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**Rendel B. Alldredge**  
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RENDEL B. ALLDREDGE

REEL LI

Including corrections offered with letter of May 15, 1964

Rendel Alldredge – Statistics and Statistical Analysis in the National Park Service –  
– History, Current Status, and Some Ruminations about the Future.

Your reporter – Rendel B. Alldredge, Chief of Statistics Analysis.

START OF TAPE

Rendel Alldredge: The period prior to 1959 about which I can comment mainly on the basis of information gained by informal conversations with various people works out about like this:

Rendel Alldredge: Prior to World War II the collection of statistical data on the public use of the national parks appears to have been a matter largely of taking data from narrative or annual reports. Monthly reporting of travel statistics, so far as our records indicate, began with the year 1941. The intervention of World War II did not cause this monthly reporting to be discontinued; however, anything serious with respect to such statistics appears to have been postponed until the post-war period. In 1945, there was established in the National Park Service the United States Travel Division; it lived a short life of only three years, being discontinued by lack of congressional appropriation support. It was headed then, I believe, by Mr. James L. Bossemeyer and its primary function appears to have been the stimulation of travel within the United States. A monthly publication called Travel U.S.A. was put out, - a sort of Chamber of Commerce brochure or early version of Holiday Magazine.

Rendel Alldredge: Also, beginning in 1947, the National Park Service sponsored, in conjunction with various state highway commissions, and sometimes the United States Bureau of Public Roads, a series of tourist surveys. These surveys were conducted in the form of interviews held by park rangers or others in which respondents were asked a series of questions concerning their state of origin, the number of people in the family, their occupation, the purpose of their trip; what sort of accommodations they used, etc. These surveys were held from 1947 through 1955 at Yellowstone, Crater Lake, Yosemite, Glacier, Shenandoah, Great Smoky Mountains, and Grand Canyon National Parks. The objective of these surveys was to produce useful information with which to answer the advocates of opening up the national parks to various kinds of commercial exploitation; in some cases, this was mining or grazing or timber cutting; in other cases, there were attempts to enlarge the resort atmosphere of the parks. The data generated by these tourist surveys established beyond question that the national parks do constitute a substantial economic element in a region's economy; in other words, tourists do spend money, great big chunks of money. After 1956, these surveys were discontinued, although there have been from time to time proposals to recommence the series. I have

objected to their being reinstated and there is now in existence a memorandum signed by Mr. Scoyen as Acting Director, in 1959 or 1960, in which the policy is established that: while the Service will be happy to cooperate with outside sponsors of such studies by way of providing traffic control, picking up self-administered questionnaires, etc., it will not directly sponsor nor urge the conducting of such a survey. The reason for this is twofold: first, we have definitely established that parks do have a tremendous economic drawing power, that tourists spend lots of money. It seems pointless to go on saying, "indeed and indeed and indeed and indeed tourists spend lots of money." Beyond that, it is correct to conclude that while these surveys have established the fact of a substantial volume of expenditures being made by tourists, it is not correct to interpret these results with statistical precision so that we can measure the exact impact on a region's economy.

Rendel Alldredge: Thus we cannot say that, as result of the existence of a certain national park, in a certain region, the per capita annual personal income, the per capita annual gross product or whatever, is so many dollars larger than otherwise it would be. The techniques of conducting these surveys leave much to be desired for the statistical precision necessary to draw such conclusions. Indeed, the surveys were not really designed for that specific purpose. Moreover, in order to measure true economic impact in a cardinal sense, one would net out the outflow of funds for purchasing the raw materials, or providing other services in a community, which would be sold to the tourist. In other words, one must get at a net amount. The tourist survey is not the procedure for doing this kind of thing.

