the lists and issued a press report the 19th August, saying, "The Mission is satisfied that the revision and recompilation of the electoral lists as observed by it attain a degree of fairness and accuracy which justifies their use in seeking the opinion of the Greek people on matters of national import."

Opportunity was taken in the second Mission to obtain information on a number of population characteristics. A miniature sample census of Greece was taken, obtaining data on the population, literacy, occupation, and employment, all by age and sex.¹ From this miniature sample census, it was estimated that the population of Greece in July, 1946, was 7.49 million. The increase in population between 1940 and 1946 was indicated by the sample to be 1 per cent. This indicated increase, however, was subject to a sampling error of 1.7 per cent; wherefore it can only be concluded that the population increase since 1940, if any, must have been slight. The number of men validly registered was shown to be 1.70 million. Several interesting features of the population are the deficit in births over the last 10 years, the losses of men in the military age-groups, and the deficit of population still visible from Greece's wars of 1912-22. These features are described in the article just mentioned.

In any election involving large numbers of voters, a certain amount of intimidation and irregularities, such as obsolete or fictitious names on election lists, are to be expected. One might have expected this in Greece, whose people had had no opportunity to express their political opinions by ballot during the last ten years of dictatorship, war, and military occupation. But the mere existence of such irregularities is not necessarily sufficient basis upon which to declare an election invalid. An important question is, *how extensive* are these irregularities? Are they so numerous as to substantially affect the outcome

of the election? And to what extent are they deliberate? Without quantitative information on such questions, the Mission would have been dependent on rumors, assertions, pressures, and impressions; but this kind of information cannot serve as an adequate basis for action when important decisions are pending.

Quantitative information and a measure of its reliability was required. It was wanted directly from the Greek people and from the primary election records. It could not be limited to the usual sources of rumors and impressions. It was of course impossible to obtain information concerning every name on every election list, nor to determine the registration and intentions to vote of every man of legal age. But by the use of appropriate statistical methods the desired information could be obtained with any desired accuracy without investigating every name or every man of legal age in Greece. The sampling tolerances were under control and measurable; in fact, approximations of these tolerances were calculable in advance and known to be suitable to the administrative requirements of the Mission.

The purpose of this article is not to describe the statistical procedures in detail, nor to derive the mathematical theories that guided them, nor even to record the findings of the results, which in fact have already been published.² Rather, the purpose is to distinguish between (i) quantitative results obtained from a proper statistical plan; and (ii) information furnished by general impressions without a proper statistical plan. A proper statistical plan furnishes quantitative answers to such questions as how many men on an election list are actually living at the addresses shown? How many have died? How many men over 21 are registered? How many are not registered? and, if not registered, why not? A tabulation of the returns gave actual figures on the number of men in each category, and particularly, of

¹ Raymond J. Jessen, Richard H. Blythe, Oscar Kempthorne, and W. Edwards Deming, "On a Population Sample for Greece," *Journal of the American Statistical Association*, vol. 42, 1947: pp. 357-84.

² *Report of the Allied Mission to Observe the Greek Election*, Department of State, Publication 2522, Government Printing Office, 1946.

the number of men attributing their non-registration either to carelessness on their own part or to some actual frustration of their attempts to register. For example, in a certain area, it was found that 92 per cent of the men 21 and over were actually registered on the 15th February and that only a quarter of the 8 per cent who were not registered ascribed the reason to frustration. Moreover, these percentages were of assessable accuracy; that is, they were within calculable limits of the results that would have been obtained with the same questionnaire and interviewing procedure had it been carried out in every household instead of only in the sample of households.

On the other hand, "general impressions" were difficult to reduce to facts for action. The Mission received numerous charges, contentions, assertions, protests, representations, which certainly could not at all be true, or at least not entirely true. What were the answers to charges and assertions of "widespread intimidation," "wholesale illegal registration," "60 per cent of the electors abstained from voting," "complete lack of law and order," and so forth? What was their quantitative effect on the results of the election? These were the kinds of questions which needed answers—answers to which people can agree—and therefore the Mission relied on statistical fact-gathering methods.

THE STATISTICAL PROCEDURE

Every statistical survey, whether a sample or complete coverage of every name and household, must be planned in order to get the right answers to the right questions. The approach to the problem, the interviewing technique, the training of the interviewers, the wording of the questions, the recommended procedures for working with the interpreters, the content and scope of the inquiries, and the tabulation plans, depended as much on knowledge of Greek history and politics as on the theory and practice of statistics. These problems were worked out with the aid of experts in the history and politics of Greece.

Because of the extreme importance of the

problem, control of the reliability was essential, demanding the use of statistical sampling procedures. Fortunately, the requisite mathematical theory had been worked out and practical experience had been gained in numerous government surveys in the United States, Great Britain, India, and elsewhere.

