

ANNUAL REPORT ON THE NATIONAL ANTI-SMALLPOX VACCINATION PROGRAMME  
IN THE REPUBLIC OF COLOMBIA, 1959

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## A. BACKGROUND

Smallpox has been a serious health problem in Colombia: between 1951 and 1955 there were 23 212 cases of the disease. For this reason, the Ministry of Public Health applied for and obtained the help of the Pan American Sanitary Bureau and of UNICEF for the implementation of a programme for the eradication of this disease through the vaccination of 80 per cent. of the total population of the country within a maximum period of five years. To this end, an agreement was signed between the three parties in December 1955.

It was decided to perform vaccination systematically by department, on a house-to-house basis, using the multi-puncture method and employing full-time personnel.

In order to have available a sufficient quantity of freeze-dried vaccine, especially for the rural areas (whose inhabitants constitute approximately 60 per cent. of the country's population), it was decided to organize and equip a production laboratory within the "Samper Martínez" National Institute, with equipment supplied by UNICEF, and as a result we have at present a sufficient quantity of dried vaccine to meet the needs of the programme and of the local health services.

The Pan American Health Organization (WHO), in addition to providing assistance through a consultant-epidemiologist specializing in the organization and direction of anti-smallpox vaccination campaigns, a technical consultant specializing in the production of freeze-dried vaccine, and other personnel, also provided short-term fellowships to enable two medical epidemiologists to observe the development of well-organized campaigns in neighbouring countries. The Organization also supplied the necessary equipment and material for the commencement of the work, together with vehicles for the transportation of personnel.

The national Government has provided technical and auxiliary personnel, material and supplies; the agreement stipulates that for the duration of the programme the national budget shall include for it a sum of not less than 900 000 pesos per year; during this last year, one million pesos were allocated, and for the next financial year a further increase of 400 000 pesos is envisaged.

During the first two years of the programme, the rhythm of the work was slower than anticipated, but from 1958 there was a marked improvement, thanks to the financial help provided by the departmental health services. As things are at present, we consider that at the end of next December four-fifths of the population to be protected will have been covered and, unless anything unforeseen happens, at the end of 1960 (the end of the five-year period) at least 80 per cent. of the population will have been vaccinated.

The incorporation of anti-smallpox vaccination as one of the routine activities of the local health services - in order to maintain an adequate level of immunity among the population - and the epidemiological investigation of cases of smallpox by these services are only in the initial stages. For this reason, we feel that priority attention should be given to these activities in the next phase of the work.

#### B. OBJECTIVES OF THE PROGRAMME

1. To carry out mass anti-smallpox vaccination within the maximum time of the five years, such vaccination to cover at least 80 per cent. of the total population of the country, with the aim of eradicating smallpox.
2. To train the necessary personnel for the programme in the techniques of anti-smallpox vaccination.
3. To incorporate anti-smallpox vaccination in the routine activities of the local health services in order permanently to maintain immunity in at least 80 per cent. of the population.
4. To organize and equip a laboratory for the production of dried anti-smallpox vaccine within the "Samper Martínez" National Institute of Hygiene, so as to produce the necessary vaccine for the maintenance of the essential level of immunity and to cover the campaign's needs.

## C. PLAN OF ACTION

### 1. Commitments

#### 1.1 Commitments of the national authorities

In accordance with the provisions of the plan of operations, the campaign is to be under the direction of the Medical Chief of the Epidemiological Section of the Ministry of Public Health; the other personnel, both medical and auxiliary, are to work on a full-time basis and to be permanently resident in the work areas.

The budget allocation for the year covered by this present report was one million pesos. This permitted normal development of the programme, payment of salaries and allowances to personnel, and provision of material and supplies in sufficient quantities. The most expeditious administrative methods were adopted.

The production of dried anti-smallpox vaccine by the "Samper Martínez" National Institute of Hygiene covered the vaccine requirements of the programme and the local services.

#### 1.2 Commitments of the Pan American Health Organization

1.2.1 Personnel. The Pan American Health Organization has provided, from the commencement of the campaign, the services of a consultant-epidemiologist specializing in the organization and direction of anti-smallpox vaccination campaigns.

1.2.2 Equipment. During the month of September, eight trucks arrived in the country sent by the Organization for the transportation of personnel. These vehicles, together with those sent in the first months of the year by UNICEF, constitute the vehicle pool which satisfactorily replaces the vehicles acquired by the Government in the first phase of the programme and which were very dilapidated.

## 2. Methods of work

### 2.1 Work in the field

2.1.1 Planning phase. Prior to vaccination, a survey is made of each commune (nucleus of the country's political divisions) in collaboration with the local authorities and with the very valuable help - from the point of view of propaganda - of the religious leaders. At the same time, data are collected relating to localities, distances, population figures, etc., and a publicity campaign is established on the basis of the available media, using the educational centres, the parochial services and the press. On the basis of the information obtained, the work in each commune is planned according to the number of vaccinations to be performed and the results to be expected.

2.1.2 Implementation. The vaccination is performed on a house-to-house basis and visits are used as an occasion for taking a census of the inhabitants; with the exception of inhabitants presenting some contra-indication, everyone is vaccinated, from infants over two weeks old up to persons of advanced age. If some members of the family are absent, instructions are left so that they may present themselves at the nearest health centre.

The technique used is: first, the cleaning of the skin with soapy water, followed by inoculation with sterilized needles, using a fresh one for each person and adopting the multi-puncture method (Leake technique).

Verification of results is obtained by reading the reaction in 10 per cent. of the initial vaccinations, from the ninth day.

The work in the villages is effected on the "block" system, following a given order, so as to facilitate supervision. In order to avoid the omission of any dwellings in rural areas, a plan is established according to the conditions of the terrain and communication routes.

Throughout the programme, from the commencement it has been the rule not to commence work in any new department until operations have been completed in the last. The only exceptions to this rule have been cases of force majeure, when the work in the incomplete department has been terminated as soon as the obstacles have been removed.

2.1.3 Evaluation of field work. The statistical reports prepared by each vaccinator and summarized by the competent team inspector, serve to determine whether the hoped-for rate of vaccination is being achieved among the estimated population in the respective communes.