Rendel Alldredge: Now, getting back to our regular series of visitor or travel statistics. Prior to 1956, these statistics were used mainly in connection with the Service's public information program. We had what was called a Monthly Visitor Report, on which each park reported the total number of visitors according to the mode of conveyance they used in getting to the park. That is, we reported the number of people coming by private automobile, by boat, by train, by bus, and by various other means. In addition, the number of overnight stays, either in campgrounds or in commercial facilities in the parks, were reported. One of the difficulties with these series of data was that the delineation of travelers by mode of conveyance proved to be useful only to a fairly restricted part of our public clientele, - those who sought the reports to determine whether or not the volume of railroad traffic, or automobile traffic, or bus traffic to any particular park was increasing or decreasing. Moreover, there were to my mind, unsatisfactory statistical controls over the generation of the data. The individual park superintendents had a rather wide range of discretion in defining what would be reported as a visitor and what would not be reported as a visitor.

It is true that the general feeling was, without making it a matter of specific instruction, (or rather, the general tradition was), that we should count only bona fide visitors. A bona fide visitor was construed as an individual who entered a park with the purpose, either consciously or unconsciously, of using or enjoying the park for the purposes for which that park was established.

Rendel Alldredge: Moreover, superintendents were urged to be conservative in their estimates of the total number of visitors in order that we would not be charged with padding our statistics. There were two unfortunate results of this scheme, - unfortunate purely from the standpoint of manipulating these statistics for anything other than public information purposes. As public information statistics they were, I would judge, adequate and satisfactory for the purposes to which they were then put. Disadvantage number one was that the data-processing office - that is, the statistician here in Washington - did not really know what were the contents of those data. He did not know what was being accepted or rejected as a visitor by the individual superintendent. Therefore it was difficult to make comparisons with respect to travel loads, traffic volume, etc., among the various parks.

Rendel Alldredge: Secondly, in as much as the definition of a visitor was largely discretionary with the superintendent, one encountered, on occasion, sharp discontinuities in the historical series of data for any park. Detailed explorations to discover whether or not there had been a violent change in the road system, a sudden alteration in the repute of the park, in the territory where it was located, or other items, proved to no avail. One came upon, finally, the fact that the discontinuities seemed to occur whenever superintendents were changed. By this I do not mean to suggest any element of dishonesty or unethical statistical practices; only to suggest that two individuals, both equally determined to be accurate and correct might have different ideas, and legitimately, about what ought and what ought not to be counted. Consequently, in 1958, following an extensive tour of the Park System, during which I visited 68 parks, monuments and other areas over a period of somewhat less than four months, the conclusion was reached that, first, an attempt to delineate between the bona fide visitor to a park and what we might call the non-conforming visitor, - that is, the businessman driving through the park, the family passing through the park on the way to some other place, utilizing park roads and facilities simply because they happened to be on the most direct route of travel to some destination beyond the park - would prove of enormous statistical expense. In any park which experiences both bona fide and non-conforming visits, there is likely to occur a significant change in the ratio of bona fide to non-conforming visitors over the year.

The level of non-conforming travel is likely to be more constant than recreation travel. Consequently, one would have to take samples two, three, four, five, or six times in every park throughout the system in order to establish reasonable ratios. This seemed to portend a more extensive effort than the data justified.

Rendel Alldredge: Moreover, the delineation between bona fide and non-conforming visitors is truly irrelevant. It makes no difference to the park manager what kind of a visitor he has. The roads are used; the facilities are used; litter is scattered; personnel must be used for control, maintenance, etc., irrespective of why an individual or a family is in the park.

Rendel Alldredge: Now - the implication here is that the statistical data on park travel ought to be so designed that they would become operationally useful to the National Park Service for management purposes. That is, these data ought to be used for such objectives as comparing the public-travel-imposed workloads on the park, so that we could get some notion of relative amount of protective staff that each park should have. We ought to be able to use the data for determining the size of various kinds of public facilities, such as comfort stations, campgrounds, parking areas, road widths, etc. Consequently, the data would give us some notion of the relative amount of dollars to be allocated to each of these parks for purposes of staffing, for both public contact work and park maintenance, and for construction. Furthermore, if our data systems were designed properly, the data would be anticipatory in character; that is, we ought to be able to see by an analysis of trends, the directions that certain patterns of travel were taking. We could see the onset of a problem before it became a matter of urgency. Thus, if we had had a thoroughgoing data system in existence, we ought to have been able to anticipate the explosion in camping that occurred after 1953, so that we would not have found our campgrounds so seriously overcrowded, the campground scene so thoroughly abused, as did turn out in the years 1955, 1957, 1958, up through 1960. What this of course means is, - public use statistics can and ought to be used for analyzing comparative park workloads, for measuring the use of various facilities, demand for various kinds of services, the forecasting of total work-loads, and the character of travel patterns. We would make comparative analyses among the parks for the purpose of establishing statistical standards for staffing, facilities, design load, etc.

