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**REACH**

RESOURCES  
FOR CHILD  
HEALTH

**Technical Assistance to the Bangladesh EPI  
For 1992 Coverage Surveys and the  
Installation of the Generic CEIS**

**February 17 - March 1, 1992**

**Dhaka, Bangladesh**



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**TECHNICAL ASSISTANCE TO THE BANGLADESH EPI  
FOR 1992 COVERAGE SURVEYS AND THE INSTALLATION  
OF THE GENERIC CEIS**

**February 17 - March 1, 1992**

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## ACRONYMS

BCG	Bacillus Calmette-Guérin
CCC	Cambridge Consulting Corporation
CEIS	Computerized EPI Information System
COSAS	Coverage Survey Analysis System
DPT	Diphtheria-Pertussis-Tetanus
EPI	Expanded Program on Immunization
FIC	Fully Immunized Child
OPV	Oral Polio Vaccine
REACH	Resources for Child Health Project
TT	Tetanus Toxoid
UNICEF	United Nations Children's Fund
UOO	Urban Operations Officer
USAID	United States Agency for International Development
WHO	World Health Organization

## **I. EXECUTIVE SUMMARY**

The Bangladesh EPI requested USAID/Dhaka to provide an external consultant to serve as a member of a five-person supervisory group that would oversee five - four divisional and one urban - EPI coverage surveys in Bangladesh from 17 February to 1 March, 1992. A REACH Technical Officer served as a consultant with support from USAID/Dhaka's Urban EPI Project which is managed by CCC.

The EPI and their partners also requested that COSAS (Coverage Survey Analysis System) be used to manage and analyze the survey data. COSAS was developed under the direction of WHO/EPI to provide EPI staff with a tool that could be used to manage and analyze coverage survey data and provide managers with important indicators of program performance, in addition to coverage, that should be monitored routinely in order to achieve coverage and disease reduction targets. During this consultancy EPI, UNICEF and WHO staff in Bangladesh were trained to use COSAS to manage and interpret survey data using the key indicators of program performance as recommend by WHO and UNICEF.

In addition to COSAS, this consultancy provided an opportunity to install the generic CEIS (Computerized EPI Information System), developed by REACH for WHO/EPI/HQ, in Bangladesh and to work with the new UNICEF Evaluation Officer to adapt the CEIS to the specifics of the Bangladesh EPI. Initial training was provided in CEIS operations and in using selected reports and graphs to routinely monitor program performance. The EPI is now in a position to actively field test the generic CEIS in Bangladesh over the next two to three months before upgrading to use of the generic CEIS to manage service delivery and disease surveillance data.

## **II. SCOPE OF WORK**

The Scope of Work for this consultancy was as follows:

1. Serve as a team leader of a divisional survey team and a member of a five-person external supervisory group which oversaw four divisional and one urban EPI coverage surveys. The objectives of the survey were to:
  - a. Measure the progress and implementation of EPI in relationship to targets for universal child immunization, its accessibility, coverage and quality of services.
  - b. Assess the TT coverage in mothers of children under one year of age.
  - c. Validate or comment on the routine vaccination performance reports.

- d. Identify programme components that need further strengthening.
  - e. Make recommendations for sustaining high vaccination coverage and for achieving disease reduction, elimination and eradication targets.
2. Assist EPI to review and update the existing CEIS including:
    - a. Installing the generic CEIS and adapting it to Bangladesh-specific needs.
    - b. Orienting and training EPI and UNICEF staff to use the generic CEIS
    - c. Assessing future training needs for improving program management using the CEIS at the divisional level.
    - d. Assessing use of the stocks and logistics module for planning and monitoring.

### III. TRIP ACTIVITIES

#### A. Coverage Surveys

Five coverage surveys were conducted in Bangladesh from February 22 - 27, 1992: four at the division level and one that sampled the 88 urban municipalities. In each of the five surveys, 30 clusters of seven children who were 12 - 23 months of age on the day of the survey and mothers of children 0 - 11 months of age on the day of the survey were randomly selected in accord with the WHO Immunization Coverage methodology. In addition to coverage data, surveyors also collected information on the reasons for immunization failure and data to estimate infant mortality. Data collection forms used in the survey appear in Annex 1.

The consultant was responsible for supervising the coverage survey in 24 of the 30 clusters in Dhaka Division and 15 of the 30 clusters in the urban survey. On each of the six days of the survey, the consultant accompanied one of five surveyors assigned to Dhaka Division and observed the completion of that day's cluster.

The consultant also provided technical assistance in using COSAS to manage and analyze data collected in all five surveys. During the survey, three EPI medical officers were trained to use COSAS to manage and analyze coverage survey data. The medical officers had conducted a coverage survey in Chittagong city in December 1991 using the standard WHO 30-cluster methodology and had analyzed the

results by hand. During the training sessions, the medical officers entered the Chittagong survey data and were trained to analyze the results using COSAS. Each analysis that the officers had completed by hand was matched with its corresponding COSAS analysis. Additionally, the calculation and interpretation of the recommended indicators of program performance provided by COSAS were also reviewed with the medical officers as well as UNICEF and WHO staff.

The medical officers, WHO and UNICEF staff were then able to enter data from the divisional surveys when they were completed. Pediatric and TT data from surveys conducted in Dhaka Division and the urban areas were entered into COSAS by the consultant who then supervised data entry from the remaining three surveys. After data entry for the five coverage surveys was completed, the consultant and other team members completely reviewed the information entered for accuracy to ensure that results provided by COSAS would match the results calculated by hand and instill confidence among staff that using COSAS would not result in different results.

A draft report, summarizing basic survey results was prepared by the five member team for presentation to the Ministry of Health (Annex 2). Data on crude coverage included in this report were obtained from the immunization summary report, based on crude data, provided by COSAS under the manual analysis menu. Crude coverage is defined as coverage calculated using all doses received by children surveyed, including those verified by card, whether valid or invalid, and those received according to history.

#### B. CEIS

During this consultancy, the generic version of CEIS, developed by the REACH Project for WHO/EPI was installed in Bangladesh. In 1988, the REACH Project supported the installation of an earlier version of the CEIS in Bangladesh. This earlier version was less flexible and required that the EPI maintain separate installations to manage data reported from the upazila and district levels. Furthermore the graphic capabilities of the older version were not adequate for the needs of EPI, UNICEF and WHO staff who were the primary users of the CEIS.

The generic CEIS should address the deficiencies of the earlier software. This consultancy provided an opportunity to introduce the generic CEIS to the Bangladesh EPI and permit EPI, UNICEF and WHO staff to field test the software, reports and graphs over the next few months until the CEIS software is finalized. This time period will also be used by the UNICEF Evaluation Officer, who just arrived in Bangladesh, to become completely familiar with the information needs in Bangladesh. A follow-up visit is recommended when the software is finalized and the field testing is completed.

As a first step in upgrading the Bangladesh CEIS to the new generic software, the completeness of data entry within the existing district and upazila level CEIS was reviewed. The review showed that within the district level CEIS, completeness of reporting was very high, with 63 of 64 districts reporting service delivery data for December, 1991, as of February 26, 1992. For the first eleven months of 1991, reporting was nearly 100% complete. Within the upazila level CEIS data entry was also fairly complete for all months of 1991 except October and November. During these months district totals were entered into the district level CEIS but no upazila totals were entered into the upazila level CEIS. Data for these two months will need to be entered into the existing upazila CEIS to bring that database up to date.

After finishing the review of completeness of reporting, the consultant and UNICEF Evaluation Officer uploaded all service delivery data from the existing upazila level CEIS into the generic CEIS. Data from October and November 1991 will have to be entered into the generic CEIS (as well as the existing upazila CEIS). However, the Bangladesh EPI will not have to re-enter any data previously entered into their upazila or district level CEIS into the generic CEIS in order to begin using the new software.

The consultant and the Evaluation Officer also specified various report and graph formats that may be useful to project managers in routinely monitoring program performance. To a large extent, formats used in the past by UNICEF staff for feedback to national and district level EPI staff were used as models for specifying reports and graphs within the generic CEIS. The consultant and Evaluation Officer were able to re-create a majority of the report and graph formats used by UNICEF within the generic CEIS.

The UNICEF training advisor noted that the generic CEIS' ability to easily and routinely produce reports and graphs for feedback would save him a great amount of time -- as in the past he had to re-enter data from the old CEIS into other software graphic packages to produce the required reports and graphs. Examples of CEIS reports and graphs that will be field tested over the next two to three months appear in Annex 6. Using the training completed during this consultancy, the UNICEF Evaluation Officer should be able to specify new reports and graphs as the information needs of the Bangladesh EPI, UNICEF and WHO become clear over the next few months.

The UNICEF advisor agreed to field test the generic CEIS during the next three months. During this time he will also be working to establish certain procedures for data entry and checking at EPI headquarters.

Once data entry procedures are well established and the generic CEIS thoroughly field tested, the EPI will switch completely to the generic CEIS to manage their service delivery and disease

surveillance data. Concomitantly, UNICEF and the Urban EPI project would like to install CEIS in one or two divisions and begin the collection and analysis of upazila level data at the divisional level. This would permit more rapid compilation and analysis of data. Feedback would also be rapid enough to be useful to division, district and upazila level staff. Currently, it is not reasonable to expect the national level to manage and analyze data and provide feedback to 538 upazilas in a timely and useful fashion.

The CCC Urban EPI Advisor also outlined the information needs with respect to managing the Urban EPI Project. Two specific needs to customize the CEIS were identified. First, the advisor requested that the 88 municipal areas be coded in the CEIS so that reports of coverage specific for these areas could be produced and compared with the national totals. Secondly, the advisor requested that these municipal areas be coded by the UOO (Urban Operations Officer) assigned to the municipality so that Officer-specific Coverage reports could be produced to help the individual UOO's monitor coverage in their municipalities as well as allow project staff to monitor performance in the municipalities assigned to each UOO.

The generic CEIS was customized by the consultant in conjunction with the UNICEF Evaluation Officer to produce the reports requested by the Urban EPI Advisor. Examples appear as Annex 7.

#### IV. RESULTS AND CONCLUSIONS

##### A. Immunization Coverage and Results for Indicators of Program Performance

Immunization coverage figures from the divisional coverage surveys and the urban survey are presented below. Coverage figures are calculated in two ways:

- Valid coverage - figures are calculated using all doses received by children surveyed, that are verified according to card data and administered according to the immunization schedule by one year of age.

- Crude coverage - figures are calculated using all doses received by children surveyed, up to the time of the survey, that are verified by card or obtained from a mother's history. Consequently, crude coverage figures represent coverage among children by two years of age.

The COSAS Immunization Summary, provided from the COSAS manual analysis, was used to obtain crude coverage figures. A copy of this report from each of the five coverage surveys appears in Annex 3.

In addition to crude immunization coverage, the COSAS standard analysis report provides data on 11 important indicators of program performance, including valid coverage by one year of age. Both WHO and UNICEF recommend that EPIs routinely calculate these indicators from coverage survey data and use the results to improve program performance.

Results for these indicators were not included in the summary report prepared for the Ministry of Health, as they are more appropriate for use by EPI staff to improve program performance at the operational level. UNICEF and WHO will conduct division-level workshops over the next three months during which division-specific survey results, including the indicators of program performance, will be discussed.

The following results from the five coverage surveys document performance with respect to key indicators of program performance for pediatric surveys calculated by COSAS and provided in the standard analysis. Copies of the COSAS standard analysis for each survey appear as Annex 4. Definitions for each indicator are also given. Graphs showing values for the indicators derived from the five surveys appear as Annex 5.

#### 1. Program Access

Percent of children surveyed who received DPT 1, verified by card or history:

##### PROGRAM ACCESS INDICATOR

##### DPT1 COVERAGE

CHITTAGONG	85%
DHAKA	84%
KHULNA	95%
RAJSHAHI	95%
URBAN	91%

#### 2. Program Continuity - two indicators:

a. Percentage of children who received DPT 1, verified by card or history, who did not receive DPT 3, verified by card or history

b. Percentage of children who received DPT 1, verified by card or history, who did not receive measles, verified by card or history.

### PROGRAM CONTINUITY INDICATORS

	DPT 1 - DPT3 DROP OUT	DPT 1 - MEASLES DROP OUT
CHITTAGONG	26%	30%
DHAKA	25%	35%
KHULNA	10%	8%
RAJSHAHI	6%	16%
URBAN	8%	13%

#### 3. Program Quality - four indicators:

##### a. Adherence to the Immunization Schedule - Two measures

- Percent of children who received DPT1, verified by card, before six weeks of age

- Percent of children who received measles, verified by card, before 38 weeks of age.

##### b. Targeting Under Ones for Measles Immunization

- Percent of children who received a valid dose of measles who were immunized before 52 weeks of age.

##### c. Effect on Coverage Of Uncorrected Missed Opportunities for Measles Immunization

- The percent of children surveyed who had the chance to receive measles at the time they received another antigen, verified by card, who were not immunized with the antigen at the time of the survey.

##### d. Availability of Documentation about Immunization

- Percent of children who received at least one immunization, verified by card or history, who have a document showing their immunization status at the time of the survey.

**PROGRAM QUALITY INDICATORS**

	DPT1 < 6 W	MEAS < 38 W	MEAS < 52 W	MISSED OPPS	CARD AVAIL.
CHITTAGONG	0%	11%	66%	3%	47%
DHAKA	3%	10%	89%	4%	41%
KHULNA	4%	6%	92%	1%	79%
RAJSHAHI	5%	4%	91%	1%	65%
URBAN	5%	7%	73%	1%	70%

**4. Providers of Immunization**

Outreach Clinics, range 80% - 87%; Fixed EPI Centers, range 7% - 10%; Private Providers (Non NGOs), range 0% - 2%; NGOs, range 1% - 5%.

**5. Program Coverage**

Percent of children fully immunized by one year of age, verified by card, based on valid data:

**CRUDE COVERAGE FOR COMPARISON**

	FIC < 52 WKS	FIC CRUDE	BCG	DPT1/ OPV1	DPT3/ OPV3	MEASLES
CHITTAGONG	15%	53%	83%	85%	63%	59%
DHAKA	16%	52%	84%	84%	63%	54%
KHULNA	51%	82%	96%	95%	87%	86%
RAJSHAHI	42%	80%	96%	95%	89%	80%
-----						
BANGLADESH		65%	89%	89%	74%	68%
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URBAN AREAS	31%	78%	92%	91%	84%	80%

**B. Conclusions from Divisional Surveys and Urban Survey**

1. Access to immunization services, as measured by DPT 1 coverage, is uniformly high in Bangladesh. More than 80% of children surveyed in all divisions and in the urban area had access. In two divisions and in the urban areas, access is over 90%.

2. Program continuity, as measured by the DPT1 - DPT3 and DPT1 - Measles drop out rates, is generally poor in all divisions and in the urban areas of Bangladesh. Performance is particularly weak with respect to the DPT1 - Measles drop out

rate and in Chittagong, Dhaka and Rajshahi Divisions. Only Khulna Division had drop-out rates below 10%. Poor program continuity represents a major reason for not achieving high levels of full immunization coverage.

### 3. Program Quality

a) Adherence to the immunization schedule, as measured by the percent of DPT 1 doses administered before the minimum age of 6 weeks is uniformly good, with the proportion of invalid DPT 1 doses below five percent in all divisions and in the urban areas of Bangladesh.

b) Adherence to the immunization schedule, as measured by the percent of measles doses administered before the minimum age of 38 weeks, is weak in three of four divisions where the proportion of invalid measles doses is greater than 5%.

c) Targeting of under ones for immunization, as measured by the percent of valid measles doses given before one year of age, is generally good, with the three of four divisions giving more than 90% of all valid measles doses before one year. Performance is weaker in Chittagong Division and in the Urban Areas.

d) Uncorrected missed opportunities for measles immunization have relatively little impact on reducing measles coverage in Bangladesh, with levels below one percent in two of four divisions and in the Urban areas. Chittagong and Dhaka Divisions experienced higher levels of uncorrected missed opportunities for measles.

e) Availability of documentation regarding immunization status is uniformly poor in all divisions and in the urban areas. No more than 80% of children surveyed had a document showing their immunization status in any division. In two of four divisions, fewer than 50% of children surveyed had documentation.

4. Completion of the immunization series by one year of age is uniformly poor in Bangladesh. No more than 50% of children surveyed were fully immunized by one year of age, based on valid doses from card data in any division or in the urban areas.

### C. Strengths and Weaknesses of Divisional EPIs and Urban EPI, Based on Values for Indicators Derived from Divisional Surveys

Survey specific results for each indicator of program performance are presented below. Results are categorized as representing a

program strength or weakness and are intended as a guide for EPI, UNICEF and WHO staff to use during divisional workshops.

The following values for each indicator were used in categorizing program performance as strong or as weak and in need of improvement. These values are also offered as a guide for use in divisional workshops. Individual divisions may wish to establish their own objectives for performance, based on their current level of performance and local priorities.

Program Coverage: More than 80% of children surveyed will be fully immunized, verified by card, based on valid doses, by one year of age.

Program Access: More than 90% of children surveyed are immunized with DPT1

Program Continuity: Less than 10% of children who are immunized with DPT1 will not be immunized with DPT3 or Measles

Program Quality:

Adherence to the immunization schedule: Less than 5% of doses of DPT1 and Measles are administered before the minimum age.

Targeting under ones for immunization: More than 80% of valid measles doses are administered to infants before one year of age.

Effect on coverage of uncorrected missed opportunities for measles: Less than 1% of children surveyed miss an opportunity for measles immunization and remain unimmunized at the time of the survey

Card retention: More than 80% of children who have a contact with the EPI have a document showing their immunization status at the time of the survey

## URBAN SURVEY

### 1. Program Strengths

#### a. Program Access

- 91% of children surveyed had contact with the EPI

#### b. Program Continuity

The Urban areas have a fairly low DPT1 - DPT3 drop out rate (7.9%)

#### c. Program quality with respect to:

- Adherence to the immunization schedule

Five percent of first doses of DPT administered were given before the minimum age of six weeks.

- Effect on coverage of uncorrected missed opportunities for measles immunization

Only 1% of children surveyed missed an opportunity to be immunized against measles and were unimmunized at the time of the survey.

### 2. Program Weaknesses

#### a. Full Immunization Coverage

Only 31% of children surveyed were fully immunized, verified by card data, before one year of age.

#### b. Program Continuity

The Urban areas had a fairly high DPT 1 - Measles drop out rate (12.6%)

#### c. Program Quality with respect to:

- Targeting under ones for measles immunization.

Only 73% of all valid measles immunizations were administered to infants less than one year of age. Early administration of measles vaccine is particularly important in urban areas where exposure is often intense and occurs at an early age. The high rate of corrected missed opportunities suggests that infants are not being immunized with measles at their first contact after nine months. By immunizing all infants at their first contact

after nine months of age, the EPI in urban areas could improve its targeting of under ones for measles immunization and increase coverage among those at highest risk for measles.

- Corrected missed opportunities for measles immunization.

Ten percent of children surveyed were not immunized at first contact after nine months of age. The delay in immunization resulting from missed opportunities is particularly important in densely populated urban areas where exposure to measles often occurs at an early age.

- Availability of documentation about immunization.

Only 70% of infants who had a contact with the EPI had a document showing their immunization status at the time of the survey.

## DHAKA DIVISION

### 1. Program Strengths

#### a. Program Quality with respect to:

- Targeting infants under one for measles immunization.

Almost 90% of all valid measles immunizations were administered to infants less than one year of age.

### 2. Program Weaknesses

#### a. Full Immunization Coverage

Only 16% of children surveyed were fully immunized, verified by card data, before one year of age.

#### b. Program Access

Only 83.7% of children surveyed had contact with the EPI.

#### c. Program Continuity

Dhaka Division has a very high DPT1 - DPT3 drop out rate (25%) and a very high DPT1 - Measles Drop out rate (35%)

#### d. Program Quality with respect to:

- Adherence to the immunization schedule.

10% of all measles doses administered were given before the minimum age of 38 weeks.

- Effect on coverage of uncorrected missed opportunities for measles immunization.