For the purposes of evaluating the quality of individual and team work, the output reports which are prepared every month are of great assistance.

## 2.2 Supervision techniques

In a programme of the type in question, effective supervision is absolutely essential: the special conditions in which the work is done call for constant control of the activities of each member of the team. On account of the monotony of the task there may be a tendency to slackness -- with the consequent prejudice to quality and to the results of the campaign as a whole. For this reason, a system was adopted whereby each vaccinator keeps a careful log of his work each day, using a daily output sheet; this makes it possible rapidly to assess the various aspects of individual work (attendance, number of vaccinations performed, number of exemptions, etc.).

The figures on the daily output sheets are added up once a month, and the average number of vaccinations performed by each vaccinator is calculated. Graphs showing the results are prepared and despatched month by month to the zonal medical officers as an objective report on the individual quality of their own and other team members.

In order that the medical officers may have, in their respective areas, as much information as possible on which to base their evaluation, a monthly memorandum on the work accomplished during the month is also sent to them, together with tables showing the overall number of vaccinations performed in each department (by commune) so that they may be able to assess the progress made.

## 2.3 Statistical information

The vaccinators summarize their activities on forms which call for information on: the number of inhabitants in the houses visited; the number of vaccinations (classified by initial and revaccinations); the total number of persons present at the time of the visit. These are the basic elements for the preparation of statistical tables, by commune.

When the work in a department is finished, a table is prepared summarizing the activities in each commune and, in addition to the above-mentioned data, giving the level of protection reached and the results of the readings of initial vaccinations. Recently, the form for this final report on vaccination by department was changed, since the previous one contained too many headings and was in consequence confusing.

#### 2.4 Evaluation of the potency of the vaccine used

In accordance with the established rules, medical officers and inspectors read the results of vaccination in 10 per cent. of the initial vaccinations in order to check the potency of the antigen strain used and, indirectly, the efficacy of the technique applied.

#### 2.5 Epidemiological study of cases of smallpox

Any case of smallpox notified in a department in which the programme is being developed is studied by the competent zonal medical officer; if the diagnosis is confirmed, all the necessary steps are taken for the application of vaccination as quickly as possible in the focus and in the commune concerned.

In departments not covered by the programme and in those in which the work has been completed, the medical officers attached to the local services are responsible for epidemiological investigations.

A special form has been prepared for these investigations and is being distributed to the local services.

### D. DEVELOPMENT OF THE PROGRAMME

#### 1. Relationship between the programme and the national health services

In accordance with the provisions of the plan of operations, the programme is under the direction of the Chief of the Epidemiological Section who, in turn, is responsible to the National Health Administration of the Ministry of Public Health (Annex 1).



The departmental governments, through their respective health secretariats, have been actively collaborating in the development of the programme. During this year, two important campaigns have been carried out with the assistance of the departments of Antioquia and Valle and this considerably raised the vaccination levels. As already mentioned in another part of this report, this policy of collaboration was instituted last year and it has given the anticipated satisfactory results; it is also serving as a precedent for the incorporation of anti-smallpox vaccination into the activities of the local health services.

## 2. Results obtained in the vaccination campaigns

### 2.1 During 1959 (January to October)

From January to October of this year, 2 185 053 vaccinations were performed. This represents 67 per cent. of the statistically estimated population and 92 per cent. of the population estimated on the basis of the "census" taken by programme personnel in the same period. It is difficult to determine the reason for such a wide deviation and we can only cite the following possible causes: over-estimation of the existing population in the departments in which the programme is being implemented; migration to other departments on account of the outbreaks of violence in most of the vaccinated departments (Caldas, Tolima, Valle); defects in data collected by personnel in these abnormal circumstances.

Of the 2 185 053 persons vaccinated, 711 087 (32 per cent.) may be classified as initial vaccinations (no previous scar) and the other 1 473 966 (68 per cent.) as revaccinations (previous scar). The first group may be assumed to have been unprotected before the campaign as it is to be supposed that one properly administered vaccination with a potent vaccine would at least leave a scar. This high proportion of persons without scar (and therefore unprotected according to the criterion mentioned above) shows very definitely that the work of vaccination carried out previously by the local health services was on a very limited scale.

During the first ten months of this year, 411 796 houses were visited (urban and rural); the average number of inhabitants per dwelling was five.

## 2.2 During the whole period of implementation of the programme

Since the commencement of the programme in October 1955, vaccination has been completed in seven departments and operations are continuing in three (Annex 2). Total vaccinations up to 31 October last number 7 207 511, which represents 78 per cent. of the statistically estimated population and 93 per cent. of the population estimated on the basis of the "census" taken by the programme personnel. According to the former, the minimum level required has been practically reached and according to the latter the level has been considerably exceeded. In addition to the factors mentioned in the previous section, and in view of the vaccination percentages reached in the departments of Norte de Santander and Santander (108 per cent. and 107 per cent. respectively on the basis of the programme "census"), it may be assumed that during the campaign there was some movement of population towards these departments, seeing that it is obviously impossible in a clearly defined area to vaccinate more persons than reside in that area. If this is not the explanation, it means that the census work is not done correctly by the programme personnel.

In this connexion it should be noted that, between the demographic estimate and the estimate based on the census made by programme personnel, there is, wherever the work has been carried out, a difference of 16.7 per cent. in favour of the former. This element will be taken into account when we prepare the final figures for the estimation of the work to be accomplished in the last phase of the programme, next year.

Of the total vaccinations (7 207 511), 2 769 956 were classified as initial vaccinations (39 per cent.) and 4 437 555 as revaccinations (61 per cent.). The first figure amply confirms what we said after examining the results of the campaign in the first 10 months of this year - to the effect that the level of immunity among the population was very low before commencement of the programme and that this may be considered as an explanation of the prevalence of the disease and, as a logical sequence, justification of the campaign for the eradication of smallpox undertaken four years ago.

Since the commencement of the programme, 1 333 623 dwellings have been visited; the average number of inhabitants per dwelling was 5.4.