Rendel Alldredge: Now, I emphasize statistical standards in this sense. A statistical standard would simply say that the average number of units of work or the average number of people served, plus or minus a certain range of error - error used here in the statistical sense - is what currently exists in the park. By identifying certain parks that we might deem for one reason or another to

be properly run, we could then determine what alterations in our staffing patterns ought to be made in order to bring all the parks in- to some sort of equity.

Rendel Alldredge: One ought to concede that the application of statistical standards to the comparative measurement of park workloads ought to be on a substantive basis. What these standards would reveal would be the inequities among the parks in the ratio of workload to staff. Thus, while no parks are, in matter of fact, genuinely over-staffed, some have comparatively more ample staffs in relation to their workloads, (or at least to certain significant features of their workload), than do others. What statistics will do is to show where adjustments are required in order to equalize the burdens. Statistics will not make the rangers happy - it will simply make them equally unhappy.

Rendel Alldredge: This has led to a new approach. First, we designed what we have called the "Monthly Public Use Report." In this report, we obtain each month from each park in the System, with a few specified exceptions, the number of visits to that park - to be discussed in a moment - the number of overnight stays according to whether they are campers, whether they are in trailers or in tents, whether they are camping within the capacity of the campground or are overflow campers; we obtain figures on the number of overnight stays in concessioner accommodations and in the accommodations operated by private innholders within the park. In addition, we obtain tailor-made data from most of the parks pertaining to special features of park use. Thus we may obtain figures on the flow of traffic at two or more points within the park, the number of visitors to any particular site in the park, the number of pleasure boats launched, and all sorts of special-use data, provided to us; the idea being that from this Monthly Public Use Report we want to work toward a time when we obtain, as complete as possible, a statistical picture of what the public does in our parks. From this statistical picture, we can measure the amount of work that the public imposes on each park, on its staff, and on its facilities.

Rendel Alldredge: The key feature of the monthly public-use reporting system is the establishment of controls. These controls are handled through a special supplement in what is now called the Report Management Handbook. Each park has a special supplement; this supplement is incorporated in that part of the Reports Management Handbook which requires the submission of the monthly public use report from that park. The supplement contains specific detailed instructions on just exactly how a visit is to be defined, how it is to be counted, and how the aggregate of visits is to be calculated for incorporation in the Monthly Public Use Report.

Rendel Alldredge: Basically, a visit makes no delineation between the bona fide and non-conforming visitors. A visit, statistically, is the entry of any individual into a national park such that his presence within the park imposes a workload on that park, - its staff or its facilities, where the imposition of a work-load is construed to mean to require the expenditure, by the National Park Service, of some public funds. We are in the process now of establishing a monthly public-contact report which, in a sense, will be a successor to the old checkerboard or statistical supplement to the annual report of interpretive services. The monthly public-contact report will be parallel to the public-use report in the sense that it will provide each month several series of data which will show the volume of services which the Park Service performs for the public, as against the public-use report which shows the volume of work the public imposes on the park. In other words, the public use report shows what the public does to us; the public contact report will show what we do for the public. These two reports taken together should give us a fairly complete statistical picture of public behavior in the national parks.