4% of children surveyed could have been immunized with measles, but were not immunized at the time of the survey.

- Availability of documentation about immunization.

Only 41% of children surveyed who had a contact with the EPI had a document showing their immunization status at the time of the survey.

## CHITTAGONG DIVISION

### 1. Program Strengths

#### a. Program quality with respect to:

- Adherence to the immunization schedule

No first doses of DPT administered were given before the minimum age of six weeks

### 2. Program Weaknesses

#### a. Full Immunization Coverage

Only 15% of children surveyed were fully immunized, verified by card data, by one year of age.

#### b. Program Access

- Only 85% of children surveyed had contact with the EPI

#### c. Program Continuity

- Chittagong Division has a very high DPT1 - DPT3 drop out rate (26%) and a very high DPT1 - Measles Drop Out rate (30%).

#### d. Program quality with respect to:

- Adherence to the immunization schedule

11% of all measles doses administered were given before the minimum age of 38 weeks

- Targeting under ones for immunization

Only 65% of all valid measles immunizations were administered to infants less than one year of age.

- Effect on coverage of uncorrected missed opportunities for measles immunization

Three percent of children surveyed missed an opportunity to be immunized against measles and were unimmunized at the time of the survey.

Six percent of children surveyed had a corrected missed opportunity for measles. This indicates that they were not immunized with measles at the first opportunity with a resulting delay in being protected against measles.

- Availability of documentation about immunization

Only 47% of children surveyed who had a contact with the EPI had a document showing their immunization status at the time of the survey.

## KHULNA DIVISION

### 1. Program Strengths

#### a. Program Access

95% of children surveyed had contact with the EPI.

#### b. Program Continuity

Khulna Division has a relatively low DPT 1 - DPT 3 drop out rate (8%) and a low DPT 1 - Measles drop out rate (10%)

#### c. Program Quality with respect to:

- Targeting under ones for immunization

92% of all valid measles immunizations were administered to infants less than one year of age

- Effect on coverage of uncorrected missed opportunities for measles

Only 1% of infants surveyed missed an opportunity to be immunized against measles and were unimmunized at time of survey

### 2. Program Weaknesses

#### a. Full Immunization Coverage

51% of children surveyed were fully immunized, verified by card data, before one year of age

#### b. Program Quality with respect to:

- Adherence to the immunization schedule

6% percent of all measles doses administered were given before the minimum age of 38 weeks

- Availability of documentation about immunization

79% of children surveyed who had a contact with the EPI had a document showing their immunization status at time of survey.

## RAJSHAHI DIVISION

### 1. Program Strengths

#### a. Program Access

95% of children surveyed had contact with the EPI

#### b. Program Continuity

- Rajshahi Division has a relatively low DPT 1 - DPT 3 drop out rate (6%)

#### c. Program Quality with respect to:

- Adherence to the immunization schedule

Only 4% of measles doses administered were given before the minimum age of 38 weeks

Only 5% of first doses of DPT administered were given before the minimum age of 6 weeks

- Targeting under ones for measles immunization

91% of all valid measles immunizations were administered to infants less than one year of age

- Effect on coverage of uncorrected missed opportunities for measles immunization

Only 1% of children surveyed missed an opportunity to be immunized against measles and were unimmunized at the time of the survey.

Only 2% of children surveyed were not immunized with measles at the first opportunity but were immunized at the time of the survey.

### 2. Program Weaknesses

#### a. Full Immunization Coverage

Only 42% of infants were fully immunized, verified by card data, before one year of age

#### b. Program Continuity

- Rajshahi Division has a relatively high DPT 1 - Measles drop out rate (16%)

c. Program Quality with respect to:

- Availability of documentation about immunization

Only 65% of children surveyed who had a contact with the EPI had a document showing their immunization status at the time of the survey.

## V. RECOMMENDATIONS

1. The EPI should complete the analysis of coverage surveys with COSAS and determine the value of indicators for each survey. Division and district level workshops should be organized and the results of the coverage surveys thoroughly reviewed. Division and district level managers should receive training in the use of program attributes and indicators in monitoring program performance and should participate in identifying program strengths and weaknesses in their operational areas as identified by the survey.

2. Possible causes for program strengths and weaknesses should be identified and further research conducted to identify specific causes in each division. Specific plans to improve performance in weak areas, based on the causes identified, should be developed and implemented in 1992. Objectives for improvement should be set and progress towards achieving these objectives should be monitored routinely throughout 1992, using available data sources, including the CEIS.

3. The national level EPI should assist divisions in developing strategies to address implementation problems that appear to be common to all divisions, as identified by the 1992 coverage survey. This would include:

a) Establishing a strategy to reduce drop-out rate, particularly the DPT1 - Measles drop out rate.

An assessment of the existing service delivery system in each division may be required to identify the reasons for high drop out rates and the actions required to reduce these rates. Focus group discussions with health workers and caretakers may provide information required to identify the causes and appropriate solutions.

b) Reviewing with health workers the national immunization schedule and policies for contraindications to immunizations.

Administration of measles vaccine before the minimum recommended age and failure to administer measles immunization to all eligible children are both reducing the level of protection against measles among children surveyed. Reasons for not giving all immunizations to eligible children during an immunization session, including health worker fears about immunizing sick children and giving more than one immunization at a time, should be assessed. If the immunization schedule is followed correctly and if all eligible children are immunized at every opportunity, valid measles coverage can increase by 10% - 15% in Bangladesh.

Failure to administer measles vaccine at the first opportunity is delaying the age at which children are being protected against measles. Policies to ensure that children are immunized against measles during their first contact with the EPI after nine months of age should be implemented so that young children at highest risk for measles related morbidity and mortality are protected.

c) Establishing a strategy to increase the distribution of immunization cards by health workers and the retention of these cards by care takers.

An immunization card is necessary if health workers are to accurately assess a child's immunization status and provide the necessary vaccines. Furthermore, cards are a primary source of information for evaluating immunization program accomplishments. Adequate supplies of cards must be available to all health workers providing immunizations national health strategies should stress that the immunization card is an important health document that should be retained by the care taker, even after all immunizations are completed.

- 4) The UNICEF Evaluation Officer should actively field test the generic CEIS over the next two to three months, identifying report and graph formats that will provide EPI management with the information they need to routinely monitor the EPI. Information and training needs of district and upazila level EPI supervisors should also be assessed and plans developed to provide training required by supervisory staff to monitor performance in their program area.
- 5) A follow-up visit by the REACH consultant should be considered after the CEIS software is finalized and the UNICEF Evaluation Officer has completed the information needs assessment.

During this visit, additional training in CEIS operations and in the routine analysis and use of program data at the national and division level for program monitoring could be provided.

## PERSONS CONTACTED

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Dr. R. N. Basu, WHO Consultant  
Dr. Arun Patel, UNICEF Training Officer  
Mr. Pradeep Kumar, UNICEF Statistics and Evaluation Officer  
Dr. Mary Carnell, Chief of Party, Urban EPI Project  
Dr. Jinnah, Urban Operations Officer, Dhaka Division  
Mr. Gary Presthaus, WHO SEARO  
Mr. David Piet, USAID/Dhaka

**Annex 1: Survey Data Collection Forms**



BANGLADESH : 1992

Cluster Form  
Infant Immunization

(1) Cluster Number: _____ (5)		(2) Date: _____	(3) Area: _____	(4) Range of birth dates: From: _____ Until: _____	Sex (M/F)								TOTAL		
													Card	Card plus history	
Child number in cluster						1	2	3	4	5	6	7	8		
(6) Birth date															
(7) Immunization Card	Yes/No														
(8) BCG	Date/+0														
	Scar: Yes/No														
	Source														
(9) DPT 1	Date/+0														
	Source														
DPT 2	Date/+0														
	Source														
DPT 3	Date/+0														
	Source														
(10) OPV 1	Date/+0														
	Source														
OPV 2	Date/+0														
	Source														
OPV 3	Date/+0														
	Source														
(11) Measles	Date/+0														
	Source														
(12) Immunization Status	Not														
	Partially														
	Fully														
(13) Fully immunized before one year of age	Yes/No														

(14) Tally of households visited: \_\_\_\_\_  
 Name of interviewer: \_\_\_\_\_  
 Signature: \_\_\_\_\_

KEY: Date/+0:  
 Date = copy date of immunization from card, if available ---  
 + = mother reports immunization was given  
 0 = immunization not given

Source:  
 OUT = Outreach  
 HOS = Hospital  
 HC = Health Centre  
 PRIV = Private/non-governmental  
 NGO = NGO clinic/center or site



BANGLADESH : 1992

Cluster Form  
Tetanus Toxoid Immunization of Women

(1) Cluster number: _____ (2) Date: _____ (3) Area: _____ (4) Range of birth dates: From: _____ Until: _____		(5) Mother's name									TOTAL	
			Card	Card plus History								
Woman number in cluster			1	2	3	4	5	6	7	8		
(6) Birth date of child												
Mother	(7) Immunization card	Yes/No										
	(8) TT 1	Date/+/0										
		Source										
	TT 2	Date/+/0										
		Source										
	TT 3	Date/+/0										
		Source										
	TT 4	Date/+/0										
		Source										
	TT 5	Date/+/0										
		Source										
	(9) Antenatal care		Yes/No									
(10) Other visits to health facility during last pregnancy		Yes/No										
(11) Delivery of baby	Home											
	HC/HOS											
	Other											
(12) Child protected against neonatal tetanus		Yes/No										

Name of interviewer: \_\_\_\_\_

Signature: \_\_\_\_\_

KEY: Date/+/0:  
Date = copy date of immunization from card, if available  
+ = mother reports immunization was given  
0 = immunization not given

Source:  
HC = Health Centre  
HOS = Hospital  
OUT = Outreach  
PRIV = Private

NGO = NGO clinic or center

BANGLADESH: 1992  
Cluster Form  
Mortality Estimate

Cluster Number: \_\_\_\_\_  
Date: \_\_\_\_\_  
Area: \_\_\_\_\_

MOTHERS OF CHILDREN 12-23 MONTHS

		1	2	3	4	5	6	7	8	Total	
										Yes	No
Has this mother had a previous live birth?	Yes/No										
If "Yes", is the child of the immediate previous birth still alive?	Yes/No										

MOTHERS OF CHILDREN 0-11 MONTHS

		1	2	3	4	5	6	7	8	Total	
										Yes	No
Has this mother had a previous live birth?	Yes/No										
If "Yes", is the child of the immediate previous birth still alive?	Yes/No										

**Annex 2: 1992 Coverage Evaluation Survey, Draft Report**

# COVERAGE EVALUATION SURVEY BANGLADESH 1992

PRELIMINARY REPORT



**EXPANDED PROGRAMME ON IMMUNIZATION  
MINISTRY OF HEALTH AND FAMILY WELFARE  
MOHAKHALI, DHAKA  
01 MARCH 1992**

# **NATIONAL VACCINATION COVERAGE SURVEY**

## **SUMMARY REPORT**

The National Steering Committee on EPI (Expanded Programme on Immunization) Government of People's Republic of Bangladesh decided to conduct a national vaccination coverage survey in February 1992 with the participation of international agencies. The government constituted a core team with four national government officers and five consultants representing international and bilateral agencies, to plan, and organize the survey. A similar national coverage survey was conducted in February 1991. The methodology adopted and main finding of the survey are presented here.

### **1. Objectives**

The main objectives of the national survey were to :

- a) measure the progress and implementation of EPI, in relation to target of 80% coverage by each antigen.
- b) assess the TT coverage in mothers of children under one year of age (0-11 months) and ascertain the percent of newborn protected again neonatal tetanus.
- c) validate or comment on the routine vaccination reports.
- d) make recommendations for sustaining high vaccination coverage in order to achieve disease reduction targets.

### **2. Organization**

The national government team members were represented by (1) Planning Commission (2) Implementation, Monitoring, and Evaluation Directorate (IMED) of Ministry of Planning;(3) Institute of Epidemiology, Disease Control and Research (IEDCR) and (4) Ministry of Local Government, Rural Development (LGRD) The international team members were represented ICDDR, SIDA, UNICEF, USAID, WHO and World Bank. WHO/UNICEF coordinated the survey. The core team members were assisted by liaison officers in the division and resource persons at headquarters. Divisional Operation Officers (WHO), Urban Operation Officer (USAID) and Divisional EPI officers (UNICEF) acted as liaison officers in the field. Fifty interviewers were recruited from NGOs including BRAC, CARE and World Vision and Dhaka University Students. Out of fifty, forty had previous experience in similar surveys. The interviewers were trained for two days, including a field exercise in a realistic situation, a survey of Dhaka Municipality. The list of team members, liaison officers and resource persons can be seen in Annex 1. The survey was supervised by the external consultants, in the divisions, making it totally independent of officers implementing EPI.

3. Methodology:

The methodology described in EPI Coverage Survey Published by WHO and revised in 1991 was followed. This is a population based random sample survey method to estimate coverage. One survey in each division (both rural and urban population), making a total of four surveys were conducted. The national estimate of coverage was made by weighting, the results of the four divisional surveys. In addition, a survey was conducted taking all urban areas of Bangladesh as the universe which is referred to as the urban survey. COSAS (a Computer Programme) was used for analysis of the data in addition to manual analyses.

The survey assessed the immunization coverage in children aged 12 to 23 months. The tetanus toxoid coverage was assessed by interviewing the mothers of children 0-11 months old. The coverage rate was measured using "card plus history" information, as of date of survey.

4. Main Findings:

DATA.

part of the report.

Survey data was analysed using the computer programme COSAS. Basic coverage figures are presented in Annex 2-12. Additional detailed analysis of survey data provided by COSAS will be used by the EPI Project for further improvement of the programme.

- 4.1 The surveys have estimated that of all children (12-23 months), 89% received BCG, 88% received one dose of DPT/OVP, 74% three doses of DPT and polio vaccine, and 68% received measles vaccine. A high level of BCG and DPT/OPV1 (above 88%) indicates almost universal accessibility of services and awareness.
- 4.2 Nationally 78% of the women (with 0-11 month children) had two doses of tetanus toxoid. A high proportion of mothers in each division received two doses of TT (75% to 84%). This resulted in large proportion of children born, protected at birth from neonatal tetanus.
- 4.3 There are variations in coverage between divisions, Khulna division and Rajshahi division were higher taking each vaccine as indicator whereas in Chittagong and Dhaka division the coverage is lower. The percentage of fully immunized child is above 80% in Rajshahi(80%) and Khulna division(82%). It was 52% in Dhaka and 53% in Chittagong division.
- 4.4 The findings of the urban survey show higher coverage, than the national weighted survey. The coverage with BCG was 92%, with DPT/OPV-3 84% and with measles vaccine 80%.

- 4.5 A high proportion of children received BCG and one dose of DPT and OPV (88% ) but only 68% received measles vaccine. The high national drop-out rate (28%) is still a matter of concern.
- 4.6 Retention of child's immunization card was poor in all areas. However improvement was noted in Khulna division (76%).
- 4.7 The main source of rural vaccination was outreach sites but in the urban area fixed health facilities were the main providers (61%).
- 4.9 The findings of the surveys indicate that routine reports on vaccination performance are within the confidence limits of the survey methodology in Rajshahi and Khulna divisions.

5. Recommendations:

Considerable progress has been made by Bangladesh EPI. The following recommendation are made to further improve the programme.

- 5.1 Vaccination coverage needs to be raised and sustained at a level of at least 90% by the year 1995. This level of coverage should be ensured in each administrative unit, district, upazila, union, town, ward. Additional emphasis needs to be given for Dhaka and Chittagong divisions to raise the vaccination coverage to 80% by end of 1992. The high level of coverage achieved in the urban areas, Khulna and Rajshahi divisions need to be maintained.
- 5.2 Vaccination for children before their first birthday and TT vaccination during each pregnancy, should be ensured.
- 5.3 Along with vaccination coverage, emphasis must be given to reporting of vaccine preventable disease and response to these reports. Support of high vaccination coverage and disease surveillance is essential to achieve diseases reduction, elimination and eradication targets.
- 5.4 The reasons for low rate of card availability needs to be determined and action taken to correct this weak component of the programme.
- 5.5 Greater efforts in communication and new strategies have to be developed to reduce the high drop-out rate.
- 5.6 The survey results show that some children were vaccinated between 1-2 years of age, but these are not reflected in the appropriate age group of routine reports. Routine report of vaccination performance need to be improved in respect of recording correct age at this of immunization.

- 5.7 Given the high EPI accessibility, EPI can be the vehicle for introduction of other interventions of primary health care.
- 5.8 Further analysis and use of coverage survey data will be useful in implementing EPI plus and in improving overall quality of services.

Doc.natvacin.bsu/k-1

**List of participants of National Vaccination Coverage Survey - 1992**

**I. Core Team Members.**

**National:**

- |                             |                      |
|-----------------------------|----------------------|
| 1. Mr. Golam Ali Mollah     | Planning Commission, |
| 2. Mr. Samsul Karim Bhuiyan | IMED                 |
| 3. Dr. Enamul Karim,        | IEDCR                |
| 4. Mr. H. R. Kabir Khan     | Ministry of L.G.R.D. |

**International:**

- |                               |            |
|-------------------------------|------------|
| 1. Dr. Mridul Kanti Chowdhuri | ICDDRB     |
| 2. Dr. Ingra Palme Berguer    | SIDA       |
| 3. Mr. David Boyd             | USAID      |
| 4. Mr. Gary Presthus          | WHO        |
| 5. Mr. S. R. Chowdhury        | World Bank |

**II. Liason Officers:**

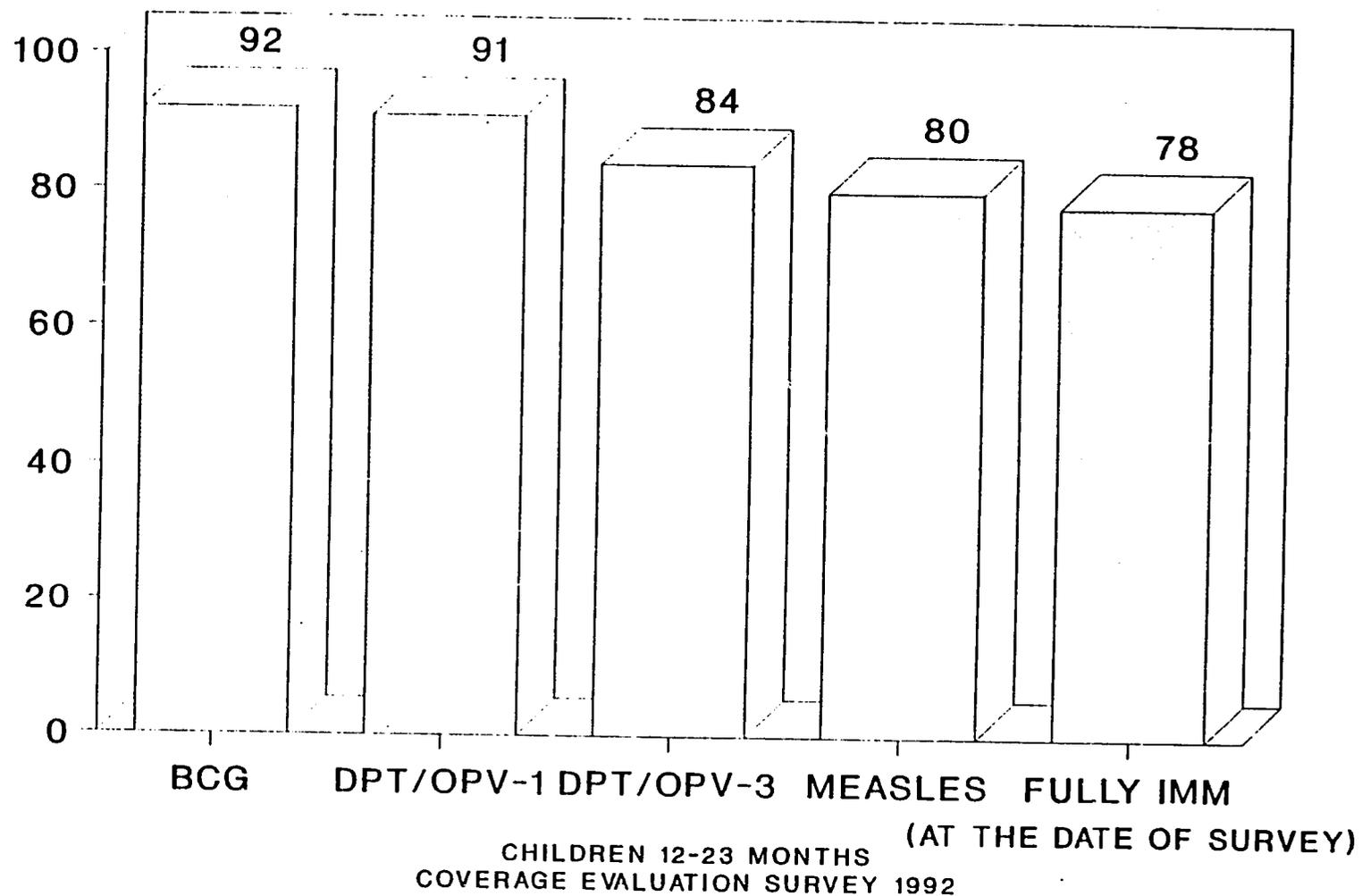
- |                         |        |
|-------------------------|--------|
| 1. Dr. Kamrul Islam     | UNICEF |
| 2. Mr. Tariqul Alam     | "      |
| 3. Mr. Fazlul Haque     | "      |
| 4. Mr. Fahimuddin       | "      |
| 5. Mr. Monzurul Islam   | "      |
| 6. Mr. Asadur Rahman    | "      |
| 7. Dr. S. Bari          | USAID  |
| 8. Dr. A. Hamid         | "      |
| 9. Dr. Bikash Roy       | "      |
| 10. Dr. I. A. Jinnah    | "      |
| 11. Dr. Habibur Rahman  | WHO    |
| 12. Dr. M. A. Sattar    | "      |
| 13. Dr. Abou Ahmed Khan | "      |

**III. Resource Persons:**

1. Dr. A. K. M. Lutfar Rahman Talukder, Director EPI
2. Dr. Arun Patel, Training Advisor, UNICEF
3. Mr. Mahboob Shareef, Programme Officer, UNICEF
4. Dr. Mary Carnel, Advisor Urban Immunization, USAID
5. Dr. R. N. Basu, WHO Consultant.