Annex 3 shows the distribution of annual vaccinations since the commencement of the programme. In order to administer one vaccination to about 10 million persons in five years, it is necessary to maintain a work rhythm of two million vaccinations per year, and this level has only been reached (and exceeded) since 1958, with the collaboration of the local health services. This demonstrates the fact that with the sole resources of the campaign, as available in the previous years, it would not have been possible to reach the present level of vaccination. This leads to consideration of the importance of adequate planning and evaluation of output before commencing any campaign of this kind.

Annex 4 shows the progress made throughout the country, by department. Practically the whole of the eastern zone (in white) is made up of "districts" and "commissariats" covering mainly uncultivated areas and prairies where the work is carried out on the "block" system applied to such areas.

### 3. Selection and training of personnel

This important aim of the programme has been given our special attention during the time in which we have been acting in an advisory capacity to the project, seeing that for such a specific task suitable personnel is absolutely essential, particularly in view of the heavy responsibility inherent in a nation-wide and all-out effort to solve a health problem.

#### 3.1 Pre-employment training courses

During the months of August and September we hold four training courses, three for candidates competing in Bogotá, and the other in Medellín for personnel attached to the Departmental Public Health Secretariat, seconded to the campaign. About 70 of approximately 150 candidates have been successful in the courses and have fulfilled the necessary conditions for recruitment.

In selecting this personnel the following factors were taken into account: level of education, reactive capacity (application of psycho-technical tests), approach to people, technical ability, physical condition. The decision as to which candidates should fulfil vacancies was made strictly in order of merit on the basis of established minimum standards and of ability tests, without any outside influence.

### 3.2 In-service training

For vaccinators already in service who were not selected as above and trained before employment, round-table talks have been arranged on technical aspects of the campaign, accompanied by practical demonstrations wherever possible without interfering with the routine work. It was not possible to arrange real in-service training courses on account of the nature of the field work which does not permit interruption or the gathering together of personnel who are usually scattered over wide areas. Nevertheless, an effort has been made to improve the qualitative output of this category of personnel and this has helped to arouse and maintain their interest in the programme.

### 4. Advisory activities in the field

Being of the opinion that a programme of the type to which we are attached in an advisory capacity is fundamentally a field programme, we have paid repeated visits to the three work fronts, both to the central offices (in the departmental capitals) and to the communes in which the programme is being implemented. In the company of the competent zonal medical officers we inspected these areas, visiting the communes where the work was progressing, and participating in the supervision of activities and, in those where the operations had been completed, evaluating the work done by the various teams. We believe this is the only way in which those of us who are working on this type of programme can assess the progress made, get to know the problems and evaluate the results.

During these journeys we also made contact - again in the company of the zonal medical officers - with the health authorities of the departments and of the smaller administrative units for the purpose of obtaining their collaboration, and especially in order to convince them of the absolute necessity for incorporating anti-smallpox vaccination in their respective programmes, this being one of the most important factors in the final eradication of the disease throughout the country.

5. Epidemiological investigation of cases of smallpox

5.1 In areas vaccinated under the programme

It should be noted that, there being no properly organized epidemiological service in most of the departments in which the work has been completed, it is extremely difficult to investigate cases of smallpox notified in such departments after the completion of the operations, and we might even say that in such departments we are without the basic elements for the evaluation of the programme. For these reasons we have sometimes asked the programme chief if there is any possibility of entrusting this task to the zonal medical officers (as has been done in other countries with satisfactory results). He has informed us that in his view this might interfere with the programmes, seeing that these medical officers are already overburdened with administrative as well as technical tasks since no staff is provided at the zonal level to deal with the administrative work, which occupies many hours. Consequently, we have considered the possibility of the "programme medical co-ordinator" (a post proposed under the next budget) undertaking the epidemiological investigation of cases of smallpox in areas where the programme has terminated, so that the epidemiological information obtained may be of real significance for purposes of evaluation.

For the purposes of systematic study of notified cases of smallpox, an epidemiological investigation form has been prepared and circulated, with instructions that it must accompany any notification, especially from areas in which the operations have terminated.

5.2 In departments in which the programme is proceeding

In these departments, the investigation of cases of smallpox is entrusted to the campaign's zonal medical officers who are responsible for case-finding and for the measures to be adopted in collaboration with the local health authorities to suppress any epidemic focus.

5.3 In departments not yet included in the vaccination programme

Our experience of these departments leads to the conclusion that there are serious defects which we have interpreted as lack of interest on the part of the local services, possibly on account of ignorance of the problem and under-estimation of its

importance. In any case, it is noted that in areas where smallpox is endemo-epidemic the number of notified cases is often below the real number of cases occurring; in some instances there are incorrect diagnoses and - what is worse - cases are notified on mere second-hand information, sometimes from completely incompetent sources.

All this throws serious doubts upon the value of the morbidity statistics, in view of the unreliable sources of information and the way in which declarations are made. We are, therefore, of the opinion that one of the most important activities of the next - and last - year of the five-year campaign should be the remedying of this situation, because if it does not change there will be no valid basis for evaluation, and any conclusions drawn will be fallacious.

6. Efforts for the incorporation of anti-smallpox vaccination in the routine programmes of local health services

The inclusion of anti-smallpox vaccination in the routine work at the local health services is one of the important objectives of the eradication campaign, seeing that this is the logical method of consolidating results. It must be remembered that a campaign such as the one under consideration is only an episode in the country's health history and that when it is finished, the competent officials must guard against any recrudescence of the problem - for the unfortunate consequences of any such recrudescence can be easily imagined.

It is, in fact, surprising to note how little has been done in some departments by the local services since the end of the campaign. If the protection of children born since the end of the campaign is not continued and if the people are not educated with regard to the necessity for periodic revaccination, there is a danger that smallpox epidemicity will continue - for obvious reasons. As an example of the truth of our assertions we would cite the results of a survey of the number of vaccinations performed on newly-born infants in six departments since the end of the programme. Such vaccinations amounted to 5.4-19.7 per cent. of the monthly average of births, estimated by district.