Rendel Alldredge: Now - this discussion has several implications for the National Park Service. You will note that our public-use statistics are primarily concerned with people. The traditional orientation, as viewed by this observer, of the National Park Service has been to lands, to the typical resources on those lands, and the management thereof. Now, in the gray book introduction to the MISSION 66 program, the Director pointed out that the primary reason for the existence of the National Park Service is people, to provide enjoyment for the people who visit the national parks. The historical role of the National Park Service, however, has been that of land management; we have been fundamentally concerned with protecting the features on the land; we have been concerned with intrusions on the natural scene, with the abuse of their features, whether natural or historical or archeological. We have, I have the temerity to suggest, had less concern with obstacles to enjoyment than with obstacles to absolute preservation. Two or three years ago we made an examination of the research projects which were being conducted at that time by the National Park Service. The survey showed that almost 100 percent of these research projects were in the field of archeology, natural history, history, geology, etc. The number of researches conducted into people, into human beings, into public behavior in the parks as against measuring how much work they imposed on us or how much money they spent around us, was almost negligible.

Rendel Alldredge: We have here, in the Monthly Public Use Report and in the soon-to-be-established Monthly Public Contact Report, the first primitive beginnings of an attempt to systematically study people, the people whom it is the

objective of the National Park Service to serve and for whom it is our purpose to provide enjoyment. The National Park Service is equally - and I emphasize equally - a manager of land and its resources and a manager or protector of people. I suppose one might wonder how it turns out, how it has come to pass that we have been so heavily emphatic on the management of land and its features concerning which we seem to have been criticized in the recent past.

Rendel Alldredge: What is the explanation for our failure to study people? And by this I mean systematically study and not just simply be concerned about them. We have long been concerned about them and talked about them, but we have shown a different kind of reaction to this concern than we have to the natural sciences; our concern about the flora and the fauna comes out in terms of research projects to find out what our problems are. We have not shown the same tendency in the case of studying human beings. One possibility, theoretically, is that we do not really mean what we say when we suggest that public enjoyment is a matter of primary concern to us. This would be hypocrisy.

Rendel Alldredge: A second explanation for our failure to have made continuous systematic studies of public behavior in the parks, patterns of use, for considering the park visitor as a human being, as a bundle of wishes, needs, hopes, backgrounds, orientation, occupational levels, educational levels, ability to absorb ideas, instruction, inspiration, etc., may have been that we really did not know that there are people who are experts in this field. There are experts in history; they specialize in dusty archives, as do archeologists in old bones, engineers in joists, stubs, and slide rules, botanists in leaves and plumes, zoologists in fins and furs, and statisticians in big numbers, if you please. We have staffs in the National Park Service of statisticians, botanists, engineers, archeologists, historians, etc., but we have very rarely employed anyone who was an expert in human beings.

Rendel Alldredge: Now our second reason for not having done so may be that we really did not know that these people exist. This seems like a special kind of ignorance. The professions of economics, sociology, psychology, education, and demography, while young in comparison with the natural sciences, do constitute the best source of expert knowledge about human beings, (human beings the National Park Service is supposed to provide enjoyment for) that we have. Somehow, it would seem useful and desirable to exploit the abilities of these people.

Rendel Alldredge: There is still a third possibility. And that is that, out of our experience, in managing the parks, out of the experience of rangers and naturalists and historians and landscape architects, park planners, and I suppose statisticians, too, we have acquired an ingrained belief that we really know

what it is that the visitors need, want, hope for. If this is true, there is a sort of benign arrogance implied here. We are possibly imputing to the people who visit the parks the motives, the hopes, and the wishes that we ourselves have, when we visit the parks. This arrogance may or may not be an accurate picture of us. A recent report by the Outdoor Recreation Resources Review Commission (Report No. 5, to be exact) makes a particular point of suggesting that the reaction to any given park by the public is very frequently not at all what the park management thinks it is.

Rendel Alldredge: The statistical program now under way in the Park Service, to reiterate, constitutes a rudimentary beginning toward an analysis of people. I will hope that it will be regarded as only a beginning and that its growth will be accelerated until the Service reaches a point where it is as expert in understanding and managing the people who visit the parks as it is in managing the land and protecting the physical features contained therein.

Rendel Alldredge: Now for a very brief look into the future of statistics and rigorous analysis as it is envisaged by this reporter. In the first place, we ought to continue and enlarge our analytical resources to provide much more specific guidance than we have been able to in the past for, say, the Design and Construction Offices; we ought to provide those offices with specific design loads for parking areas, museum exhibit groups, comfort stations, campgrounds, lobbies, and so on, all through the parks, so that when the time comes to build a feature, hours of time will not be lost in discussing things that ought to be a matter of basic data. The question of how large, how many, are statistical questions and not questions which are resolved by guessing and hunches around a conference table.