# EPI BANGLADESH

## CHILDREN IMMUNIZATION COVERAGE IN URBAN AREAS (CARD + HISTORY)



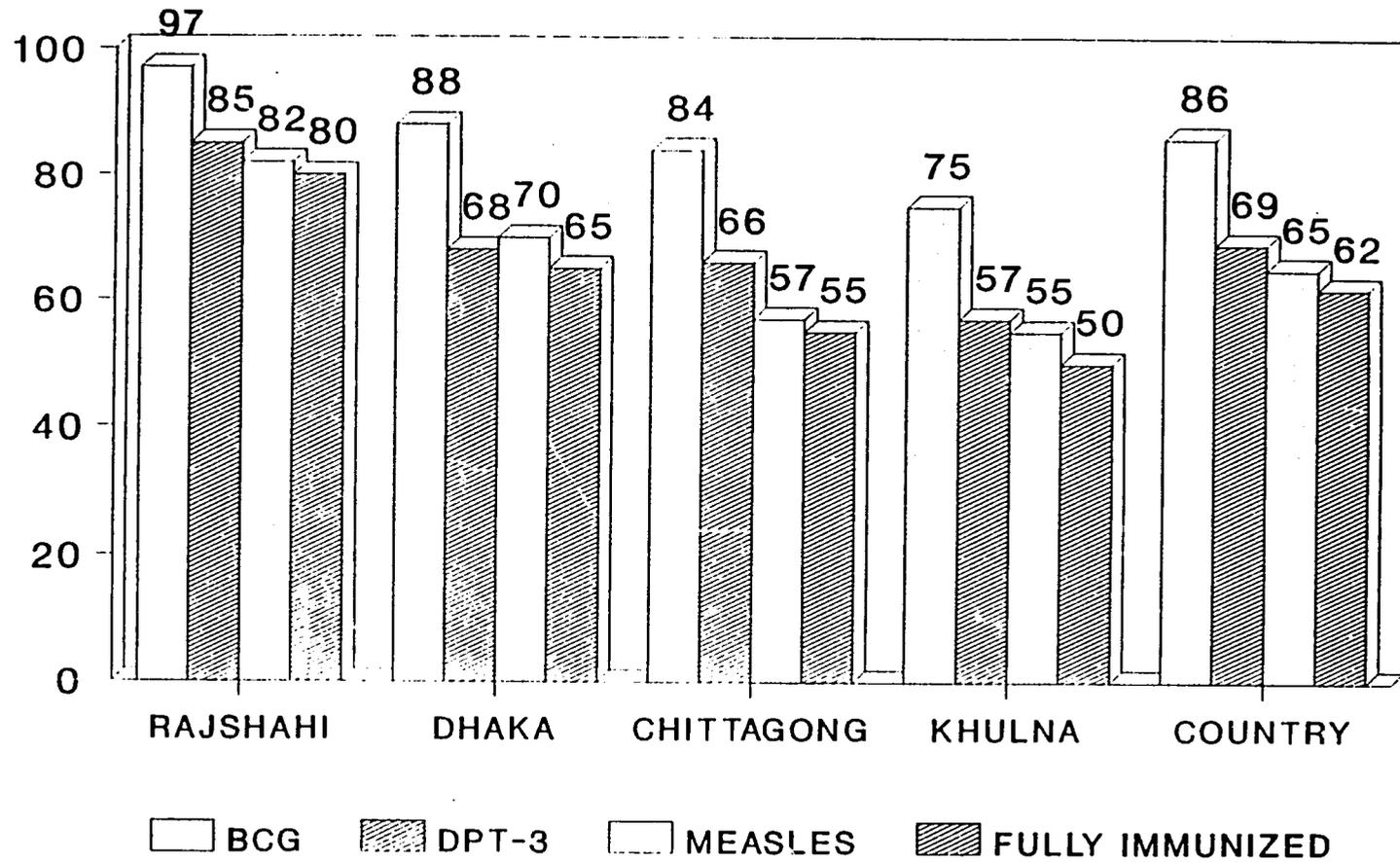
CES4-92

22

# EPI BANGLADESH

## COVERAGE EVALUATION SURVEY

### FEBRUARY 1991



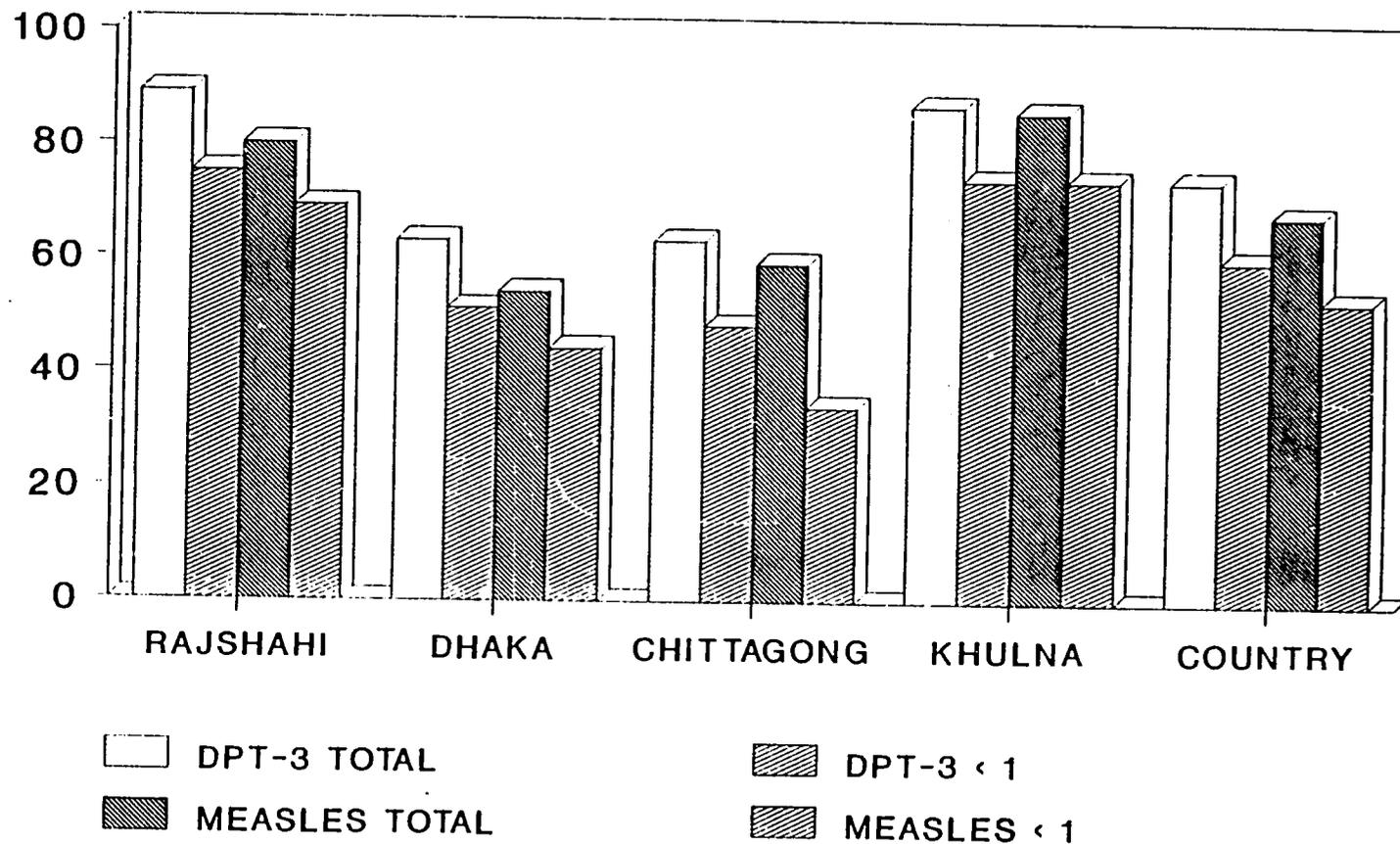
CHILDREN 12-17 MONTHS

- 23

# EPI BANGLADESH

## CHILDREN COVERAGE (CARDS + HISTORY)

### AGE 12-23 MONTHS ON THE DAY OF SURVEY



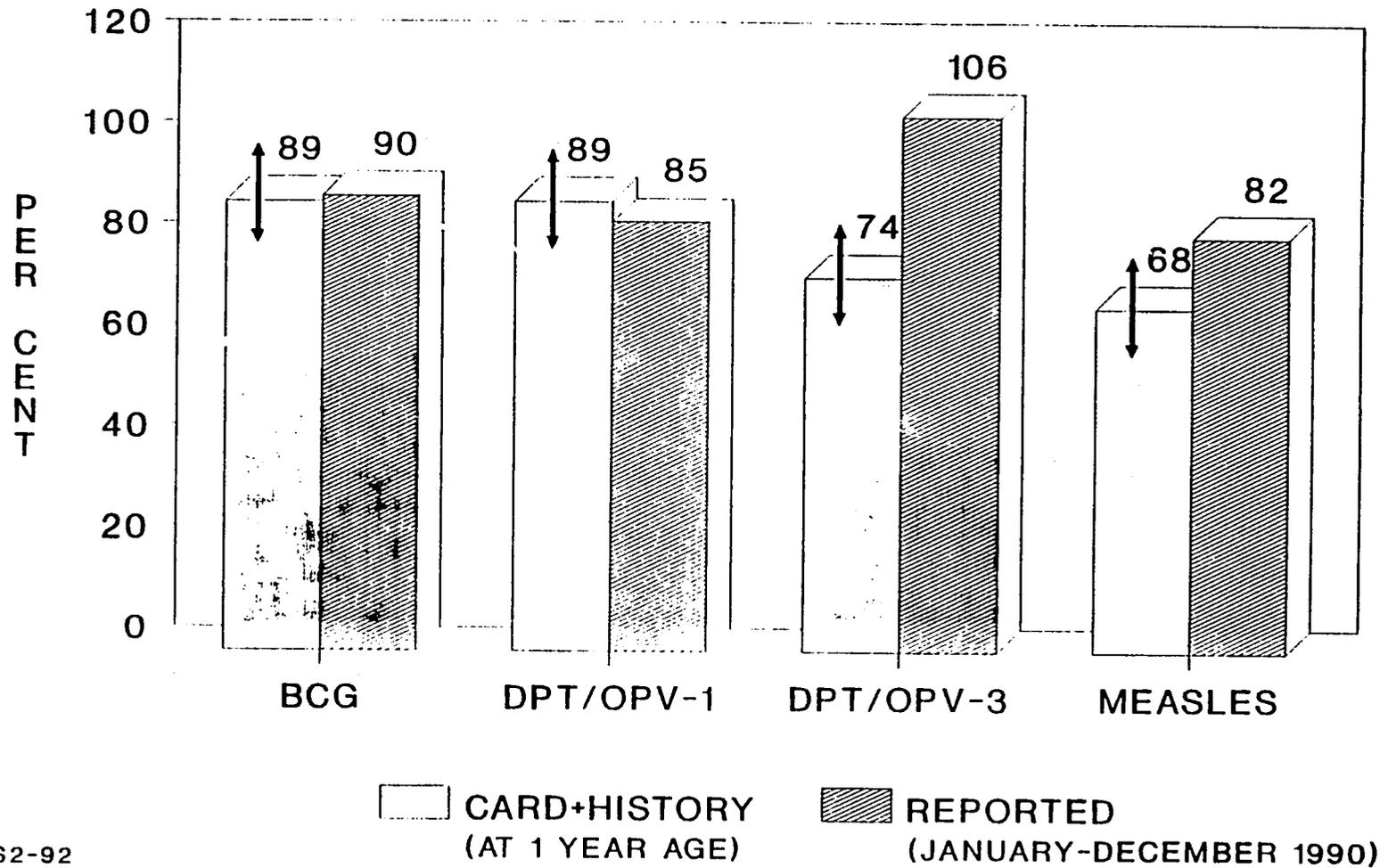
CES6-92

COVERAGE EVALUATION SURVEY 1992

24

# EPI BANGLADESH

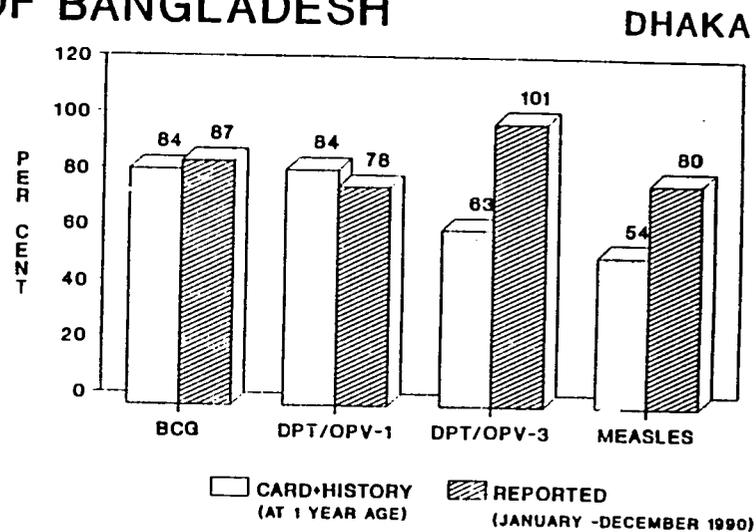
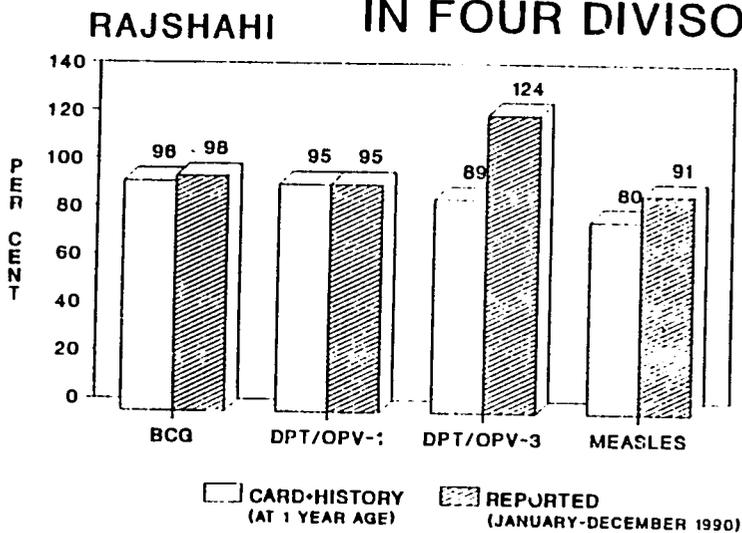
## NATIONAL SURVEY AND REPORTED COVERAGE



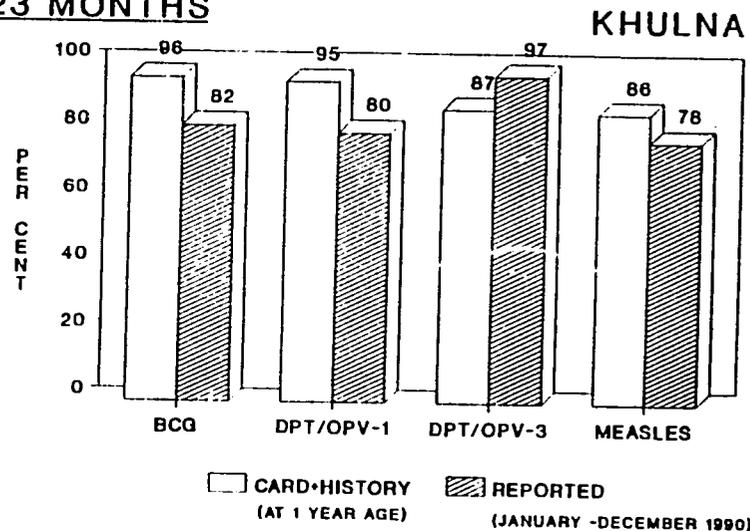
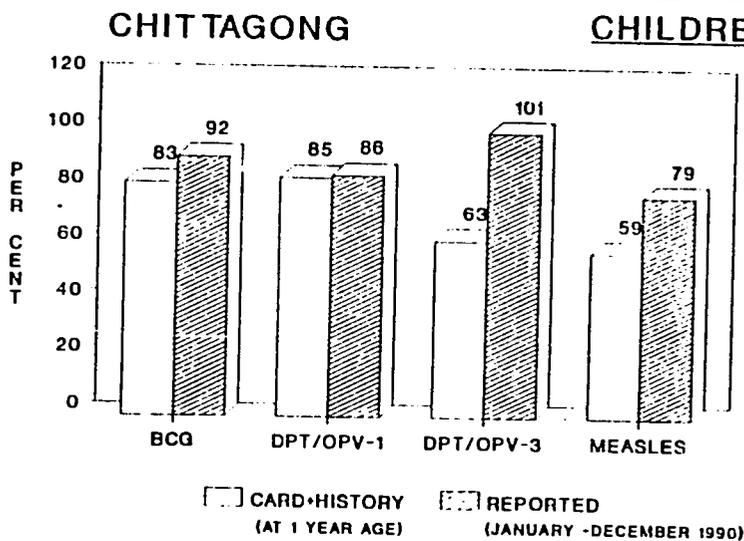
CES2-92