During the last few months, meetings have been held - with the participation of authorities and officials of the National Health Division and of consultants on the Colombia-4 project and on this programme - in order to discuss the situation and find some means of remedying it. Consideration was given to the need for collaboration

on the part of medical officers attached to health centres and for locating infants born since the campaign in order that they may be vaccinated. In connexion with this last-named problem, it was agreed that a co-ordinated effort should be made to obtain the collaboration of the religious authorities so as to procure the addresses of persons applying for the baptism of infants (which takes precedence in the country over civil registration). Such addresses could then be passed to those responsible for the control of vaccination. It was also agreed that every effort should be made to obtain the co-operation of private practitioners, and that outlying services should be given instructions to the effect that, as a rule, in order to give timely protection, infants should be vaccinated against smallpox from the eighth day of life (after the falling of the umbilical cord).

During our visits to the outlying services, we made every effort to maintain the best possible relations with the health authorities for the above-mentioned reasons. It must be admitted, however, that the results of these efforts have not been very encouraging so far - although it is known that in some places a certain amount of anxiety is beginning to be felt on the subject, whereas until quite recently it was ignored. As an example, we would cite the case of the Valle Departmental Health Secretariat which has decided that what is left over from the budget for the campaign (already completed in this district) is to be devoted to the maintenance of a small team of vaccinators who will visit the communes for the purpose of vaccinating infants born since the commencement of the programme and so far unvaccinated.

7. Brief summary of the work accomplished in the production of freeze-dried vaccine, to provide antigens for the programme, by the laboratory attached to the "Samper Martínez" National Institute of Hygiene

First of all we would mention the effective manner in which the laboratory has met the vaccine requirements of both the programme and the local services; moreover, the potency of the antigens has been adequate and this has constituted one of the best guarantees for the success of the campaign. We shall return to this point later, under "Evaluation of the programme".

Between January and October of this year the Institute prepared 4 511 600 doses of dried vaccine (the only type at present being manufactured) and this satisfactorily covered the needs of both the programme and the local services (see Annex 5).

#### 8. Methods of publicity used for the programme

In view of the very specific nature of the programme and of the constant displacement of workers all over the country in both urban and rural areas (which made close contact between educators and the community practically impossible), it cannot be said that any health education in the strict sense of the term was undertaken. The most that could be done was to make the best propaganda use of the elements available in order to arouse public interest and induce people to accept vaccination and to collaborate in the programme.

The following concrete information activities were undertaken:

- (a) propaganda by means of loudspeakers, with the repetition of slogans relating to various aspects of the work;
- (b) lectures in educational centres;
- (c) display of wall-posters alluding to the campaign (see graphs);
- (d) projection of diapositives in cinemas;
- (e) articles in the press.

We would make special mention - although the fact is already well known in the country - of the remarkable co-operation afforded by the Catholic Church authorities whose influence over the people is undeniable. It is no exaggeration to say that in many rural centres the vaccination was accepted principally on account of the influence of the priests who, both from loudspeakers installed in parochial halls and from the pulpit, have not hesitated to advise vaccination and even to impose it as an obligation.

#### E. EVALUATION OF THE PROGRAMME

So as to proceed in an orderly manner, we studied both the immediate and longer-term results.



1. Immediate results

1.1 Attainment of objectives

Apart from the above-mentioned incorporation of smallpox vaccination as a routine part of the work of the local health services, the objectives of the programme are being satisfactorily achieved. With regard to the level of vaccination to be obtained within a maximum period of five years (termination in 1960), it should be noted that by the end of the fourth year, four-fifths of the population it was hoped to cover will have been vaccinated (as mentioned in another part of this report), so that the final aim will be achieved within the five-year period.

1.2 Vaccinators' output

Anyone who has been responsible for the development of a mass vaccination programme (or any other mass preventive programme) is aware of the importance of determining (as accurately as possible) the output of the vaccinators, because this determines the extent to which the resources are utilized - which can, finally, mean a larger number of vaccinations and, therefore, a higher proportion of protected inhabitants. From the middle of this year "daily output sheets" were prepared, and on the basis of these it was possible to calculate more or less accurately the average output by individual, by group, by zone, and for the whole country. A summary of these studies is given in Annex 6, which on the basis of information on output in the most varied conditions over five consecutive months gives the average output per worker per day as 72 inoculations.

The next phase of the work will be planned on the basis of these output levels.

We would here draw attention to a fact which may be important in the calculation of the work for the rest of the programme: examination of the columns referring to the demographic statistics and to the "census" taken by personnel during implementation of the programme (see Annex 2) shows that the former figures exceed the latter by 17 per cent. Although we have mentioned a number of probable causes of these deviations, we feel that none of them can be cited with certainty as the real cause and, since this difference may persist to the end of the programme, we are of the opinion that for statistical purposes the calculation of the amount of vaccination to be done before the end of the campaign can be considered as reduced by the above-mentioned percentage.

This will mean that there are fewer inhabitants to be vaccinated in the last phase which is about to commence, so that we shall be even nearer to the achievement of the primary aim of the programme, i.e. vaccination of at least 80 per cent. of the country's total population.

It is estimated that at the end of this year approximately 7 600 000 persons will have been vaccinated, which leaves about 2 500 000 for next year; it is hoped to cover this number satisfactorily in view of the budgetary and personnel resources that will be available.

1.3 Efficacy of the vaccine and of the technique used, assessed by reactions in primary vaccinations

It is an accepted criterion that a satisfactorily potent anti-smallpox vaccine, administered by a good technique, should produce primary reactions in at least 95 per cent. of primary vaccinations. It is in the light of this criterion that the results obtained from the reading of 10 per cent. of primary vaccinations during the current year and throughout the whole programme should be examined. In the first-mentioned period the positivity rate was 94 per cent., with 95 per cent. median value (Annex 7), and in the second the rates were the same, i.e. 94 per cent. and 95 per cent. respectively (Annex 2).

As mentioned above, we have no hesitation in saying that, on the basis of this criterion for the evaluation of the programme, the work has been fairly satisfactory both in the current and in the previous years.

1.4 Estimated per capita cost of the vaccination programme to the Government of Colombia

It has not been possible to obtain information regarding the costs from the moment when the programme was launched. This would have produced a more valid estimate but we have been obliged to confine ourselves, as a basis for this calculation, to the costs incurred for the period January to October of this year, i.e. the period covered by this report, and to the number of vaccinations performed in that period.