Rendel Alldredge: The individual park master plans should contain an up-to-date statement - and by this I mean not just one or two sentences but a complete analysis for each park - of public behavior, public need, the patterns of use, the patterns of services which are currently provided, some anticipatory data which will suggest as rigorously as possible the direction of future patterns. Are we going to have more camping, more drive-through sightseeing? Are there indications of an increased interest in the formal aspects of interpretation? And so on and on. So that when the time comes to move into a construction program some fairly clear notions will be had as to what ought to be built, where it ought to be built, and how it ought to be built.

Rendel Alldredge: We ought to move, perhaps boldly, into the new field of operations research. This is a highly sophisticated art which has developed in the last 8 or 10 years. It would enable us more or less directly to work effectively on such problems as the long queues that develop at entrance stations during the peak of use. Such other agencies as the New York Port

Authority have used operations research to cut the queues forming at either entrance to the Holland Tunnel, the Lincoln Tunnel, etc., which go under the Hudson River. We could take advantage not only of experience that other agencies have had - these government agencies-, but also private industry, which has moved very heavily into the field of operations research.

Rendel Alldredge: On more general lines, the utilization of high-speed data-processing equipment is something that ought to concern the National Park Service. It is possibly true that at the present time a fully automated data processing system is not only more sophisticated than we really need but is possibly more expensive than the current level of operations can justify. However, I believe that this might be a debatable issue.

Rendel Alldredge: When I speak of automatic data processing, I have in mind not simply the analysis of data on public use or public services of the parks, but I have in mind something more general than that, - a complete information system which would embrace the activities of public use statistics and public service statistics, operations and maintenance statistics, finance, and personnel. The idea behind a full-scale information system, which would require the use of automatic data-processing equipment, would be to provide, through a data-processing and data-analysis center coupled with a technical group who would design and control the flows of information from the individual parks, a scheme whereby every operating official, every planning official, every programming official in the National Park Service would have, regularly flowing across his desk, the information, the data, the facts, that he needed to perform his task and to anticipate future action.

Rendel Alldredge: This means that a complete information system would provide the proper information at the proper time in the proper place in the proper form to the proper person for the execution of planning, management, the programming function of the National Park Service. The adoption of a complete information system is not something which can be taken lightly. If we should decide at this moment - which is not very likely - to move in this direction, some two, three, or more years would be required before we could actually begin the establishment of such a system. However, the dimensions of recreation use, the various kinds of parks and resources and abilities with which we work have made any sort of data systems, short of an automated one, extremely cumbersome with which to work. The actual mechanics of processing statistics, even though we know precisely how to go about it, sometimes takes so long and is so complicated that we simply avoid it, because by the time we have the analysis done it becomes a matter of history in terms of application. It is too late.

Rendel Alldredge: The great variety of tasks, functions, and types of park areas on which we work makes it almost impossible to do analytical work except upon the peripheries, to forecast total travel to individual parks; so when it comes to forecasting detailed patterns of travel, the complexity of these patterns causes us simply to avoid even considering them with the present equipment and resources that we have. I think then that the future of data processing - and I include financial data, personnel data, and operations data as well as public use data, in this - is as a substitute, and not a very good substitute, for personal observation and personal knowledge. When a park was visited by only a few thousand people a year; when the rangers and the naturalists and the superintendents could in fact be almost personally acquainted with each visitor; when a contact could be made which would involve a conversation of decent length; when the number of personnel employed in the Park Service was small, so that the Director and his staff personally knew all of the individuals and their families and their background, there was no need for statistics. Statistics are a poor substitute for personal knowledge when personal knowledge is possible of being acquired. But when there are 88 million people a year going to 192 parks, staffed by some six thousand people, the acquisition of personal knowledge is an absolute impossibility. In order that this personal knowledge will not become biased impressions about what is going on in the parks, a statistical system is imperative. It is a sine qua non of rational management.

END OF TAPE