COVERAGE EVALUATION SURVEY 1992

# CHILDREN IMMUNIZATION COVERAGE IN FOUR DIVISIONS OF BANGLADESH



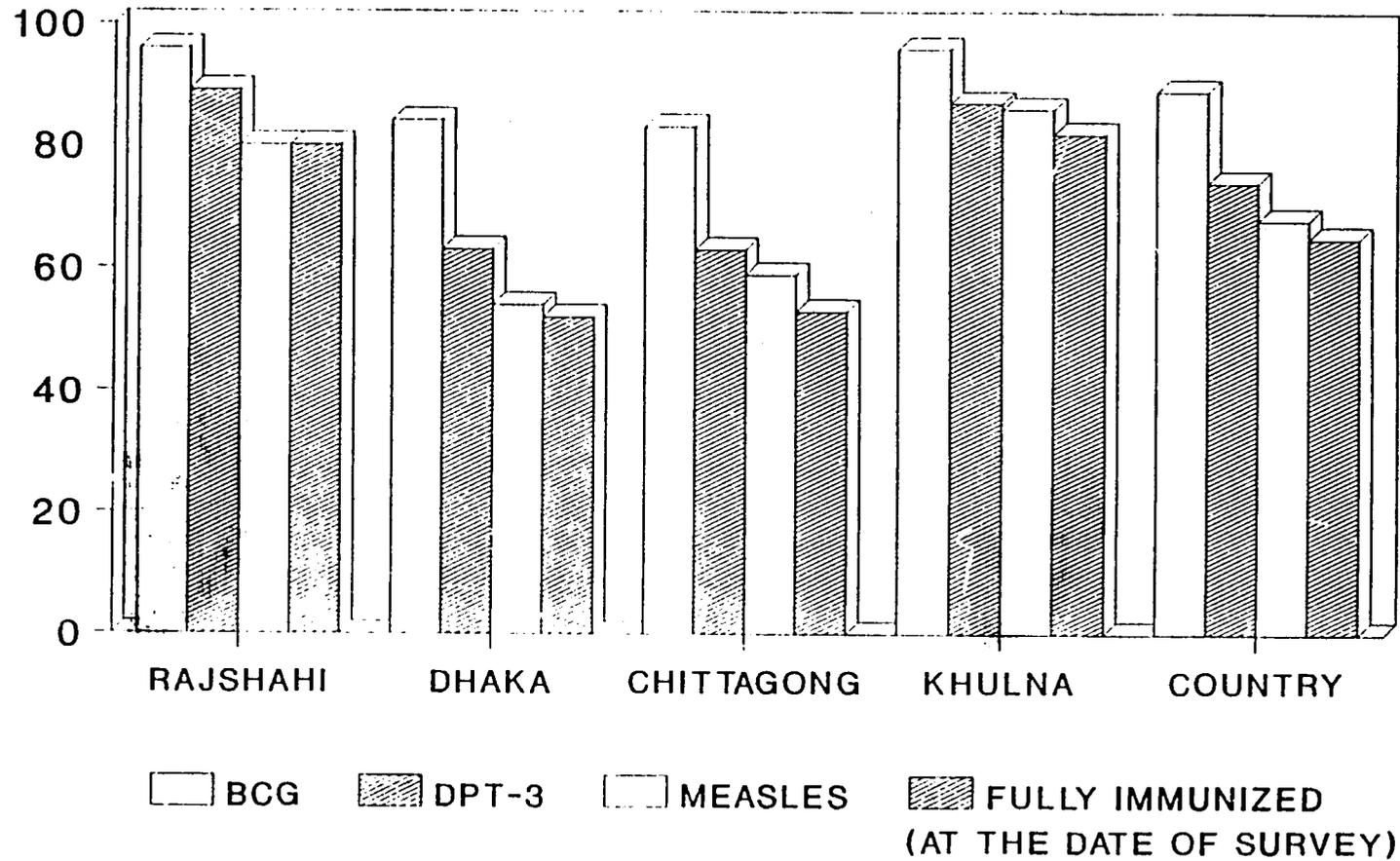
## CARDS + HISTORY CHILDREN 12-23 MONTHS



24

# EPI BANGLADESH

## CHILDREN IMMUNIZATION COVERAGE CARDS + HISTORY

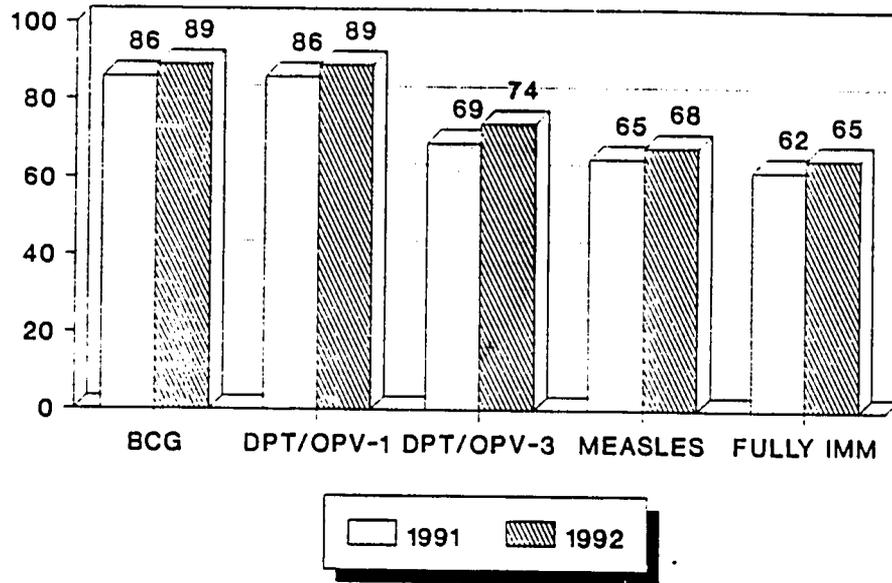


CES1-92

CHILDREN 12-23 MONTHS  
COVERAGE EVALUATION SURVEY 1992

27

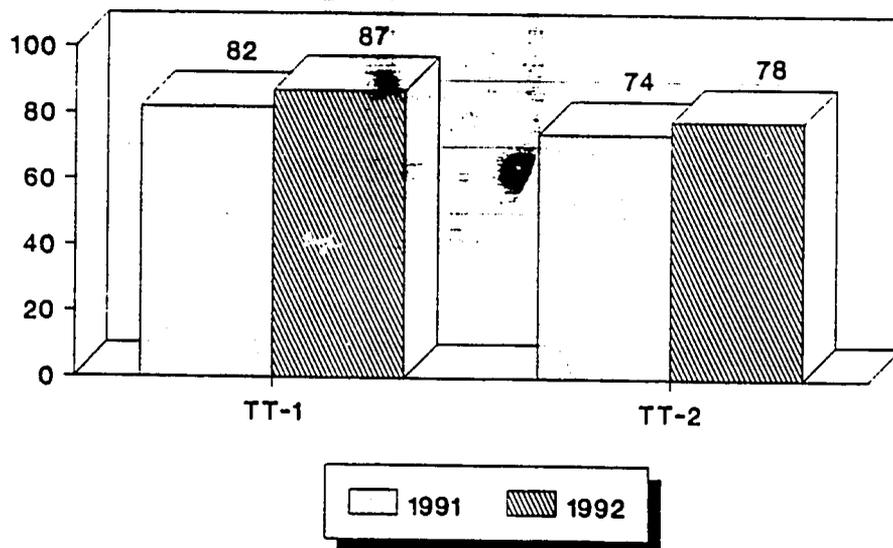
**EPI BANGLADESH  
CHILDREN IMMUNIZATION COVERAGE  
1991 & 1992 (CARD + HISTORY)**



CES-12

CES 1991 & 1992

**EPI BANGLADESH  
TT IMMUNIZATION COVERAGE  
1991 & 1992 (CARD + HISTORY)**

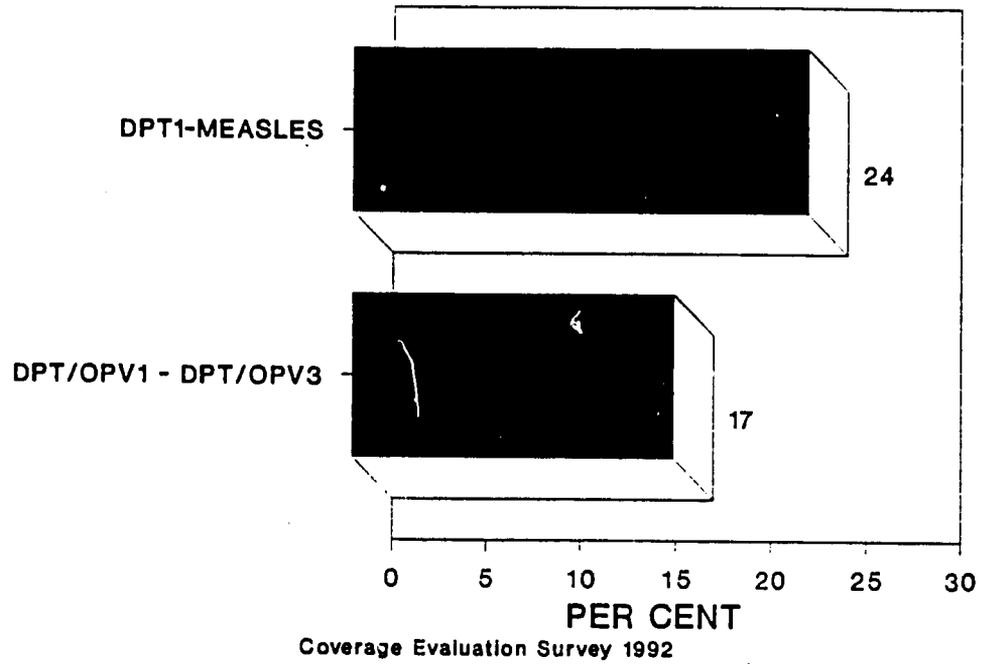


CES-13

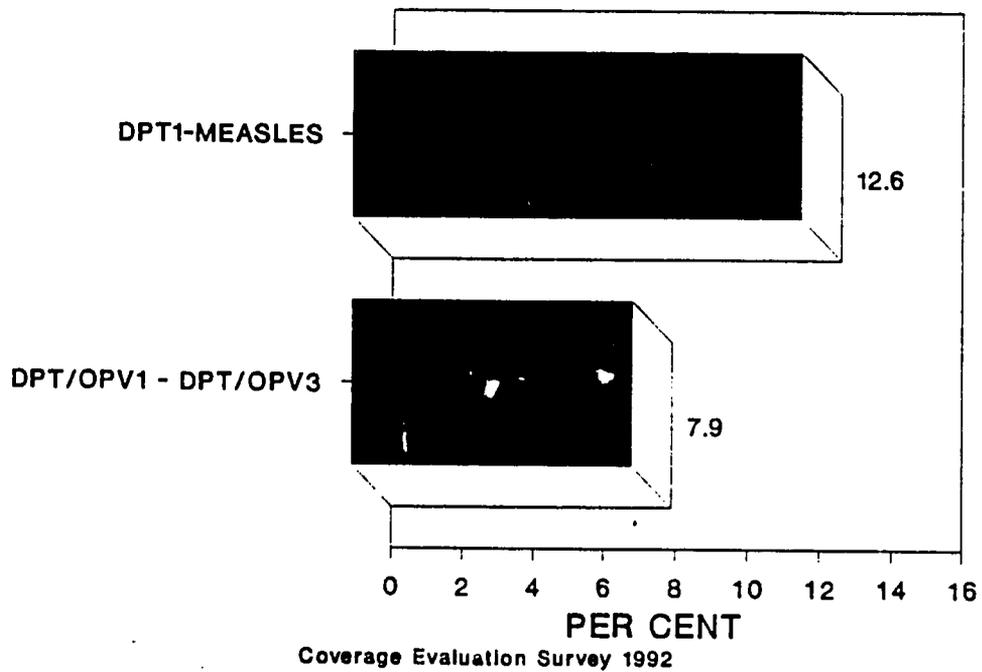
CES 1991 & 1992

*58*

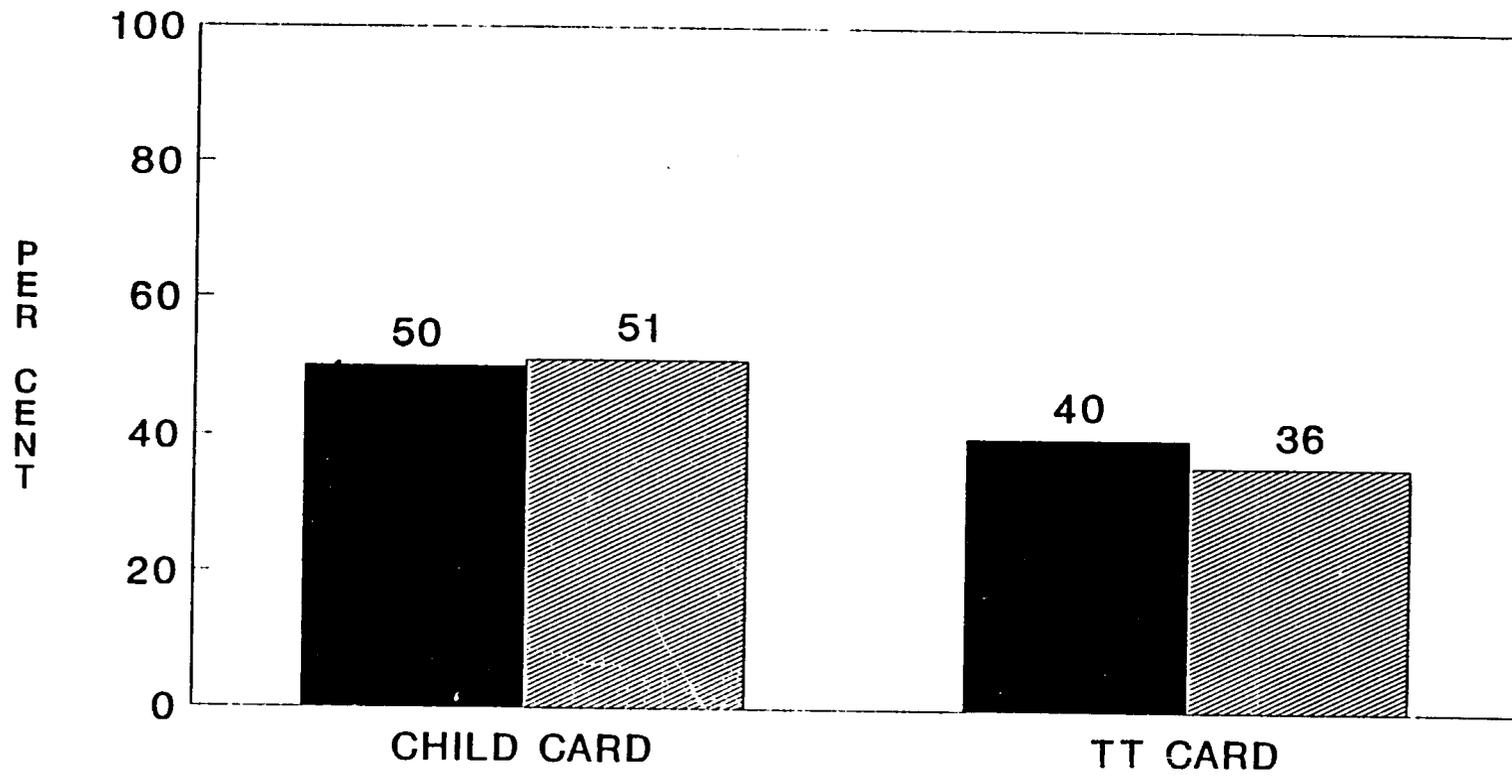
### EPI BANGLADESH - COUNTRY DROP OUT RATE FROM IMMUNIZATION SERVICES



### EPI BANGLADESH - URBAN DROP OUT RATE FROM IMMUNIZATION SERVICES



# EPI BANGLADESH IMMUNIZATION CARDS RETENTION



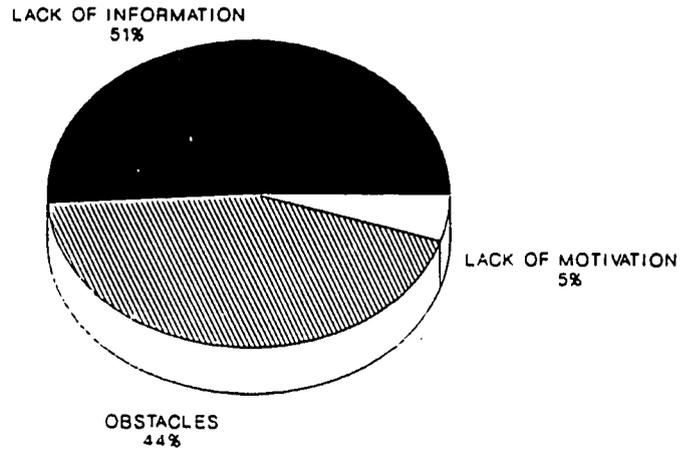
■ 1991 SURVEY    ▨ 1992 SURVEY

CES7-92

COVERAGE EVALUATION SURVEYS 1991/1992

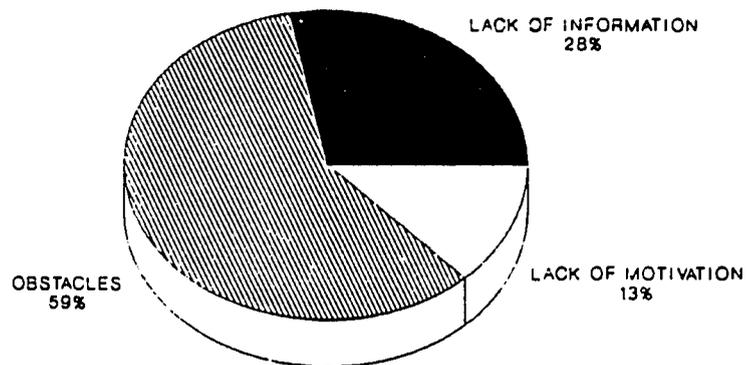
10

**EPI BANGLADESH  
REASONS FOR FAILURE TO IMMUNIZE  
COUNTRY**



COVERAGE EVALUATION SURVEY 1992

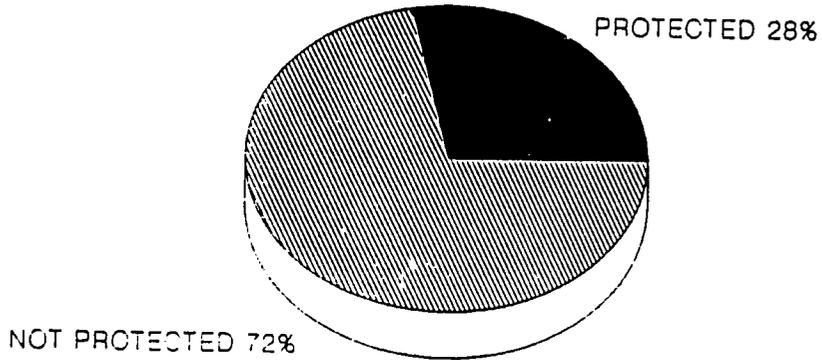
**EPI BANGLADESH  
REASONS FOR FAILURE TO IMMUNIZE  
URBAN**



CES9-92

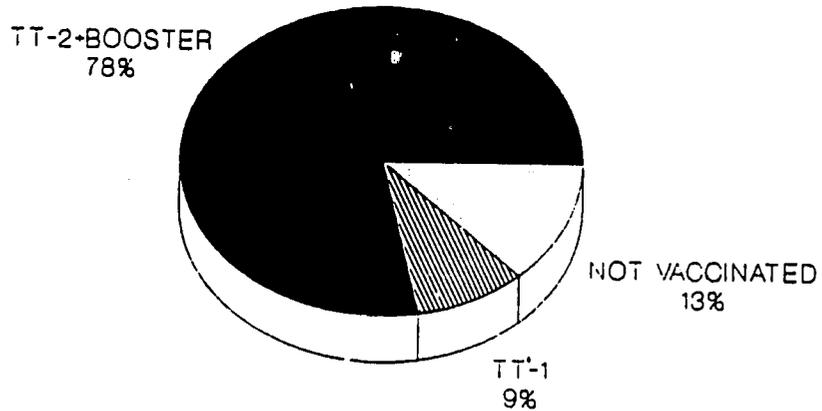
COVERAGE EVALUATION SURVEY 1992

**EPI BANGLADESH  
INFANTS PROTECTED AGAINST  
NEONATAL TETANUS  
CARDS ONLY**



**MOTHERS OF CHILDREN 0-11 MONTHS  
COVERAGE EVALUATION SURVEY 1992**

**EPI BANGLADESH  
COVERAGE OF TETANUS TOXOID VACCINATION  
DURING LAST PREGNANCY  
CARDS + HISTORY**



CES5-92

**MOTHERS OF CHILDREN 0-11 MONTHS  
COVERAGE EVALUATION SURVEY 1992**

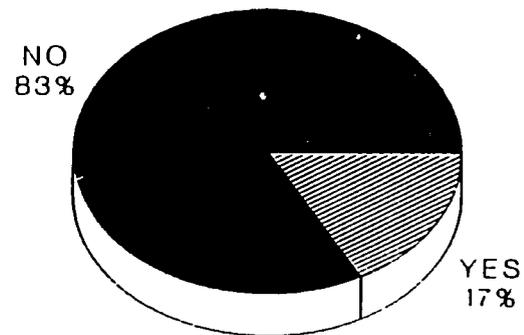
# EPI BANGLADESH

## EARLY CONTACTS WITH MOTHERS

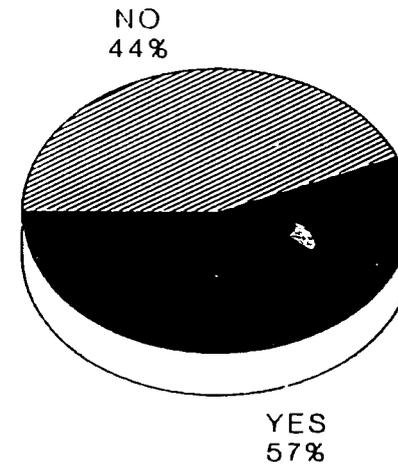
(SAMPLE NUMBER = 842)