The average per capita cost of vaccination to the Government of Colombia has been \$ 0.42 (national currency).

We would again emphasize that this estimate refers to a very limited period and we shall as soon as possible obtain the necessary information relating to the previous years so that we may prepare a new and more significant estimate.

## 2. Longer-term results

### 2.1 Modification of morbidity rates

We had at our disposal statistical data on this subject from the year 1953, that is, from two years before the commencement of the programme (Annex 8). However, we have some doubts about the value of the analysis in view of the very defective system of notification, of which we had practical experience.

Nevertheless, taking as the point of departure the fact that satisfactorily potent vaccines and adequate inoculation techniques were used throughout the programme - as proved by the results of the reading of a representative proportion of initial vaccinations - it may be said that, with the systematic vaccination of more than 7 000 000 persons throughout the country it is to be supposed that the improvement reflected in the statistics is in accordance with the facts: according to the statistics there were 7203 cases of smallpox throughout the country in 1954 (a year before the commencement of the programme), the rate being 66 cases per 100 000 inhabitants, whereas in 1958 there were only 2009 cases, i.e. 15.9 cases per 100 000 inhabitants.

At the end of October of this year (44th week) there had been only 767 cases throughout the country so that, taking the average monthly incidence for the first 10 months as a guide, the number of cases for the whole year will be about 920 (Annex 8).

We hope that improvement in the system of notification will make it possible to obtain statistics of better quality in the future since this is essential from now on as we approach the last phase of the programme, when we shall be commencing one of the most important tasks - that of evaluation.

## F. PLANS FOR 1960

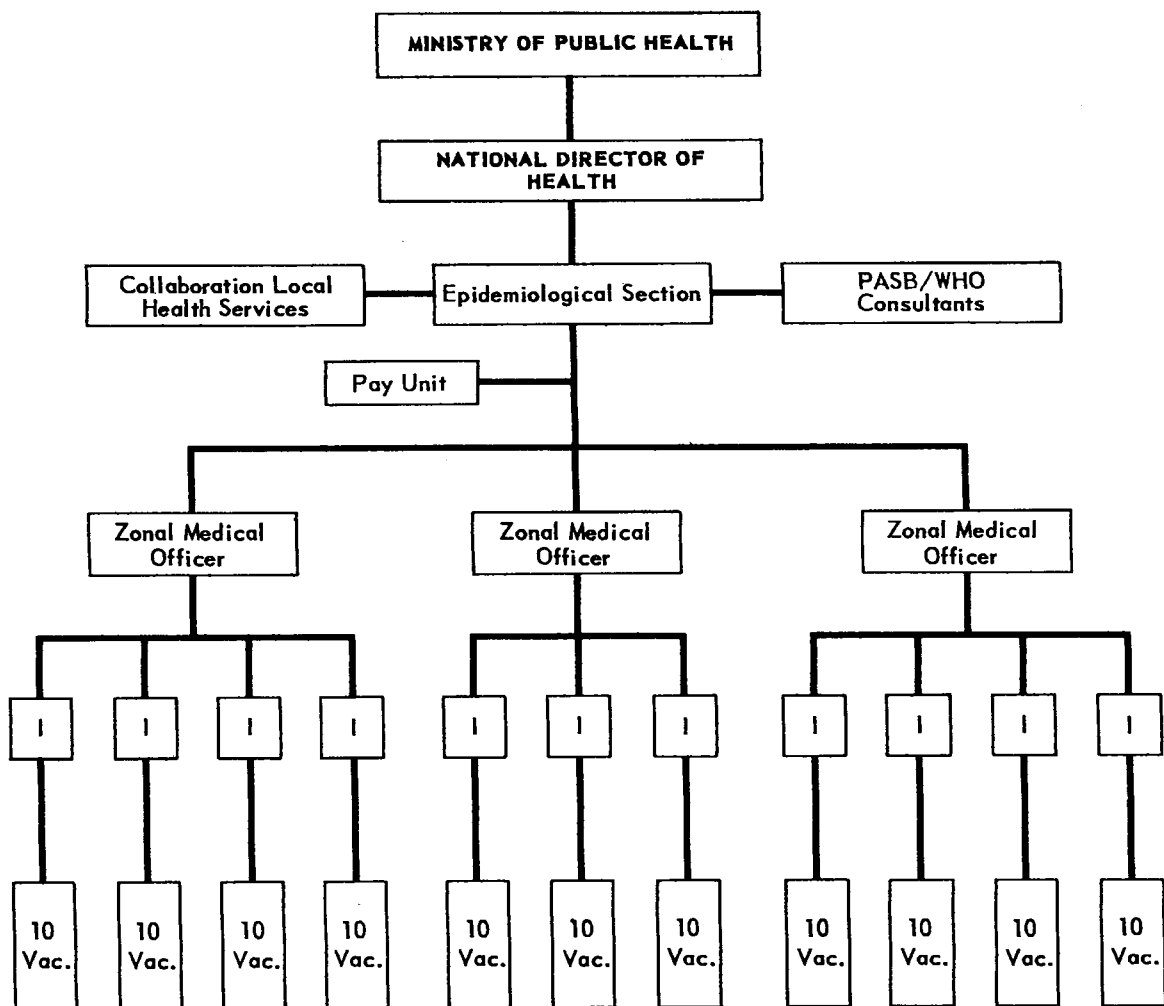
These plans are the logical conclusion to the foregoing and we will give hereunder the clearly-defined objectives to be attained in the last phase of the programme. The human and material resources for completion of the work exist and everything will depend upon the plan of operations which, in view of the fundamental time factor, must be as precise and effective as a real field campaign.

We hope there will be no difficulty in persuading the local health services to undertake the functions which should normally be within their exclusive competence, so that the work of the national anti-smallpox vaccination programme may be consolidated.

The plans for 1960 may be summed up in the following objectives:

- (1) completion of the programme in accordance with the five-year plan;
- (2) organization of notification and epidemiological investigation of cases of smallpox;
- (3) intensification of efforts to incorporate anti-smallpox vaccination in the routine work of the local health services;
- (4) evaluation of the programme.