All polling units of Greece (including the islands) were classified according to the geographical position and size of city or village in which they were located. For each of the five inquiries, a sample of these polling units was selected for visitation. The procedure for selection was automatic after the number of units for the sample was determined. In the case of Inquiry D, every 21st polling unit was selected, following the choice of a random start. For example, if the random start for a certain class was 6, then the 6th, 27th, 48th, 69th, etc., polling unit of that class was designated as the sample. Thus the final selection of the particular election districts whence information was to be obtained from officials and party leaders of the particular names on the election lists to be investigated, and of the particular households to be visited, was not left to the judgment of the individual observer.

The statistical procedure demanded that every man in every household, every name on every electoral list, and every election official, have an assigned chance of being included in the observations. The assignment of these chances and the rigid specifications for drawing the samples controlled the sampling tolerances. A list of registrants, an election district, an area or a household, once drawn in the sample was always in the sample. Mathematical theories for calculating and controlling reliability are valid only for this type of procedure. Substitution of one sampling unit for another was therefore not permitted, nor was the convenience of the observer nor anyone's judgment regarding "representative" or "typical" areas nor anyone's desires to be in or out of the sample permitted to dictate the selection in any way, for fear of impairing the results. The vagaries of chance were merciless, sometimes sending teams over difficult terrain or to far islands.

Boats and airplanes furnished transportation to the islands; but in the rugged hills it was sometimes necessary to abandon even the invaluable jeep to proceed by burro or afoot to get to the "sample place." The field-work was a large and exacting operation made possible by facilities and personnel supplied by the armed forces of Britain and the United States. In all, 240 teams took part in this operation. Some were British, some French, and some American. Each team consisted of an observer (or interviewer, usually an Army officer), a jeep driver, and an interpreter.

NATURE OF THE INQUIRIES

Consideration of the kinds of information needed and of the best ways to go about getting it led to six different inquiries, as described below. There were three distinct periods during which the inquiries were made. Inquiries A, B, C, and E were made prior to election day and dealt with preparation; Inquiry D took place on election day; and Inquiry F was made on the day following the election.

Inquiry A took place after registration but before the election, and consisted of observations concerning the printing and posting of the electoral lists, and interviews with local party representatives and election officials. The information called for was recorded on an appropriate schedule. The questions covered many pertinent aspects of the electoral lists, whether they consisted of an entirely new catalogue or an old one with annual supplements (positive, those which add names, and negative, those which subtract names). Were the official registration lists actually seen by the party representatives, and if seen, where were they? What credentials were required to establish registration? Were the lists posted in a public place, and at what hours? Were lists of men who had registered elsewhere before 28 October 1940 (the date for determining legal residence) received from proper authorities? Each party representative in the selected areas was asked whether he himself had personally examined the registration

list of his precinct or parish, and if not, why not? Were all the members of his party registered, and did he regard the lists as satisfactory? If unsatisfactory, what comments would he make? How many members of his party *in this precinct* were refused registration and for what reasons? How many men *in this precinct* are being intimidated to the point of being afraid to vote or carry on electoral activities? In addition to the useful information obtained directly from the interview, it may be said that the conferences held with the local party representatives and election officials had the effects of publicizing the fact that the Allied Mission was on the job observing the quality of the election lists and the conduct of registrations. This publicity undoubtedly wrought improvements in registration procedure, and the experience gained by the observing teams during this survey was of considerable value in training them for the more difficult later inquiries.

In Inquiry A one out of every two registration units was observed. Thus in 1450 of the roughly 3200 registration units, observers reported the answers to specific questions. The reason for going into half of the registration units was partly psychological; it was quite unnecessary from a statistical point of view. As a matter of fact, error (variation due to sampling) of a sample of this size is ordinarily so small that it is overshadowed by the errors and biases arising from difficulties of response, which are present whether the observations are taken in every registration unit or only on a proper sample of them.

Inquiry B took place prior to the elections and consisted of a cross-sectional sample of 2000 households located in 150 cities, towns, and villages dispersed over every part of Greece. The Mission's observers interviewed the families residing in the selected households, asking for names of those members who were eligible to register, whether each was registered, and if not, why not; the total number of inhabitants in the household, and other similar questions. Each name of a person said to be registered was verified by checking the electoral list he was said to be on, or, where electoral booklets were issued,

by asking to see his booklet. The answers, which by the way were very willingly given, provided the basis for estimating such important characteristics as the total number of men registered, not registered for each of seven possible reasons, and the number of men intending or not intending to vote.

Inquiry C took place at the same time as Inquiry B, and it used the same sample cities, towns, and villages. But here the similarity ended. Inquiry C dealt with the content of the electoral lists. A sample of 2365 names, 1/40th of the names in rural places and 1/18th of the names in urban places, was drawn off the electoral lists in the selected cities, towns, and villages. With regard to each name, questions were asked from neighbors (or in the case of small villages, from townspeople in general). They were asked; Do you know the registrant? What is his occupation? How old is he? Where does he live? How long has he lived at this place? And if dead, when did he die? These questions were put for every name drawn in the sample, even for names drawn from negative lists (lists of men supposedly dead, moved away, or disbarred by law from registering). This information, invaluable for determining the validity of the electoral lists, provided an estimate (independent of Inquiry B) of the total number of valid registrants in Greece.