### ANTENATAL CARE

NATIONAL



URBAN



CES8-92

Mothers of Children 0 - 11 Months  
COVERAGE EVALUATION SURVEY 1992

5

**Annex 3: COSAS Manual Analysis Immunization Summaries**

**COSAS MANUAL ANALYSIS  
IMMUNIZATION SUMMARY, CRUDE DATE**

**Paediatric Coverage Survey**

Survey title **CHITTAGONG CHILDREN SURVEY**

Beginning of survey : **22/02/92**

Type of area : **DIVISION**

Number of records to process: **214**  
                                   **CARD AVAILABLE**       **85 ( 39.7%)**  
                                   **BCGscar**           **165 ( 77.1%)**

**Coverage    Crude data**

	Card	Card	+ History
BCG	166 ( 77.6%)	178	( 83.2%)
POLIO 0	0 ( 0.0%)	0	( 0.0%)
POLIO 1	77 ( 36.0%)	181	( 84.6%)
POLIO 2	72 ( 33.6%)	160	( 74.8%)
POLIO 3	63 ( 29.4%)	134	( 62.6%)
DPT 1	77 ( 36.0%)	181	( 84.6%)
DPT 2	72 ( 33.6%)	160	( 74.8%)
DPT 3	65 ( 30.4%)	134	( 62.6%)
MEASLES	65 ( 30.4%)	126	( 58.9%)
Yellow Fever	0 ( 0.0%)	0	( 0.0%)
Other vaccine	0 ( 0.0%)	0	( 0.0%)
All doses received	52 ( 24.3%)	113	( 52.8%)
No vaccine , Crude data		32	( 15.0%)

**COSAS MANUAL ANALYSIS  
IMMUNIZATION SUMMARY, CRUDE DATA**

**Paediatric Coverage Survey**

Survey title **DHAKA DIVISION SURVEY**

Beginning of survey : **22/02/92**

Type of area : **DHAKA DIVISION INCLUDING DHAKA CC**

Number of records to process: **209**  
                                   **CARD AVAILABLE**       **73 ( 34.9%)**  
                                   **BCGscar**           **169 ( 80.9%)**

**Coverage      Crude data**

	<b>Card</b>	<b>Card</b>	<b>+ History</b>
<b>BCG</b>	<b>170 ( 81.3%)</b>	<b>175</b>	<b>( 83.7%)</b>
<b>POLIO 0</b>	<b>0 ( 0.0%)</b>	<b>0</b>	<b>( 0.0%)</b>
<b>POLIO 1</b>	<b>71 ( 34.0%)</b>	<b>175</b>	<b>( 83.7%)</b>
<b>POLIO 2</b>	<b>65 ( 31.1%)</b>	<b>150</b>	<b>( 71.8%)</b>
<b>POLIO 3</b>	<b>57 ( 27.3%)</b>	<b>131</b>	<b>( 62.7%)</b>
<b>DPT 1</b>	<b>71 ( 34.0%)</b>	<b>175</b>	<b>( 83.7%)</b>
<b>DPT 2</b>	<b>65 ( 31.1%)</b>	<b>150</b>	<b>( 71.8%)</b>
<b>DPT 3</b>	<b>57 ( 27.3%)</b>	<b>131</b>	<b>( 62.7%)</b>
<b>MEASLES</b>	<b>52 ( 24.9%)</b>	<b>114</b>	<b>( 54.5%)</b>
<b>Yellow Fever</b>	<b>0 ( 0.0%)</b>	<b>0</b>	<b>( 0.0%)</b>
<b>Other vaccine</b>	<b>0 ( 0.0%)</b>	<b>0</b>	<b>( 0.0%)</b>
<b>All doses received</b>	<b>48 ( 23.0%)</b>	<b>108</b>	<b>( 51.7%)</b>
<b>No vaccine , Crude data</b>		<b>32</b>	<b>( 15.3%)</b>

**COSAS MANUAL ANALYSIS  
IMMUNIZATION SUMMARY, CRUDE DATA**

**Paediatric Coverage Survey**

Survey title Khulna Division Pediatric Survey

Beginning of survey : 22/02/92

Type of area : D.division

Number of records to process:	215
CARD AVAILABLE	162 ( 75.3%)
BCGscar	200 ( 93.0%)

**Coverage Crude data**

	Card	Card	+ History
BCG	204 ( 94.9%)	206	( 95.8%)
POLIO 0	0 ( 0.0%)	0	( 0.0%)
POLIO 1	156 ( 72.6%)	204	( 94.9%)
POLIO 2	157 ( 73.0%)	198	( 92.1%)
POLIO 3	149 ( 69.3%)	187	( 87.0%)
DPT 1	156 ( 72.6%)	204	( 94.9%)
DPT 2	157 ( 73.0%)	198	( 92.1%)
DPT 3	149 ( 69.3%)	187	( 87.0%)
MEASLES	149 ( 69.3%)	184	( 85.6%)
Yellow Fever	0 ( 0.0%)	0	( 0.0%)
Other vaccine	0 ( 0.0%)	0	( 0.0%)
All doses received	141 ( 65.6%)	177	( 82.3%)
No vaccine , Crude data		9	( 4.2%)

**COSAS MANUAL ANALYSIS  
IMMUNIZATION SUMMARY, CRUDE DATA**

**Paediatric Coverage Survey**

Survey title **RASHAHID PEDIATRIC SURVEY**

Beginning of survey : **22/02/92**

Type of area : **DIVISION**

Number of records to process: **211**  
                                   **CARD AVAILABLE**      **132 ( 62.6%)**  
                                   **BCGscar**            **198 ( 93.8%)**

**Coverage      Crude data**

	<b>Card</b>	<b>Card + History</b>
BCG	200 ( 94.8%)	202 ( 95.7%)
POLIO 0	0 ( 0.0%)	0 ( 0.0%)
POLIO 1	130 ( 61.6%)	201 ( 95.3%)
POLIO 2	128 ( 60.7%)	195 ( 92.4%)
POLIO 3	123 ( 58.3%)	187 ( 88.6%)
DPT 1	130 ( 61.6%)	200 ( 94.8%)
DPT 2	128 ( 60.7%)	195 ( 92.4%)
DPT 3	123 ( 58.3%)	188 ( 89.1%)
MEASLES	114 ( 54.0%)	168 ( 79.6%)
Yellow Fever	0 ( 0.0%)	0 ( 0.0%)
Other vaccine	0 ( 0.0%)	0 ( 0.0%)
All doses received	113 ( 53.6%)	168 ( 79.6%)
<b>No vaccine , Crude data</b>		<b>9 ( 4.3%)</b>

**COSAS MANUAL ANALYSIS  
IMMUNIZATION SUMMARY, CRUDE DATA**

**Paediatric Coverage Survey**

Survey title Urban Pediatric Survey

Beginning of survey : 22/02/92

Type of area : Urban areas of Bangladesh

Number of records to process:	209
CARD AVAILABLE	135 ( 64.6%)
BCGscar	189 ( 90.4%)

**Coverage Crude data**

	Card	Card + History
BCG	190 ( 90.9%)	192 ( 91.9%)
POLIO 0	0 ( 0.0%)	0 ( 0.0%)
POLIO 1	129 ( 61.7%)	191 ( 91.4%)
POLIO 2	123 ( 58.9%)	182 ( 87.1%)
POLIO 3	122 ( 58.4%)	176 ( 84.2%)
DPT 1	129 ( 61.7%)	191 ( 91.4%)
DPT 2	122 ( 58.4%)	182 ( 87.1%)
DPT 3	122 ( 58.4%)	176 ( 84.2%)
MEASLES	109 ( 52.2%)	167 ( 79.9%)
Yellow Fever	0 ( 0.0%)	0 ( 0.0%)
Other vaccine	0 ( 0.0%)	0 ( 0.0%)
All doses received	105 ( 50.2%)	164 ( 78.5%)
No vaccine , Crude data		16 ( 7.7%)

**Annex 4: COSAS Standard Analysis of Five Coverage Surveys**

Standard analysis of the survey (WHO/UNICEF)  
Paediatric Coverage Survey

Survey title Khulna Division Pediatric Survey

Beginning of survey : 22/02/92

Type of area : D.division

Number of records to process:	215
CARD AVAILABLE	162 ( 75.3%)
BCGscar	200 ( 93.0%)

INDICATORS:

I. Coverage by one year of age

	Card	Card + History
BCG	198 ( 92.1%)	( 93.0%)
POLIO 0	0 ( 0.0%)	( 0.0%)
POLIO 1	143 ( 66.5%)	( 87.0%)
POLIO 2	134 ( 62.3%)	( 78.6%)
POLIO 3	125 ( 58.1%)	( 73.0%)
DPT 1	144 ( 67.0%)	( 87.6%)
DPT 2	135 ( 62.8%)	( 79.2%)
DPT 3	126 ( 58.6%)	( 73.6%)
MEASLES	129 ( 60.0%)	( 74.1%)
Yellow Fever	0 ( 0.0%)	( 0.0%)
Other vaccine	0 ( 0.0%)	( 0.0%)
All doses received	109 ( 50.7%)	( 63.6%)

No vaccine , Crude data 9 ( 4.2%)

II. PROGRAM ACCESS

DPT 1 Crude Coverage + History 94.9 %

III. PROGRAM CONTINUITY

A. DROPOUT DPT1-MEASLES 9.8 %

B. DROPOUT DPT 1-3 8.3 %

IV. PROGRAM QUALITY

A. Availability of documentation about immunizations 99.0 %

B. Adherence to the immunization schedule

Proportion of invalid doses

Measles 6.0 %

DPT 1 4.5 %

C. Targeting under ones for immunization

Proportion of valid measles doses given before 52 weeks: 92.1%

### D. Missed opportunities

Vaccine	Uncorrected	Corrected
BCG :	1 ( 0.47%)	22 ( 10.23%)
DPT1 :	2 ( 0.93%)	7 ( 3.26%)
DPT2 :	0 ( 0.00%)	5 ( 2.33%)
DPT3 :	0 ( 0.00%)	4 ( 1.86%)
POL1 :	2 ( 0.93%)	8 ( 3.72%)
POL2 :	0 ( 0.00%)	5 ( 2.33%)
POL3 :	0 ( 0.00%)	4 ( 1.86%)
MEAS :	2 ( 0.93%)	10 ( 4.65%)
Child	215	

### V. Providers

Valid value for the field SOURCE : OHCPN

	O	H	C	P	N	?
BCG :	179(87%)	3(1%)	15(7%)	0(0%)	9(4%)	0
DPT1 :	178(87%)	2(1%)	15(7%)	0(0%)	9(4%)	0
DPT2 :	173(87%)	1(1%)	14(7%)	0(0%)	10(5%)	0
DPT3 :	162(87%)	1(1%)	14(7%)	0(0%)	10(5%)	0
POL1 :	178(87%)	2(1%)	15(7%)	0(0%)	9(4%)	0
POL2 :	173(87%)	1(1%)	14(7%)	0(0%)	10(5%)	0
POL3 :	162(87%)	1(1%)	14(7%)	0(0%)	10(5%)	0
MEAS :	162(88%)	1(1%)	12(7%)	0(0%)	9(5%)	0
	1367(87%)	12(1%)	113(7%)	0(0%)	76(5%)	0

Standard analysis of the survey (WHO/UNICEF)  
Paediatric Coverage Survey

Survey title RAJSHAHI PEDIATRIC SURVEY  
Beginning of survey : 22/02/92  
Type of area : DIVISION

Number of records to process: 211  
CARD AVAILABLE 132 ( 62.6%)  
BCGscar 198 ( 93.8%)

INDICATORS:

I. Coverage by one year of age

	Card	Card + History
BCG	199 ( 94.3%)	( 95.3%)
POLIO 0	0 ( 0.0%)	( 0.0%)
POLIO 1	124 ( 58.8%)	( 90.9%)
POLIO 2	116 ( 55.0%)	( 83.8%)
POLIO 3	105 ( 49.8%)	( 75.7%)
DPT 1	123 ( 58.3%)	( 89.7%)
DPT 2	115 ( 54.5%)	( 83.0%)
DPT 3	104 ( 49.3%)	( 75.3%)
MEASLES	99 ( 46.9%)	( 69.1%)
Yellow Fever	0 ( 0.0%)	( 0.0%)
Other vaccine	0 ( 0.0%)	( 0.0%)
All doses received	88 ( 41.7%)	( 62.0%)

No vaccine , Crude data 9 ( 4.3%)

II. PROGRAM ACCESS

DPT 1 Crude Coverage + History 94.8 %

III. PROGRAM CONTINUITY

A. DROPOUT DPT1-MEASLES 16.0 %  
B. DROPOUT DPT 1-3 6.0 %

IV. PROGRAM QUALITY

A. Availability of documentation about immunizations 99.0 %

B. Adherence to the immunization schedule

Proportion of invalid doses

Measles 4.4 %  
DPT 1 4.6 %

C. Targeting under ones for immunization

Proportion of valid measles doses given before 52 weeks: 90.8%

53

D. Missed opportunities

Vaccine	Uncorrected	Corrected
BCG :	0 ( 0.00%)	9 ( 4.27%)
DPT1 :	0 ( 0.00%)	6 ( 2.84%)
DPT2 :	1 ( 0.47%)	5 ( 2.37%)
DPT3 :	0 ( 0.00%)	6 ( 2.84%)
POL1 :	0 ( 0.00%)	6 ( 2.84%)
POL2 :	1 ( 0.47%)	5 ( 2.37%)
POL3 :	0 ( 0.00%)	5 ( 2.37%)
MEAS :	2 ( 0.95%)	5 ( 2.37%)
Child	211	

V. Providers

Valid value for the field SOURCE : OCHPN

	O	C	H	P	N	?
BCG :	173(86%)	16(8%)	11(5%)	0(0%)	2(1%)	0
DPT1 :	171(86%)	16(8%)	11(6%)	0(0%)	2(1%)	0
DPT2 :	167(86%)	16(8%)	10(5%)	0(0%)	2(1%)	0
DPT3 :	160(85%)	16(9%)	10(5%)	0(0%)	2(1%)	0
POL1 :	172(86%)	16(8%)	11(5%)	0(0%)	2(1%)	0
POL2 :	167(86%)	16(8%)	10(5%)	0(0%)	2(1%)	0
POL3 :	159(85%)	16(9%)	10(5%)	0(0%)	2(1%)	0
MEAS :	144(86%)	15(9%)	8(5%)	0(0%)	1(1%)	0
	1313(85%)	127(8%)	81(5%)	0(0%)	15(1%)	0

24

Standard analysis of the survey (WHO/UNICEF)  
Paediatric Coverage Survey

Survey title CHITTAGONG PEDIATRIC SURVEY  
Beginning of survey : 22/02/92  
Type of area : DIVISION

Number of records to process: 214  
CARD AVAILABLE 85 ( 39.7%)  
BCGscar 165 ( 77.1%)

INDICATORS:

I. Coverage by one year of age

	Card	Card + History
BCG	157 ( 73.4%)	( 78.7%)
POLIO 0	0 ( 0.0%)	( 0.0%)
POLIO 1	72 ( 33.6%)	( 79.1%)
POLIO 2	60 ( 28.0%)	( 62.3%)
POLIO 3	51 ( 23.8%)	( 50.7%)
DPT 1	72 ( 33.6%)	( 79.1%)
DPT 2	60 ( 28.0%)	( 62.3%)
DPT 3	50 ( 23.4%)	( 48.2%)
MEASLES	38 ( 17.8%)	( 34.4%)
Yellow Fever	0 ( 0.0%)	( 0.0%)
Other vaccine	0 ( 0.0%)	( 0.0%)
All doses received	32 ( 15.0%)	( 32.5%)

No vaccine , Crude data 32 ( 15.0%)

II. PROGRAM ACCESS

DPT 1 Crude Coverage + History 84.6 %

III. PROGRAM CONTINUITY

A. DROPOUT DPT1-MEASLES 30.4 %  
B. DROPOUT DPT 1-3 26.0 %

IV. PROGRAM QUALITY

A. Availability of documentation about immunizations 99.5 %

B. Adherence to the immunization schedule

Proportion of invalid doses

Measles 10.8 %  
DPT 1 0.0 %

C. Targeting under ones for immunization

Proportion of valid measles doses given before 52 weeks: 65.5%

#### D. Missed opportunities

Vaccine	Uncorrected	Corrected
BCG :	4 ( 1.87%)	19 ( 8.88%)
DPT1 :	6 ( 2.80%)	2 ( 0.93%)
DPT2 :	0 ( 0.00%)	1 ( 0.47%)
DPT3 :	0 ( 0.00%)	4 ( 1.87%)
POL1 :	6 ( 2.80%)	1 ( 0.47%)
POL2 :	0 ( 0.00%)	0 ( 0.00%)
POL3 :	1 ( 0.47%)	3 ( 1.40%)
MEAS :	6 ( 2.80%)	13 ( 6.07%)
Child	214	

#### V. Providers

Valid value for the field SOURCE : OCHPN

	O	C	H	P	N	?
BCG :	142(80%)	18(10%)	11(6%)	4(2%)	2(1%)	1
DPT1 :	145(80%)	19(10%)	11(6%)	4(2%)	2(1%)	0
DPT2 :	128(80%)	15(9%)	11(7%)	4(3%)	2(1%)	0
DPT3 :	106(79%)	16(12%)	6(4%)	4(3%)	2(1%)	0
POL1 :	145(80%)	19(10%)	11(6%)	4(2%)	2(1%)	0
POL2 :	128(80%)	15(9%)	11(7%)	4(3%)	2(1%)	0
POL3 :	106(79%)	16(12%)	6(4%)	4(3%)	2(1%)	0
MEAS :	102(81%)	13(10%)	7(6%)	3(2%)	1(1%)	0
	1002(80%)	131(10%)	74(6%)	31(2%)	15(1%)	1

Standard analysis of the survey (WHO/UNICEF)  
Paediatric Coverage Survey

Survey title DHAKA PEDIATRIC SURVEY

Beginning of survey : 22/02/92

Type of area : DHAKA DIVISION INCLUDING DHAKA CC

Number of records to process: 209  
CARD AVAILABLE 73 ( 34.9%)  
BCGscar 169 ( 80.9%)

INDICATORS:

I. Coverage by one year of age

	Card	Card + History
BCG	165 ( 78.9%)	( 81.3%)
POLIO 0	0 ( 0.0%)	( 0.0%)
POLIO 1	65 ( 31.1%)	( 76.7%)
POLIO 2	54 ( 25.8%)	( 59.6%)
POLIO 3	45 ( 21.5%)	( 49.5%)
DPT 1	65 ( 31.1%)	( 76.7%)
DPT 2	55 ( 26.3%)	( 60.7%)
DPT 3	46 ( 22.0%)	( 50.6%)
MEASLES	42 ( 20.1%)	( 44.1%)
Yellow Fever	0 ( 0.0%)	( 0.0%)
Other vaccine	0 ( 0.0%)	( 0.0%)
All doses received	34 ( 16.3%)	( 36.6%)
No vaccine, Crude data		32 ( 15.3%)

II. PROGRAM ACCESS:

DPT 1 Crude Coverage + History 83.7 %

III. PROGRAM CONTINUITY:

A. DROPOUT DPT1-MEASLES 34.9 %  
B. DROPOUT DPT 1-3 25.1 %

IV. PROGRAM QUALITY:

A. Availability of documentation about immunizations 98.9 %

B. Adherence to the immunization schedule

Proportion of invalid doses

Measles 9.6 %  
DPT 1 2.8 %

C. Targeting under ones for immunization

Proportion of valid measles doses given before 52 weeks: 89.4%

51

#### D. Missed opportunities

Vaccine	Uncorrected	Corrected
BCG :	2 ( 0.96%)	9 ( 4.31%)
DPT1 :	1 ( 0.48%)	2 ( 0.96%)
DPT2 :	0 ( 0.00%)	1 ( 0.48%)
DPT3 :	1 ( 0.48%)	3 ( 1.44%)
POL1 :	1 ( 0.48%)	3 ( 1.44%)
POL2 :	0 ( 0.00%)	1 ( 0.48%)
POL3 :	1 ( 0.48%)	3 ( 1.44%)
MEAS :	8 ( 3.83%)	7 ( 3.35%)
Child	209	

#### V. Providers

Valid value for the field SOURCE : OHCPN

	O	H	C	P	N	?
BCG :	142(81%)	17(10%)	12(7%)	2(1%)	2(1%)	0
DPT1 :	141(81%)	18(10%)	11(6%)	3(2%)	2(1%)	0
DPT2 :	120(90%)	14(9%)	11(7%)	3(2%)	2(1%)	0
DPT3 :	102(78%)	15(11%)	10(8%)	2(2%)	2(2%)	0
POL1 :	141(81%)	18(10%)	11(6%)	3(2%)	2(1%)	0
POL2 :	120(80%)	14(9%)	11(7%)	3(2%)	2(1%)	0
POL3 :	102(78%)	15(11%)	10(8%)	2(2%)	2(2%)	0
MEAS :	88(77%)	14(12%)	8(7%)	2(2%)	2(2%)	0
	956(80%)	125(10%)	84(7%)	20(2%)	16(1%)	0

50

Standard analysis of the survey (WHO/UNICEF)  
Paediatric Coverage Survey

Survey title Urban Pediatric Survey  
Beginning of survey : 22/02/92  
Type of area : Urban areas of Bangladesh

Number of records to process: 209  
CARD AVAILABLE 135 ( 64.6%)  
BCGscar 189 ( 90.4%)

INDICATORS:

I. Coverage by one year of age

	Card	Card + History
BCG	180 ( 86.1%)	( 87.0%)
POLIO 0	0 ( 0.0%)	( 0.0%)
POLIO 1	115 ( 55.0%)	( 81.5%)
POLIO 2	108 ( 51.7%)	( 76.5%)
POLIO 3	95 ( 45.5%)	( 65.6%)
DPT 1	115 ( 55.0%)	( 81.5%)
DPT 2	108 ( 51.7%)	( 77.1%)
DPT 3	96 ( 45.9%)	( 66.3%)
MEASLES	74 ( 35.4%)	( 54.2%)
Yellow Fever	0 ( 0.0%)	( 0.0%)
Other vaccine	0 ( 0.0%)	( 0.0%)
All doses received	64 ( 30.6%)	( 47.8%)
No vaccine , Crude data		16 ( 7.7%)

II. PROGRAM ACCESS

DPT 1 Crude Coverage + History 91.4 %

III. PROGRAM CONTINUITY

A. DROPOUT DPT1-MEASLES 12.6 %  
B. DROPOUT DPT 1-3 7.9 %

IV. PROGRAM QUALITY

A. Availability of documentation about immunizations 99.0 %  
B. Adherence to the immunization schedule

Proportion of invalid doses

Measles 7.3 %  
DPT 1 4.7 %

C. Targeting under ones for immunization

Proportion of valid measles doses given before 52 weeks: 73.3%

D. Missed opportunities

Vaccine	Uncorrected	Corrected
BCG :	4 ( 1.91%)	24 ( 11.48%)
DPT1 :	4 ( 1.91%)	7 ( 3.35%)
DPT2 :	4 ( 1.91%)	3 ( 1.44%)
DPT3 :	0 ( 0.00%)	3 ( 1.44%)
POL1 :	4 ( 1.91%)	4 ( 1.91%)
POL2 :	3 ( 1.44%)	1 ( 0.48%)
POL3 :	0 ( 0.00%)	1 ( 0.48%)
MEAS :	2 ( 0.96%)	20 ( 9.57%)
Child	209	

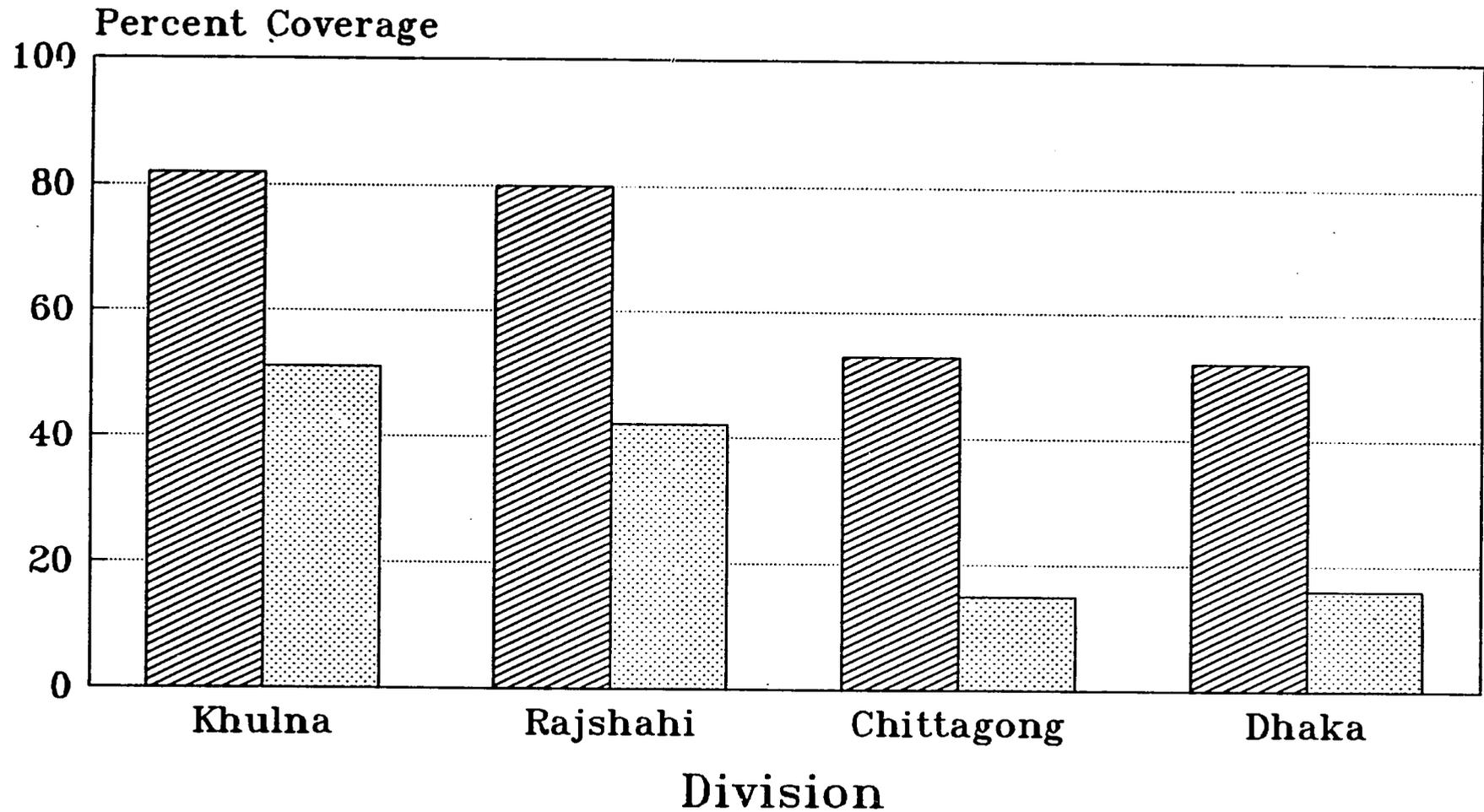
V. Providers

Valid value for the field SOURCE : OHCPN

	O	H	C	P	N	?
BCG :	75 (39%)	48 (25%)	10 (5%)	22 (11%)	37 (19%)	0
DPT1 :	74 (39%)	48 (25%)	10 (5%)	22 (12%)	37 (19%)	0
DPT2 :	71 (39%)	46 (25%)	9 (5%)	22 (12%)	34 (19%)	0
DPT3 :	67 (38%)	42 (24%)	9 (5%)	22 (13%)	36 (20%)	0
POL1 :	74 (39%)	48 (25%)	10 (5%)	22 (12%)	37 (19%)	0
POL2 :	71 (39%)	46 (25%)	9 (5%)	22 (12%)	34 (19%)	0
POL3 :	67 (38%)	42 (24%)	9 (5%)	22 (13%)	36 (20%)	0
MEAS :	64 (38%)	39 (23%)	9 (5%)	22 (13%)	33 (20%)	0
	563 (39%)	359 (25%)	75 (5%)	176 (12%)	284 (19%)	0

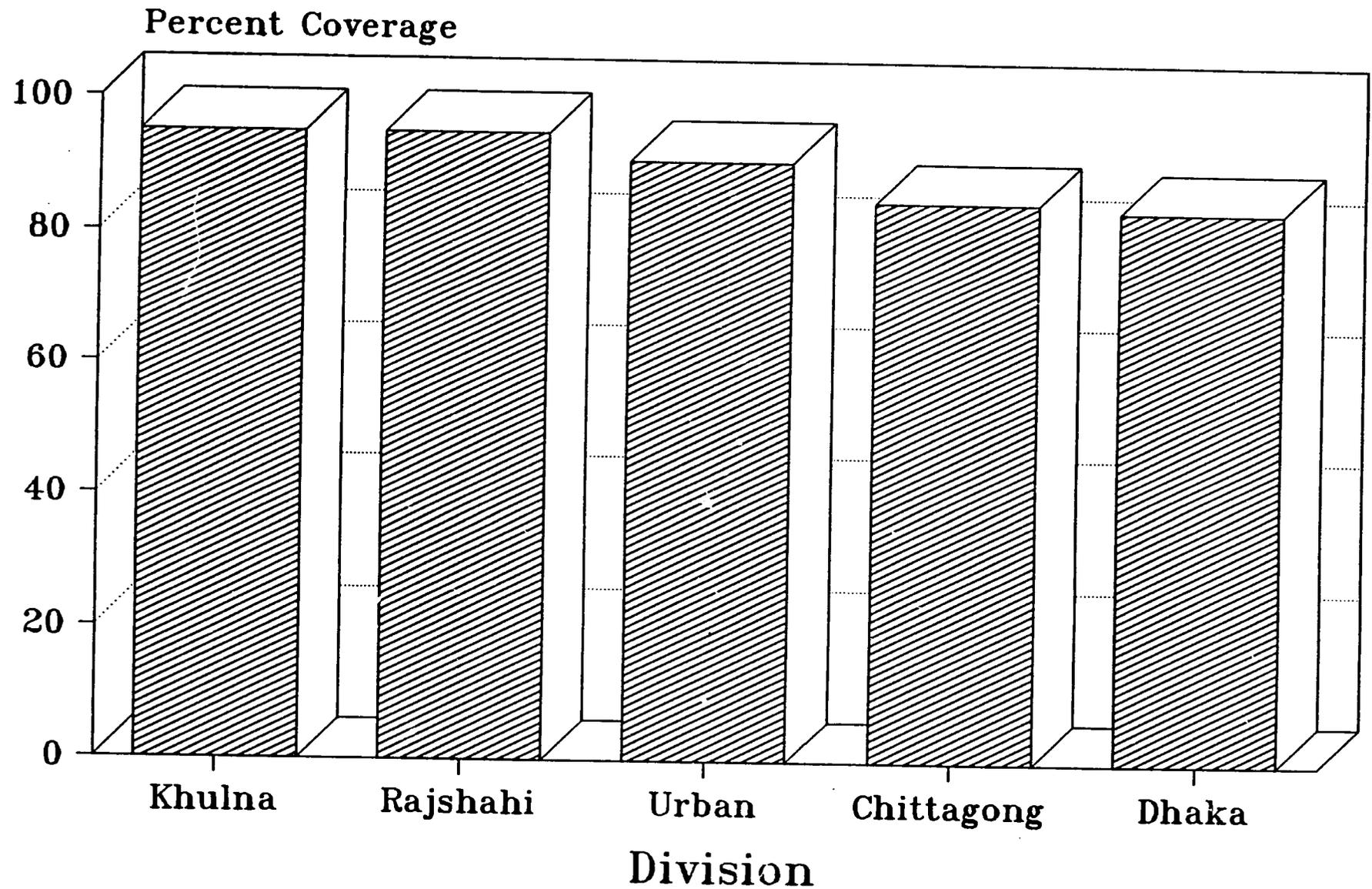
**Annex 5: Graphs: Indicators of Program Performance  
for Five Surveys**

# Immunization Coverage Children Fully Immunized

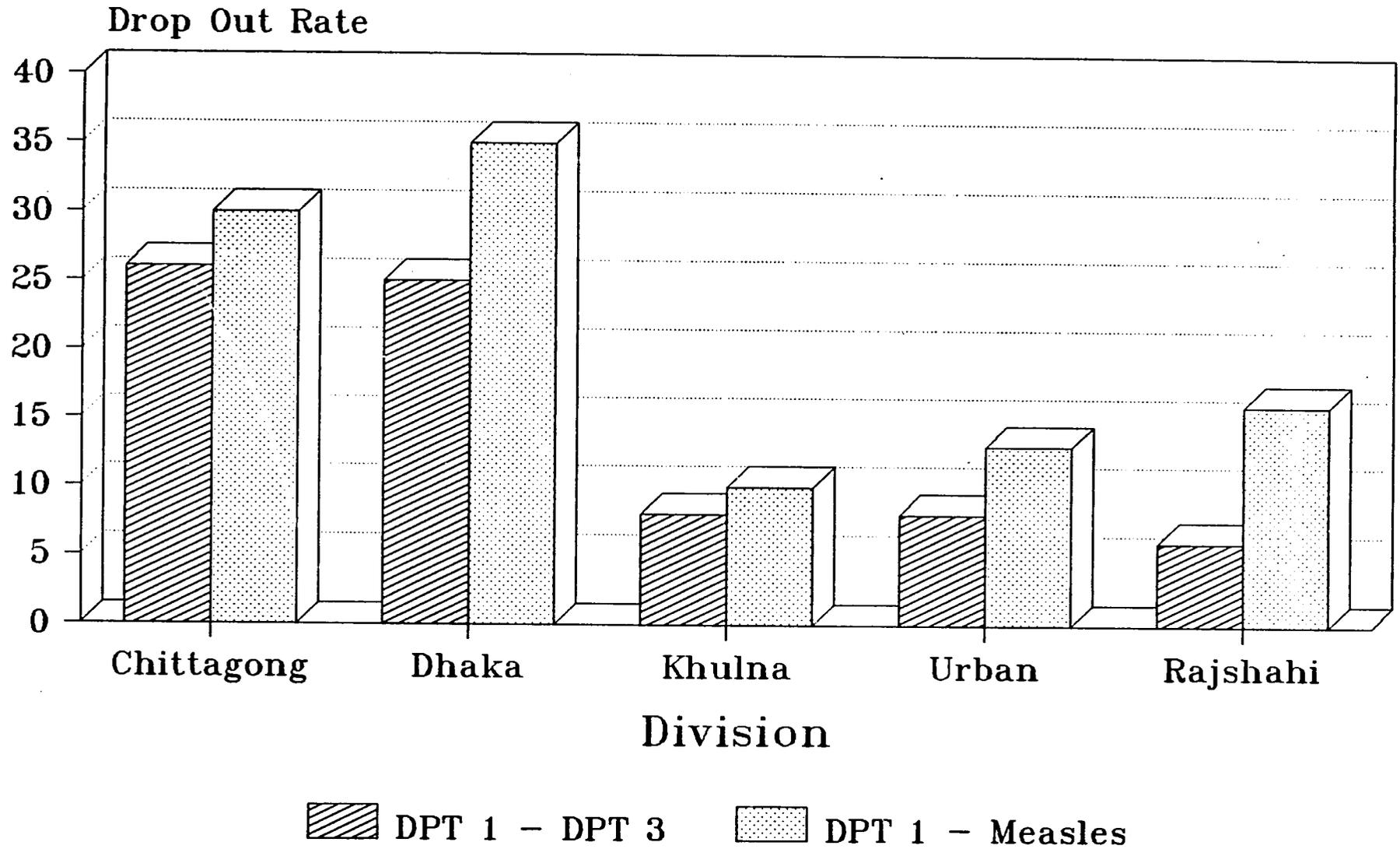


 At Time of Survey       By One Year  
Data from Card plus History      Valid Data from Card Only