**DIAGRAM OF NATIONAL ANTISMALLPOX VACCINATION PROGRAMME**  
Republic of Colombia 1959

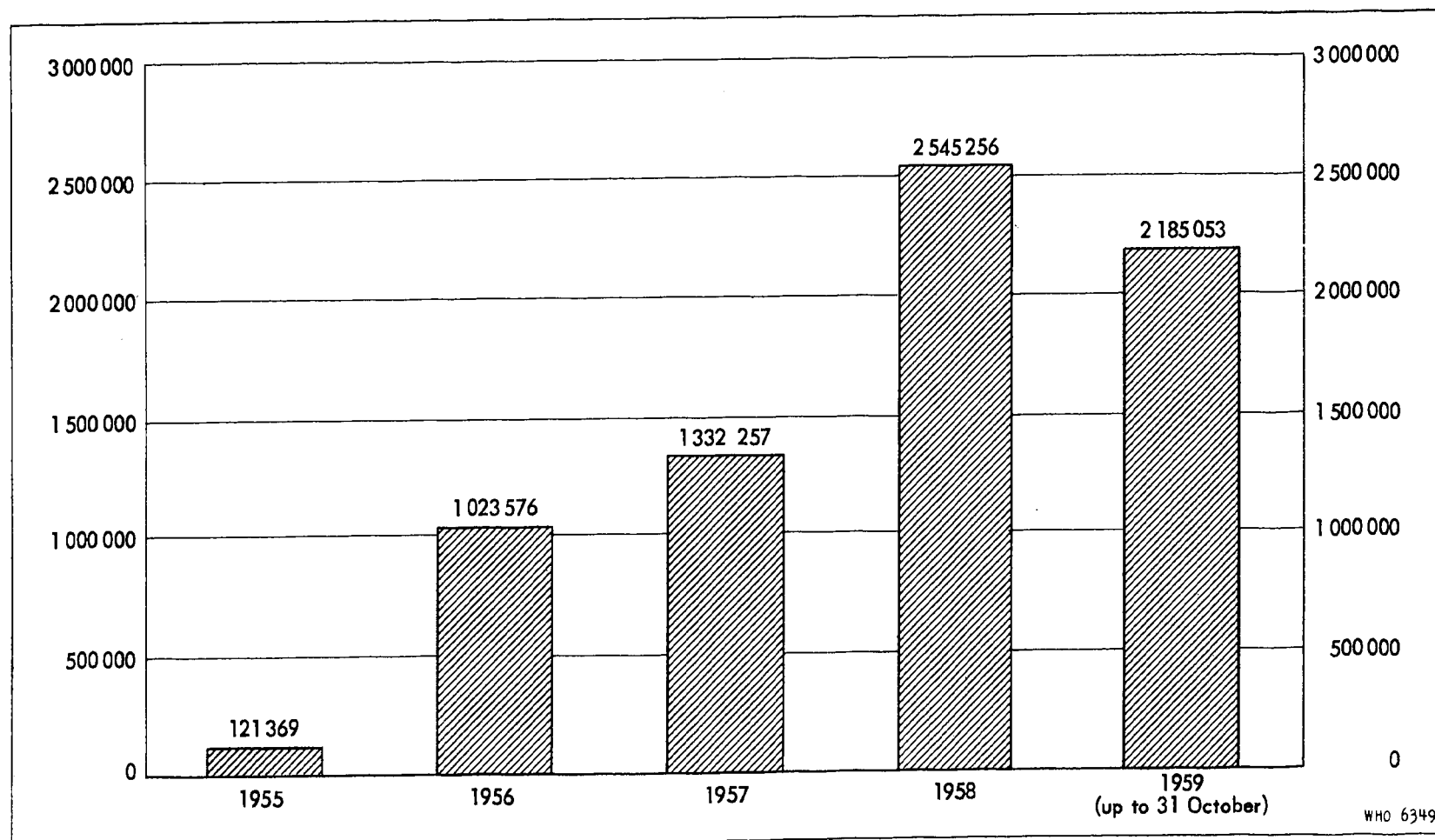


## NATIONAL ANTI-SMALLPOX VACCINATION CAMPAIGN

WORK ACCOMPLISHED BETWEEN OCTOBER 1955 AND OCTOBER 1959

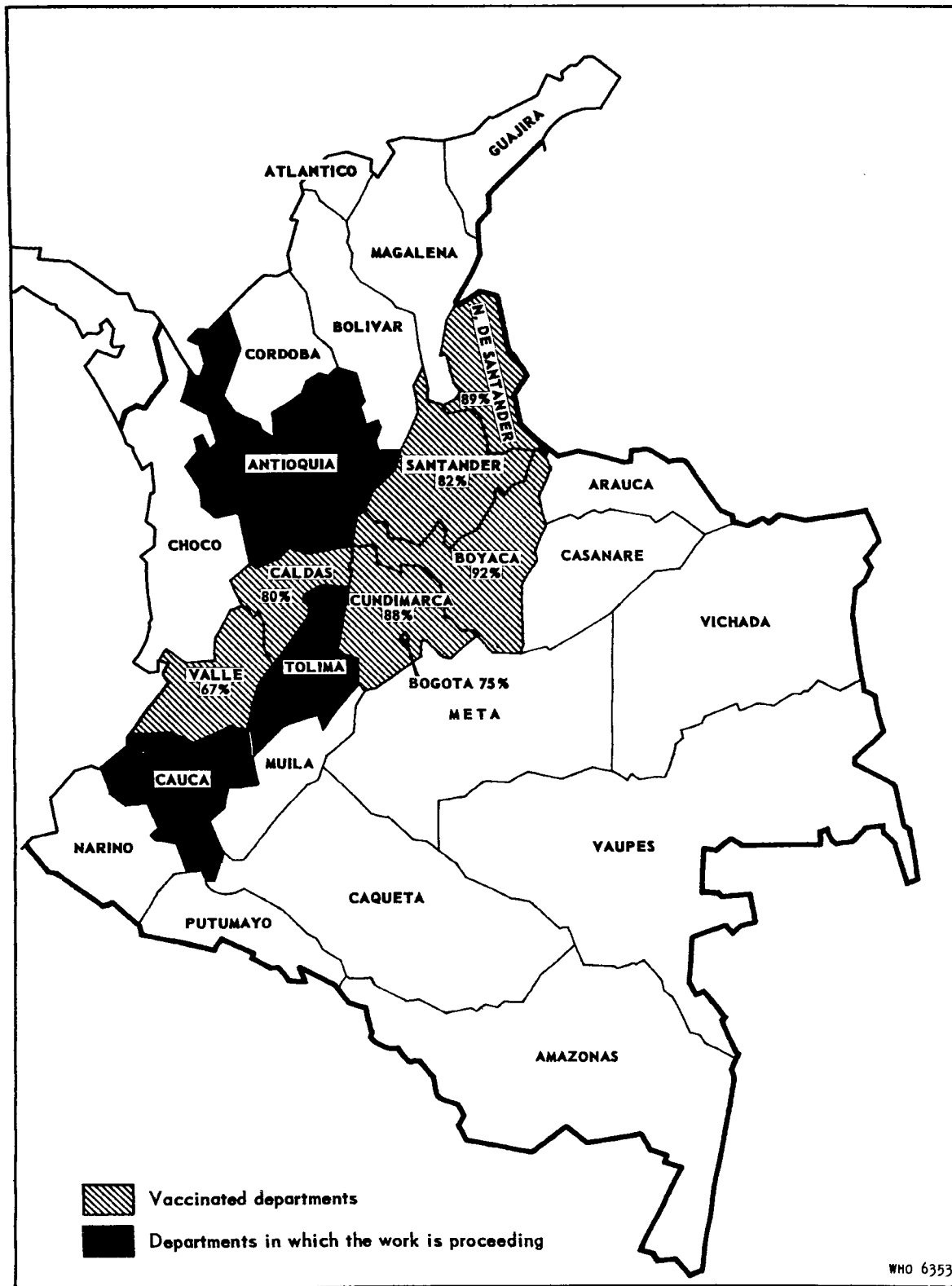
Department	Census		Vaccination			Level of protection		No. of houses visited	Readings			Date of implementation of programme	
	Estimated population for year of the campaign	Census made by programme personnel	Total vaccinations performed	No. of primary vaccinations	No. of revaccinations	Based on estimated population	Based on programme census		Primary vaccinations read	No. of positive reactions	%	Commencement	Termination
N. de Santander	408 480	325 092	350 849	233 393	117 456	89	108	57 887	25 250	24 182	96	October 1955	April 1956
Santander	834 460	639 894	686 175	383 231	302 944	82	107	115 975	42 879	40 478	94	May 1956	Nov. 1956
Boyaca	800 320	812 512	737 976	438 026	299 950	92	91	173 580	51 766	47 832	92	Oct. 1956	June 1957