Inquiry D took place on election day. Its primary purpose was to determine the extent of patent irregularities in voting procedure. This was done by observing in detail the conduct at a sample of polling stations and comparing the election results of that observed sample with the final returns for the whole of Greece. If the conduct as observed at the sample polling stations was acceptable, and also if the election results at these sample places agreed well with the final returns for all of Greece, the likelihood was great that had observers been present at all 3200 stations, the outcome of the elections would not have been essentially different. As it turned out, the total votes cast as estimated from the sample was within 2 per cent of the final count for the whole of Greece. Since

conduct at the observed sample of polling stations was acceptable, the conduct at the *unobserved* places was not essentially different so far as its effect on votes cast was concerned. This inquiry was carried out in two sections, to each of which were assigned 120 of the Mission's total of 240 observer teams.

Section 1 took place at 105 polling stations selected by a proper statistical method from the official list of polling stations. At each of the 105 sample polling stations, an observer team remained during the entire period of voting (from sunrise to sunset) and during the counting of ballot papers (beginning immediately after voting terminated and continuing into the night until completed). A questionnaire reporting form was provided which contained such questions as these: Does the polling station have facilities so that the voter can mark his ballot paper in secrecy? What parties have representatives present? What complaints on electoral procedure arose? How were they dealt with? What is your (the observer's) opinion of the fairness of the decision rendered on the complaint? How many votes were cast for each party or independent candidate?

Section 2 took place along 120 routes, one for each observer team assigned to this inquiry, mapped out beforehand but known only to the Mission. The purpose of this inquiry was twofold: (i) to put the observer teams visibly before as many of the Greeks and in as widely scattered parts of Greece as possible and (ii) to observe the activities at a larger number of polling stations visited without benefit of appointment except for the general announcement that any station might be visited at any time during the day. In addition to the 120 stations at which observers remained the whole day (Section 1), 700 other stations were paid brief visits during the day; therefore of the total of 3300 polling stations in all Greece, 800 or about 1 of every 4 were visited by an allied observer during election day. Each observer was supplied with a questionnaire-reporting form similar to that used by Section 1, with certain questions deleted as inapplicable to the roving teams.

Inquiry E was not a specific inquiry like Inquiries A, B, C, D, and F. Inquiry E was a convenient label for all other investigations carried out according to a sampling plan. For example, certain interested groups would often charge flagrant irregularities and malpractices on the part of its opponents or government officials. These groups would present the Mission with lists of names of alleged violators or other information which would help identification. Such evidence could not be accepted without some sort of verification, and it was impossible to examine all such cases submitted. However, the Mission would have been shirking its duty if it had not accepted and evaluated all information supplied to it. Plans were developed to deal with this mass of material on a sample basis. The use of samples of the alleged violators permitted a thorough investigation of these complicated cases without an excessive use of the Mission's limited facilities, and yet provided the necessary understanding of their accuracy and therefore importance. Much of this material was found irrelevant in the sense that the alleged violations were not committed recently, but years ago. Some were found to have been true at one time, but to have been subsequently corrected. Corrections on the electoral lists were continually being made by officials up to election day. No doubt some improvement of the electoral lists came about as a result of the Mission's persistent and what appeared to be ubiquitous examinations. A few others were found to be verified violations, and still others were not verifiable at all because of insufficient evidence or lack of identification.

Inquiry F took place immediately following the elections. Its purpose was to investigate certain aspects of the election, particularly the extent of illegal voting and deliberate

abstention. It consisted of a sample of 1345 names selected on polling day from the electoral lists of each of 113 sample polling stations. Every 40th name was drawn off the electoral lists at the close of polling at each of the 113 polling stations. Each sample name was then checked with the records kept by the election committee to determine whether anyone of that name was credited as having voted that day at that station. On the next day, the registrant himself was located and asked if he had voted and if so where; and if not, why not. The answers to these and other questions furnished valuable information in assessing the extent of abstention for party reasons (certain leftist parties were abstaining from the election), apart from other reasons for not voting.

SUMMARY

By making use of statistically designed sampling inquiries, the Allied Mission to Observe the Greek Elections was able to assess in a quantitative fashion the nature and extent of such violations of the election laws as occurred in the Greek elections of 31 March, 1946. The systematic collection of first-hand information in accordance with a plan which gave every potential voter and every polling place in Greece a preassigned chance of being investigated made it possible to place in proper perspective the numerous charges and counter-charges that marked each stage of the political campaign. Having thus measured on a national scale the net effect of the various factors which could have prevented individuals from voting for the party of their choice, the Mission had available the weight of evidence necessary to support its findings against those members of either faction who might attempt to contradict those findings by generalizing from selected instances.