# Access to Immunization Services DPT 1 Coverage, Card plus History

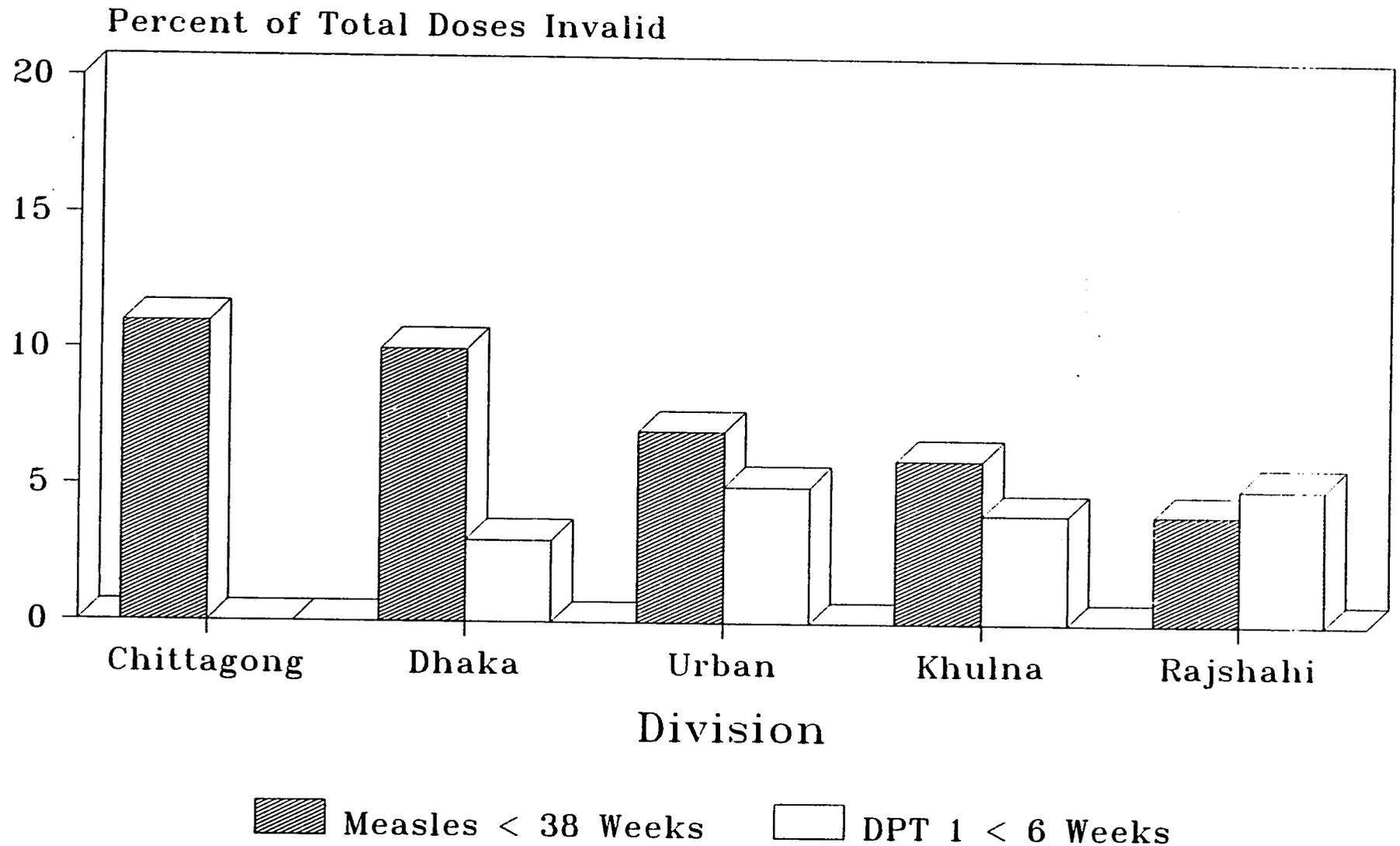


# Program Continuity Drop Out Rates



# Program Quality

## Adherence to the Immunization Schedule

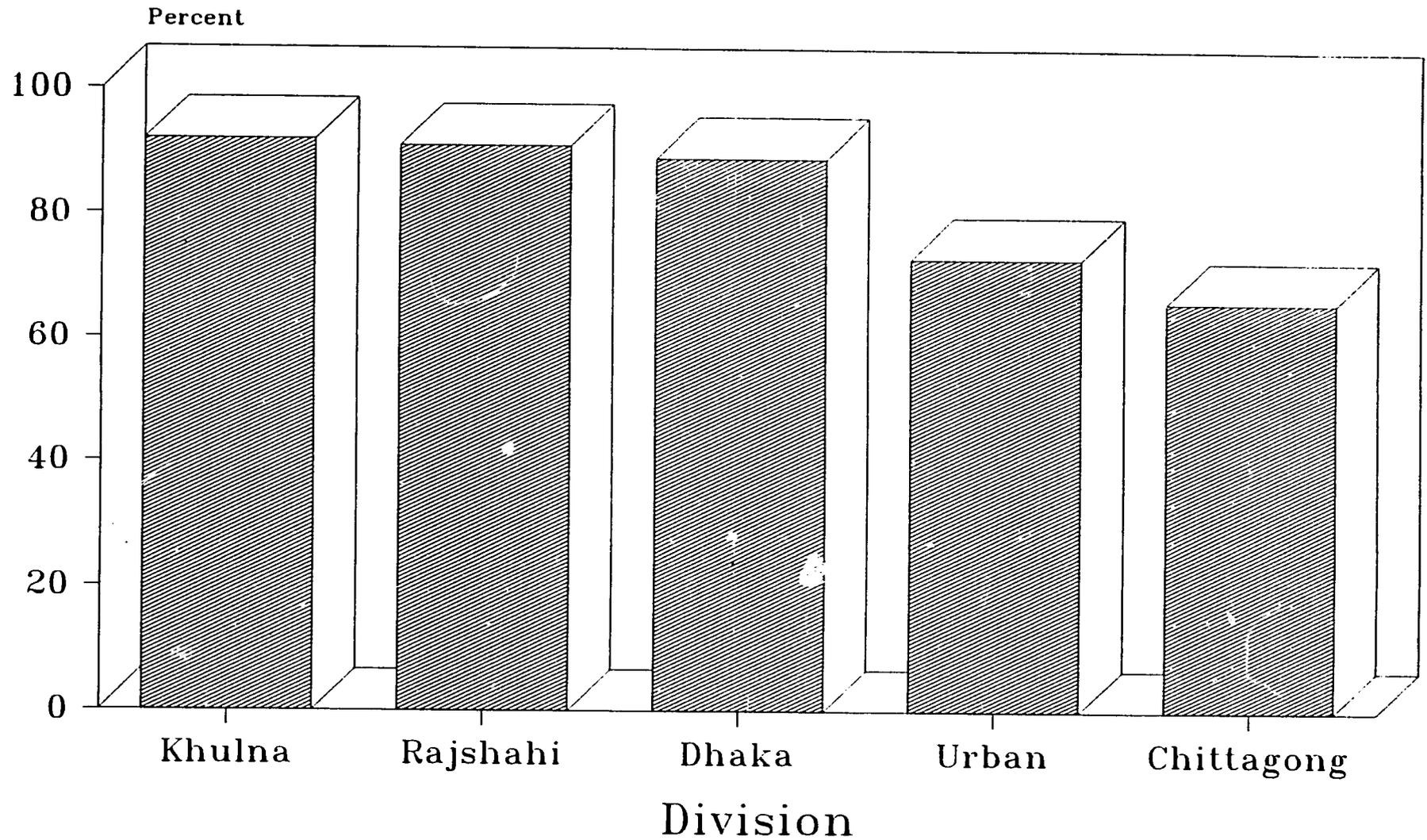


5

# Program Quality

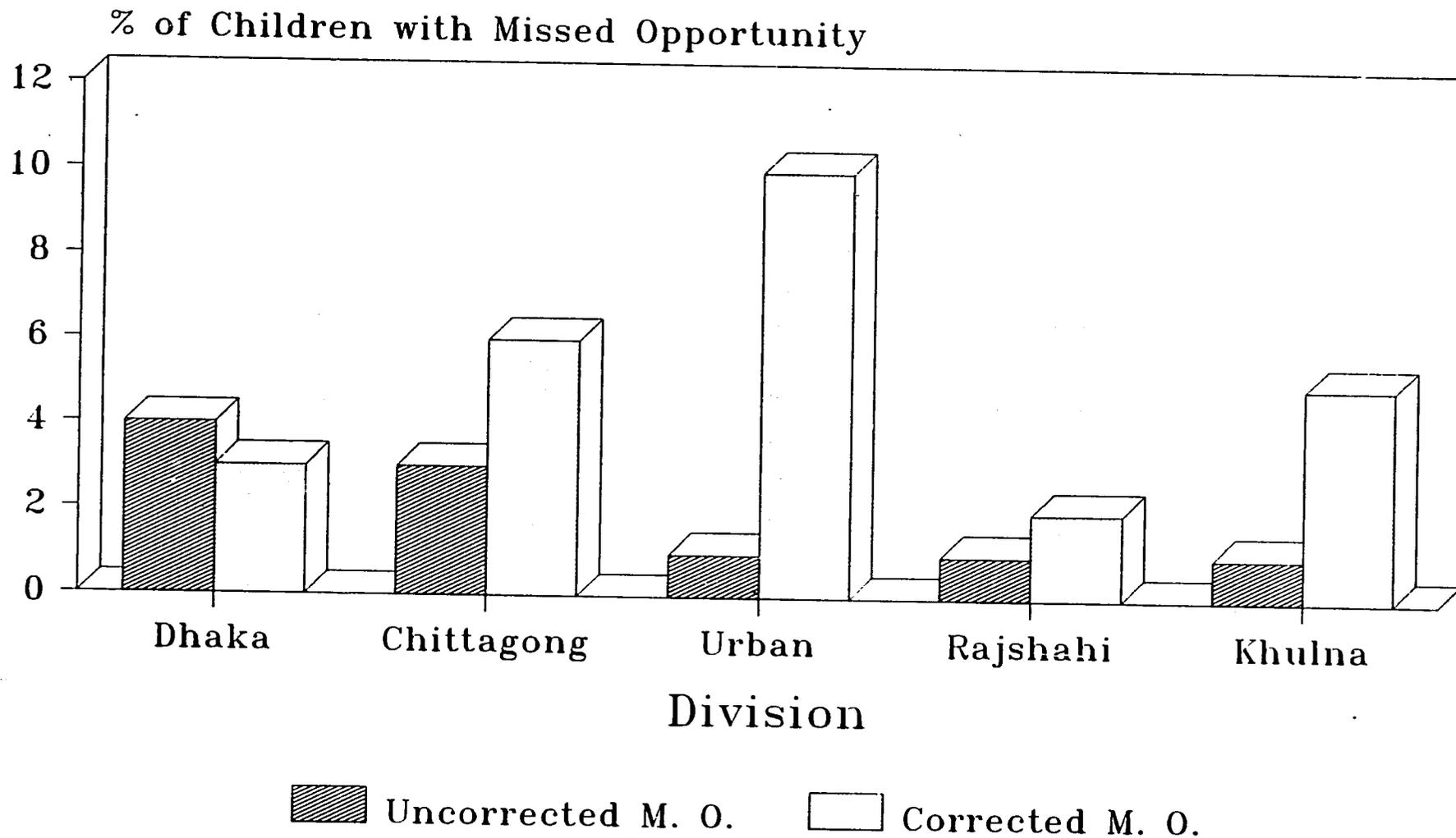
## Targeting Under Ones for Immunization

### % of Valid Measles Doses Given < 1 Year

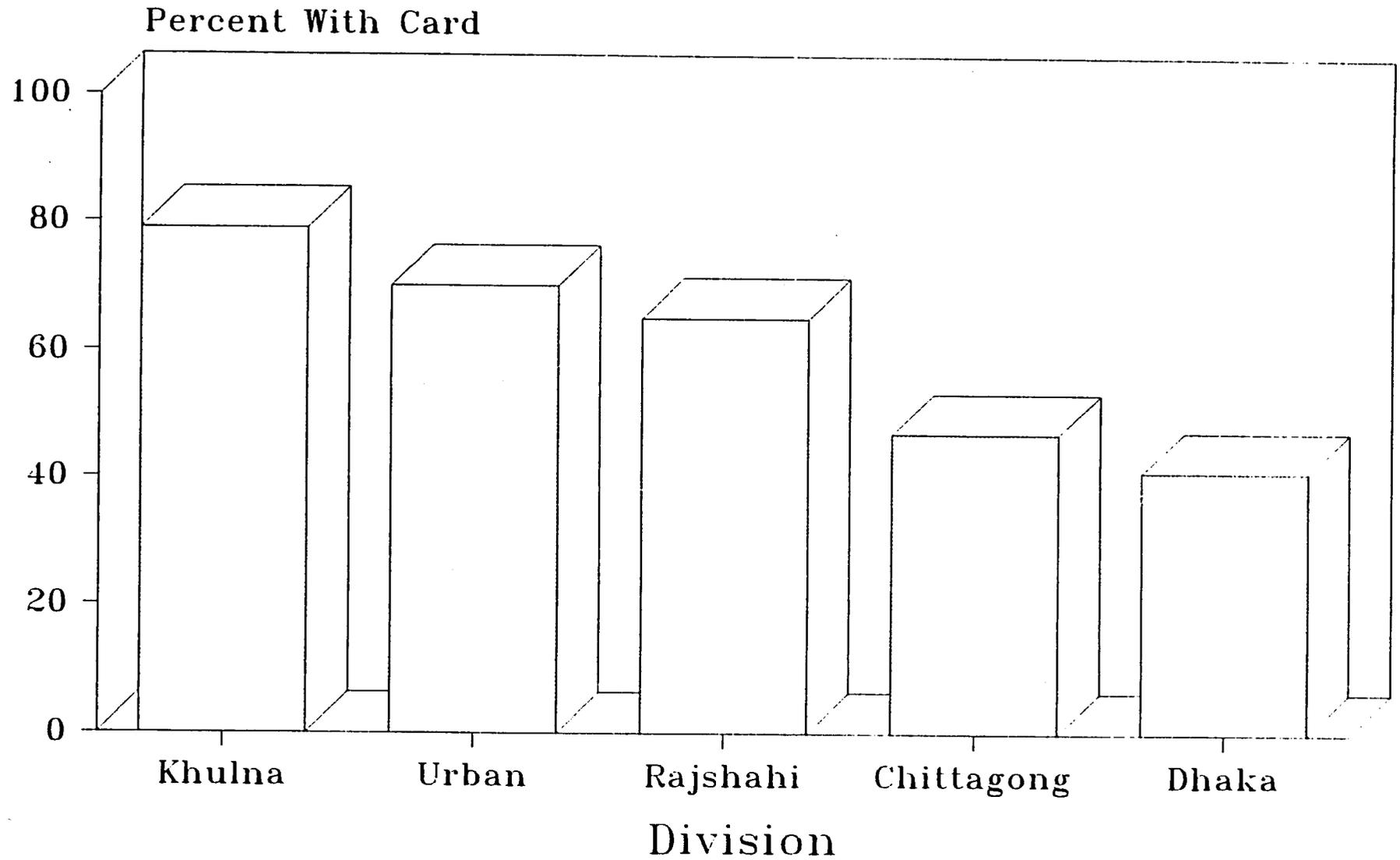


16

# Program Quality Effect on Coverage of Missed Opportunities for Measles



# Program Quality Availability of Documentation About Immunization



83

**Annex 6: Examples of CEIS Reports and Graphs to be Tested**

PERIOD OF TIME TO BE COVERED

AREA TO BE COVERED

DATE

UNICEF FORMAT

ANTIGEN

CUMULATIVE TOTAL TO BE VACCINATED

													100%
													90%
													80%
													70%
													60%
													50%
													40%
													30%
													20%
													10%
													0%
MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
NO VACC PER MONTH													
NO CUM VACC PER MONTH													
NO VACC PER MONTH													
NO CUM VACC PER MONTH													

PERCENTAGE OF TARGET POPULATION REACHED

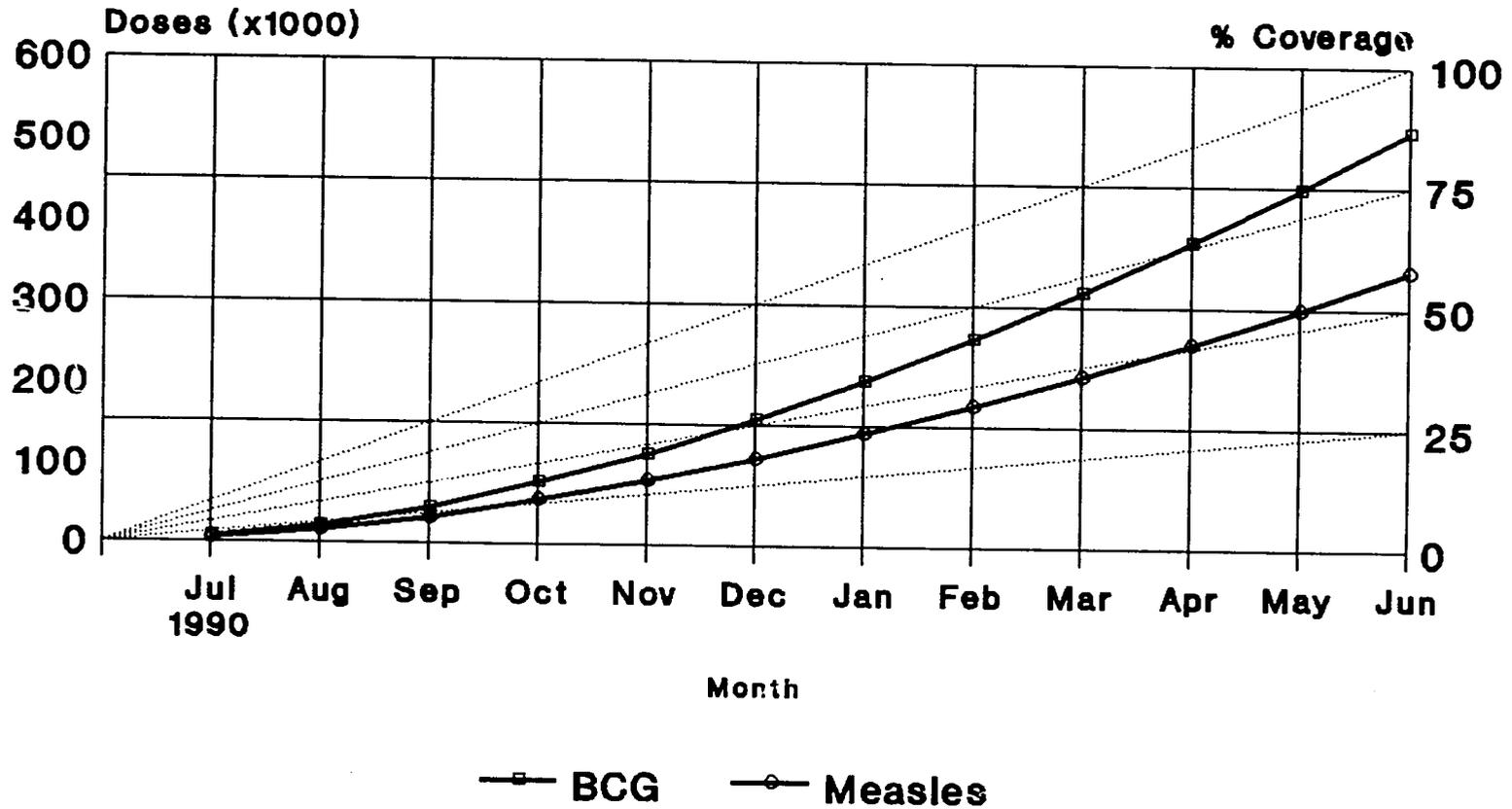
70

CEIS FORMAT

# Monthly Monitoring Chart

## Upazilla: Dhaka Mun.

### BCG and Measles Coverage

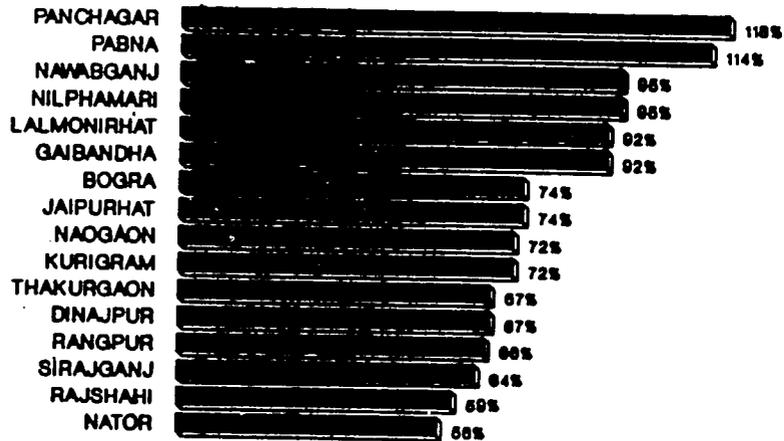


Bangladesh EPI

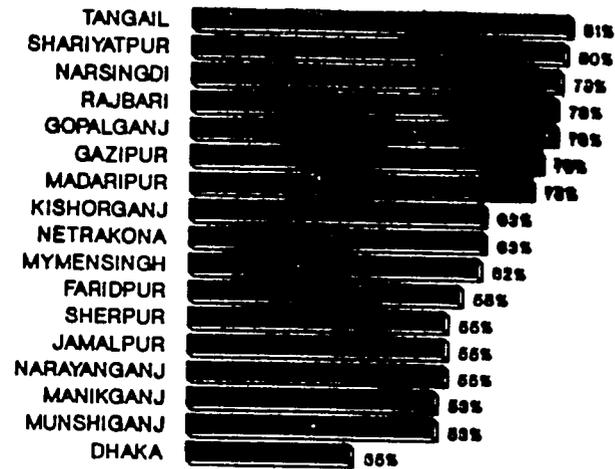
16

UNICEF FORMAT

RAJSHAHI DIVISION (MEASLES)