Cundina-marca	958 450	894 465	841 509	373 059	462 450	88	94	174 991	40 328	37 306	93	June 1957	Nov. 1958
Bogotá D.E.	1 183 120	1 049 666	888 902	148 390	740 512	75	85	131 778	15 339	14 515	95	April 1958	Sept. 1958
Caldas	1 276 080	1 020 938	1 017 313	380 329	636 984	80	99	175 200	35 760	33 279	93	Jan. 1958	March 1959
Valle	1 633 110	1 233 379	1 088 305	317 080	771 225	67	88	204 863	29 832	29 029	97	July 1958	Sept. 1959
Antioquia (X)	1 275 270	1 120 814	1 010 051	253 169	756 882	79	90	183 144	28 188	27 762	98	Oct. 1958	In progress
Tolima (X)	742 810	518 182	480 578	196 688	283 890	65	93	92 124	21 654	18 686	86	Sept. 1958	In progress
Cauca (X)	154 940	110 251	105 853	46 591	59 262	68	96	22 081	4 299	4 106	96		In progress
Total	9 267 040	7 725 193	7 207 511	2 769 956	4 437 555	78	93	1 333 623	295 295	277 175	94	-	-

**NATIONAL ANTISMALLPOX VACCINATION CAMPAIGN**  
Distribution of annual vaccination from commencement of programme - October 1955 - October 1959



# REPUBLIC OF COLOMBIA

Present situation with regard to the Antismallpox Vaccination Campaign  
October 1959





WHO/Smallpox/13

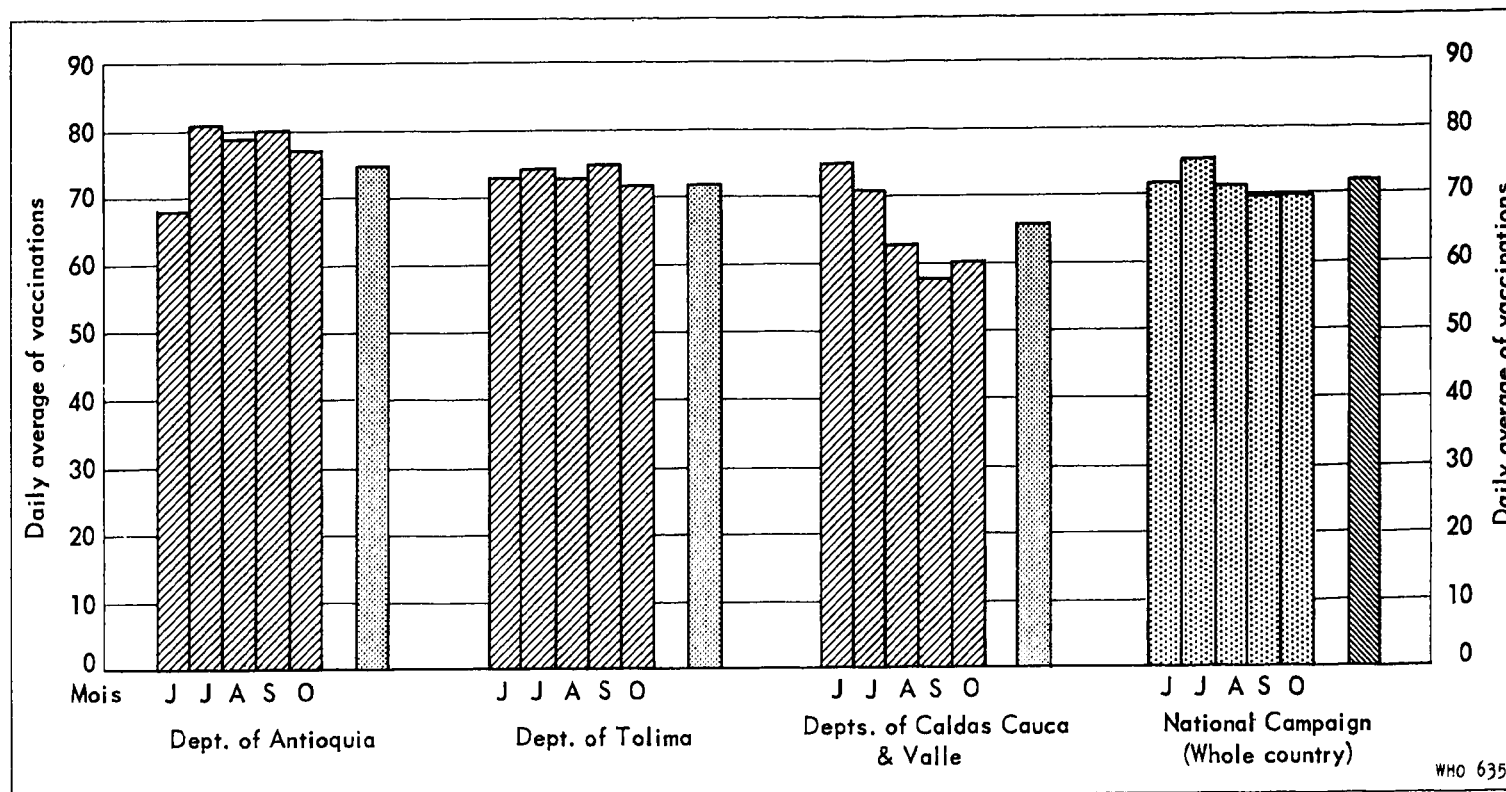
ANNEX 5

PRODUCTION OF FREEZE-DRIED ANTI-SMALLPOX VACCINE  
BY THE "SAMPER MARTINEZ" NATIONAL INSTITUTE OF HYGIENE





January-October 1959

Type of vaccine	No. of doses produced
Freeze-dried, prepared in bovines	4 511 600
Freeze-dried, prepared in chick embryos	534 700
Total	5 046 300

**OUTPUT GRAPH (CALCULATED BY THE SYSTEM OF AVERAGES) FOR FIVE MONTHS  
(JUNE - OCTOBER) BY ZONE AND FOR THE WHOLE COUNTRY  
NATIONAL ANTISMAILPOX VACCINATION PROGRAMME - COLOMBIA 1959**



WHO 6351

-  Monthly average
-  Average for five months
-  General average, by month
-  General average for five months

ANTI-SMALLPOX VACCINATION PROGRAMME  
RESULTS OF READINGS OF INITIAL VACCINATIONS

January-October 1959

Department	Total primary vaccinations	Reading		
		Primary vaccinations read	Primary vaccinations positive	%
Caldas	69 655	6 767	6 234	92
Valle	206 805	23 840	23 373	98
Antioquia	217 623	24 309	23 108	95
Tolima	170 413	18 560	16 151	87
Cauca	46 591	4 299	4 106	96
Total	711 087	77 775	72 972	94

SMALLPOX MORBIDITY REGISTERED IN THE REPUBLIC OF COLOMBIA  
FOR THE YEARS 1953-1959 (UP TO 44th WEEK)

Coefficient per 100 000 inhabitants

Department	1953		1954		1955		1956		1957		1958		1959(x)
	Cases	Coefficient	Cases	Coefficient	Cases	Coefficient	Cases	Coefficient	Cases	Coefficient	Cases	Coefficient	Cases
Antioquia	575	40.7	851	53.4	371	22.9	243	14.0	114	6.4	174	9.3	147
Atlántico	29	6.5	23	4.9	67	13.8	34	6.6	9	1.7	9	1.6	13
Bolívar	125	23.6	189	31.3	182	28.2	105	15.8	104	16.1	26	5.5	95
Boyaca (y)	330	79.4	637	134.8	182	41.2	102	21.2	2	0.4	5	1.0	2
Caldas (y)	845	76.4	2 054	179.8	859	74.0	570	47.0	386	71.3	257	19.8	10
Cauca (x)	50	16.3	63	19.2	51	14.5	75	19.0	56	17.5	29	8.4	65
Cordova	134	38.2	142	41.3	122	34.8	95	26.6	89	24.5	33	7.8	44
Cundinamarca (y)	593	42.4	554	34.3	258	14.6	246	13.2	162	8.6	29	3.0	12
Bogotá (y)	-	-	-	-	-	-	-	-	-	-	184	15.6	6
Choco	3	2.9	33	29.2	5	4.9	25	21.4	6	5.2	7	6.1	17
Huila	575	250.0	278	162.0	39	13.9	21	6.9	12	3.7	58	16.9	29
Magdalena	245	60.5	126	26.7	55	12.9	77	18.0	51	11.5	7	1.4	17
Nariño	424	118.3	127	29.8	54	12.3	35	8.0	25	5.1	22	4.6	66
Norte de Santander (y)	43	11.3	67	17.2	49	13.4	44	12.0	2	0.6	1	0.3	-
Santander (y)	94	16.8	656	105.1	357	58.9	110	17.2	1	0.2	-	-	-
Tolima (x)	778	137.7	324	47.6	129	19.4	69	10.1	89	13.0	638	84.8	89
Valle (y)	509	45.4	948	77.9	586	45.8	705	50.5	502	34.4	452	28.3	133
Intendencias-Comisarias	174	134.7	131	87.6	38	19.7	19	6.5	35	11.6	78	25.0	22
Total	5 526	56.3	7 203	66.0	3 404	30.7	2 572	21.6	2 145	17.8	2 009	15.9	767

(y) = Departments totally vaccinated

(x) = Up to 44th week

(Statistical Co-ordination and Analysis)