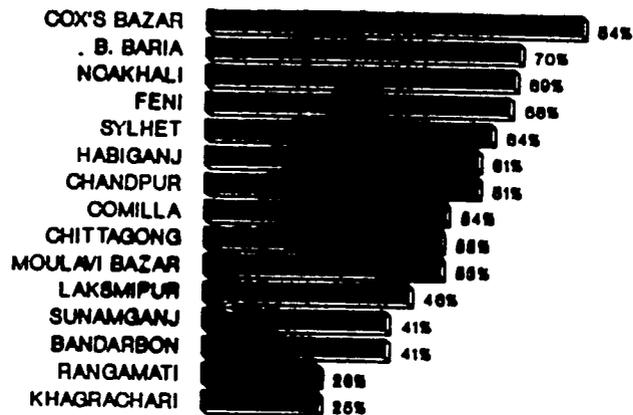


DHAKA DIVISION (MEASLES)

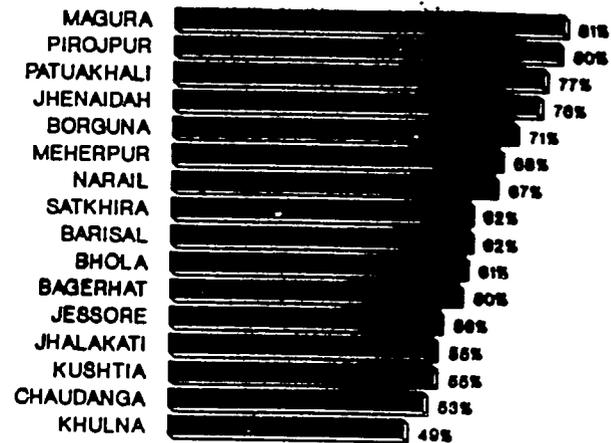


COMPARISON OF DISTRICTS BY DIVISION (APR 1989 - MAR 1990)

CHITTAGONG DIVISION (MEASLES)



KHULNA DIVISION (MEASLES)



CHILDREN  
UNDER  
1 YEAR

22

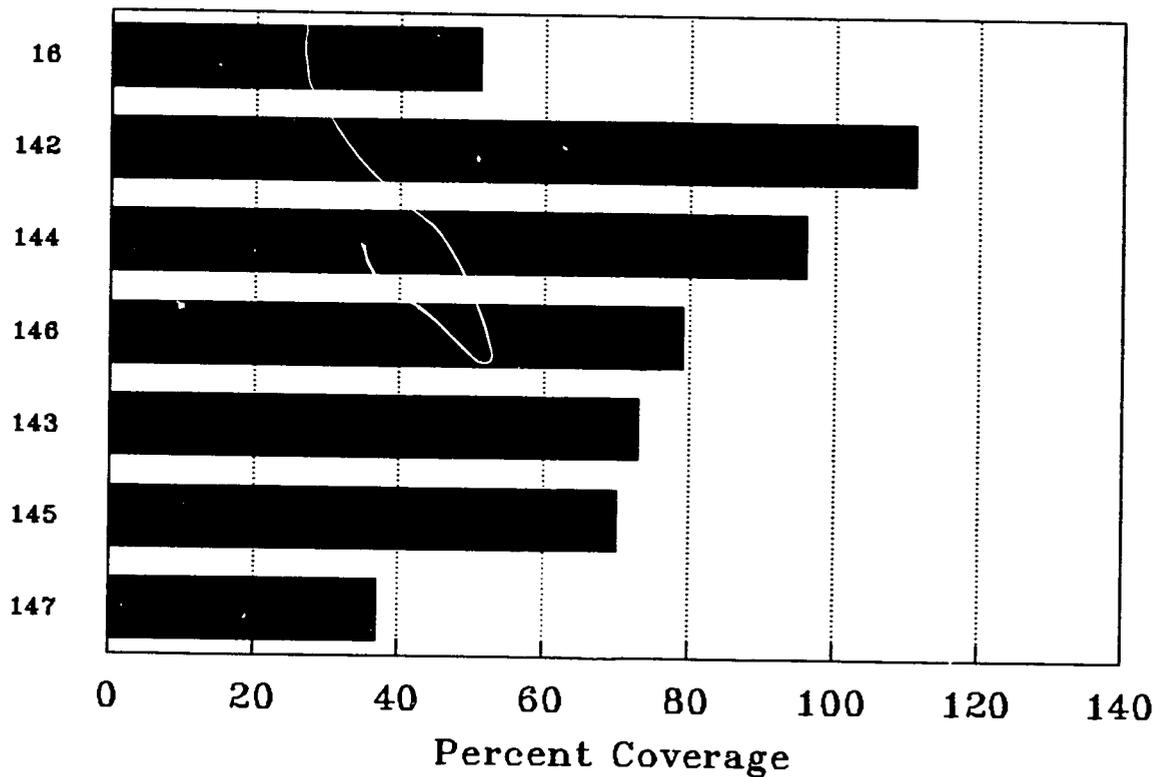
# Ranked Immunization Coverage

## District: DHAKA, 1990

### Measles

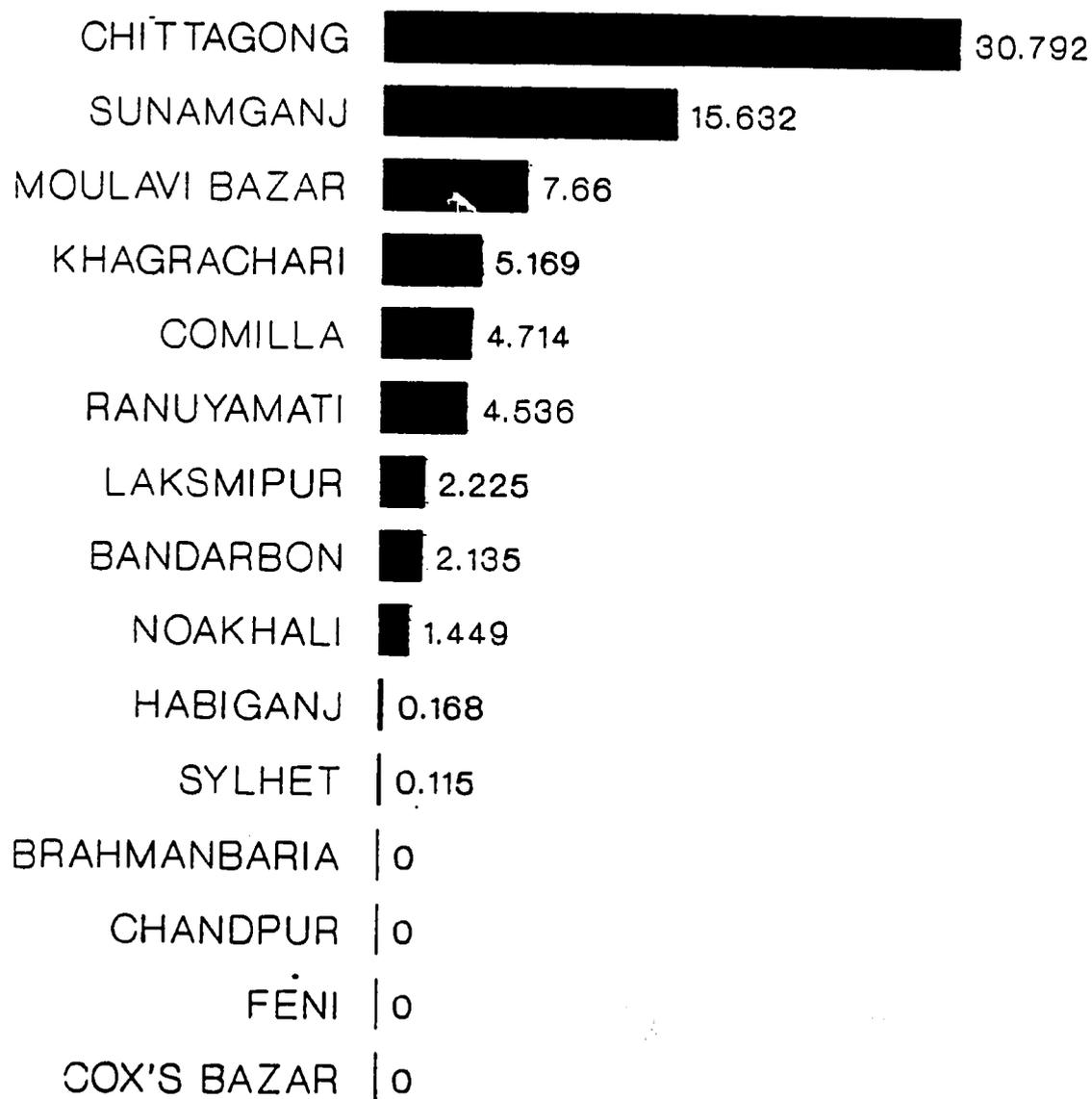
Location

Antigen  
■ Measles



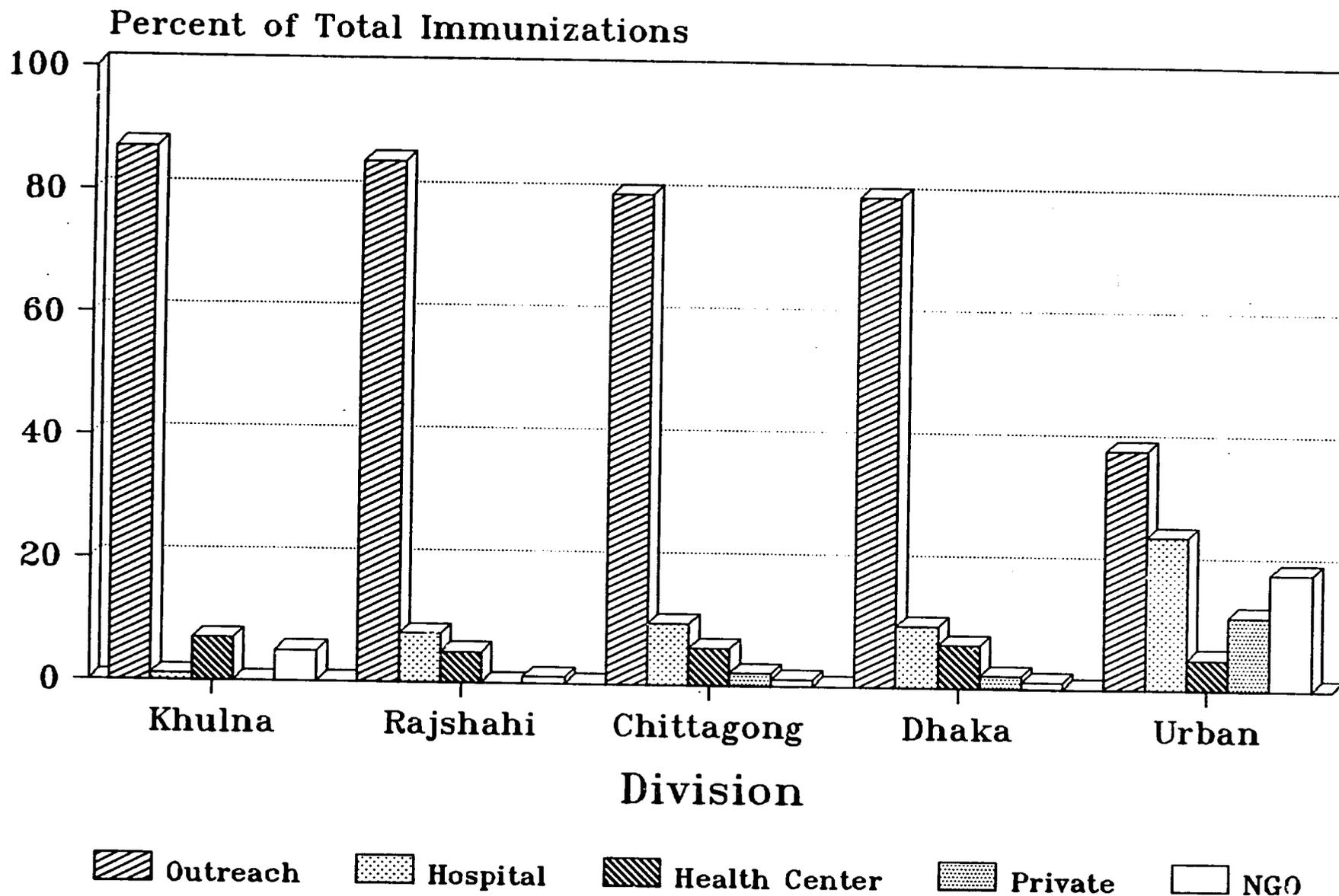
12

# CHITTAGONG DIVISION LEFT OUT - TARGET, DPT-1 JULY 1989 - APRIL 1990



CHILDREN UNDER ONE IN THOUSAND

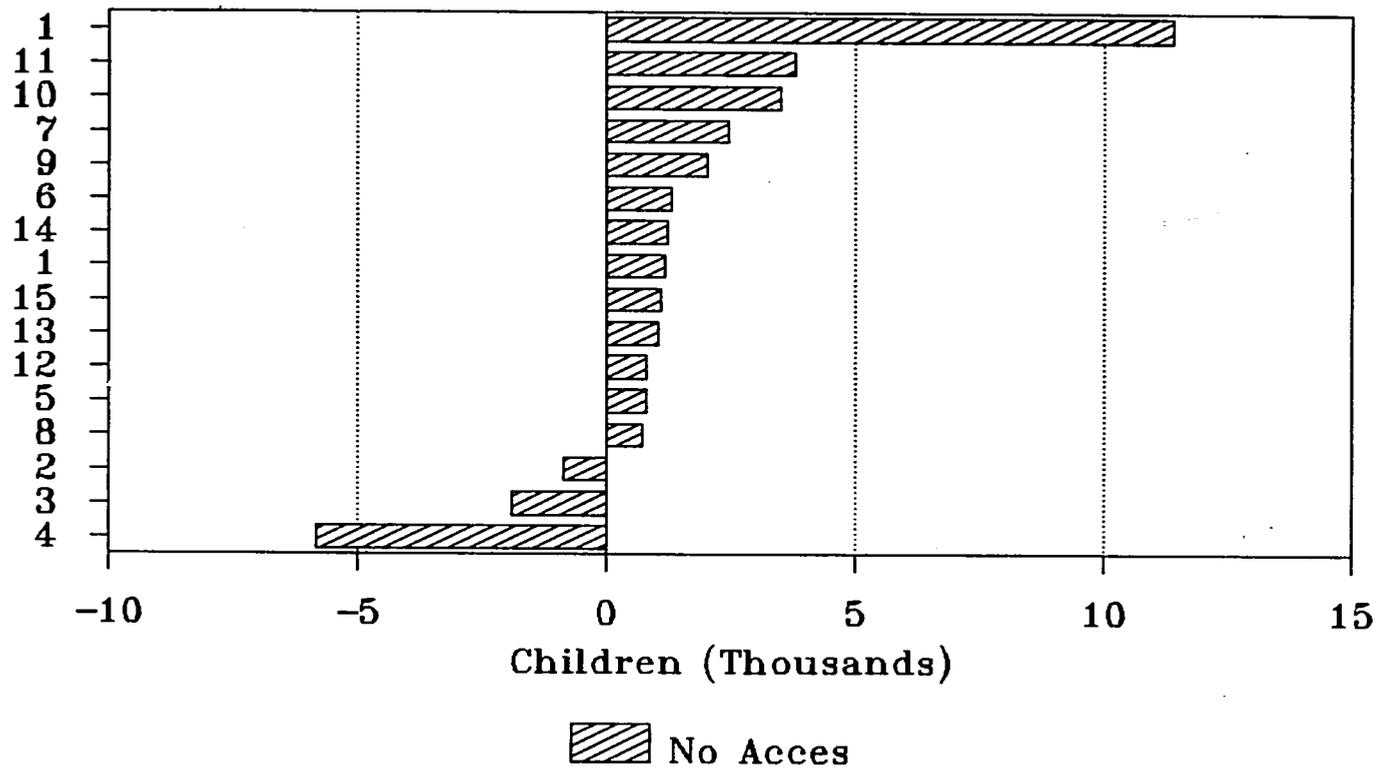
# Providers of Immunizations



75

# Left Out - Target, DPT -1 District: CHITTAGONG, 1990

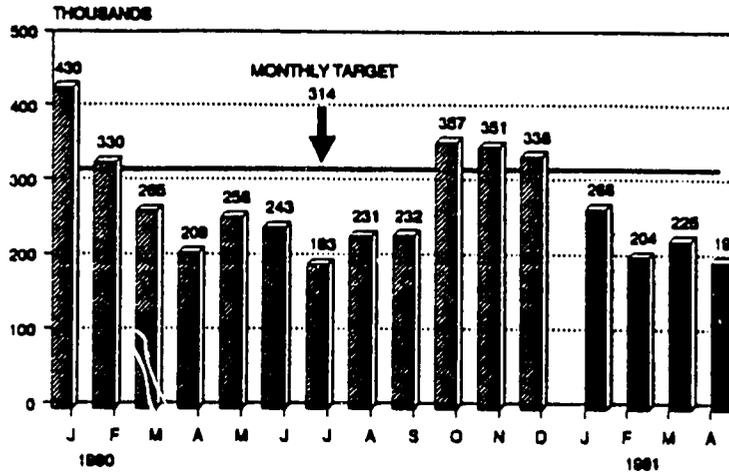
Location



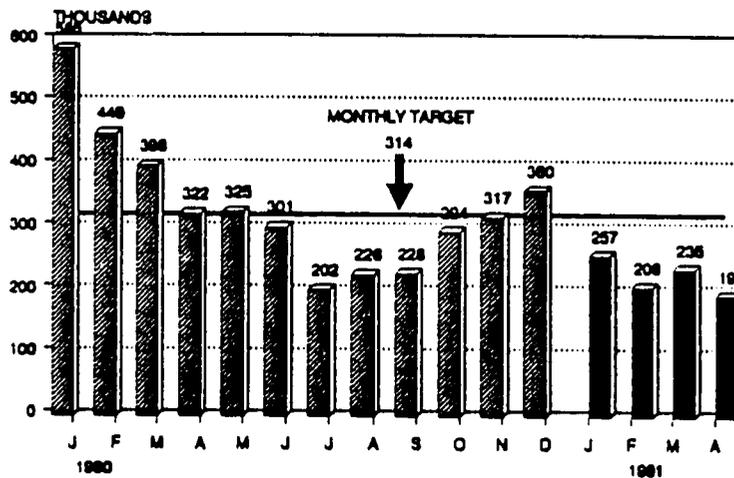
16

UNICEF FORMAT

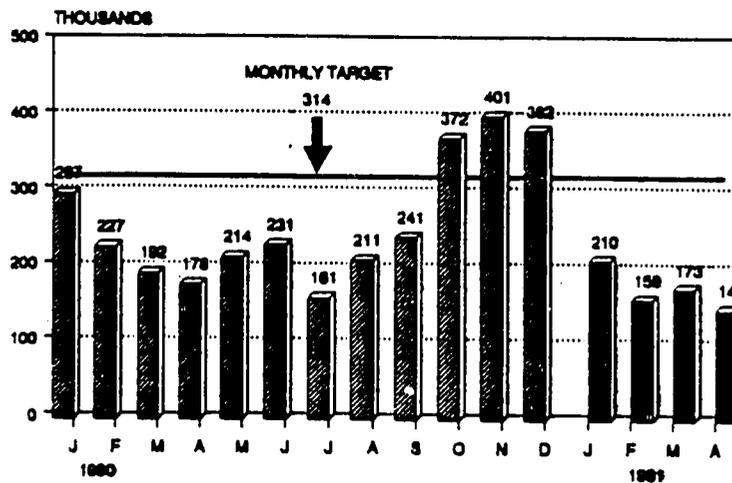
EPI BANGLADESH  
BCG MONTHLY COVERAGE  
1990/1991



EPI BANGLADESH  
DPT-3 MONTHLY COVERAGE  
1990/1991



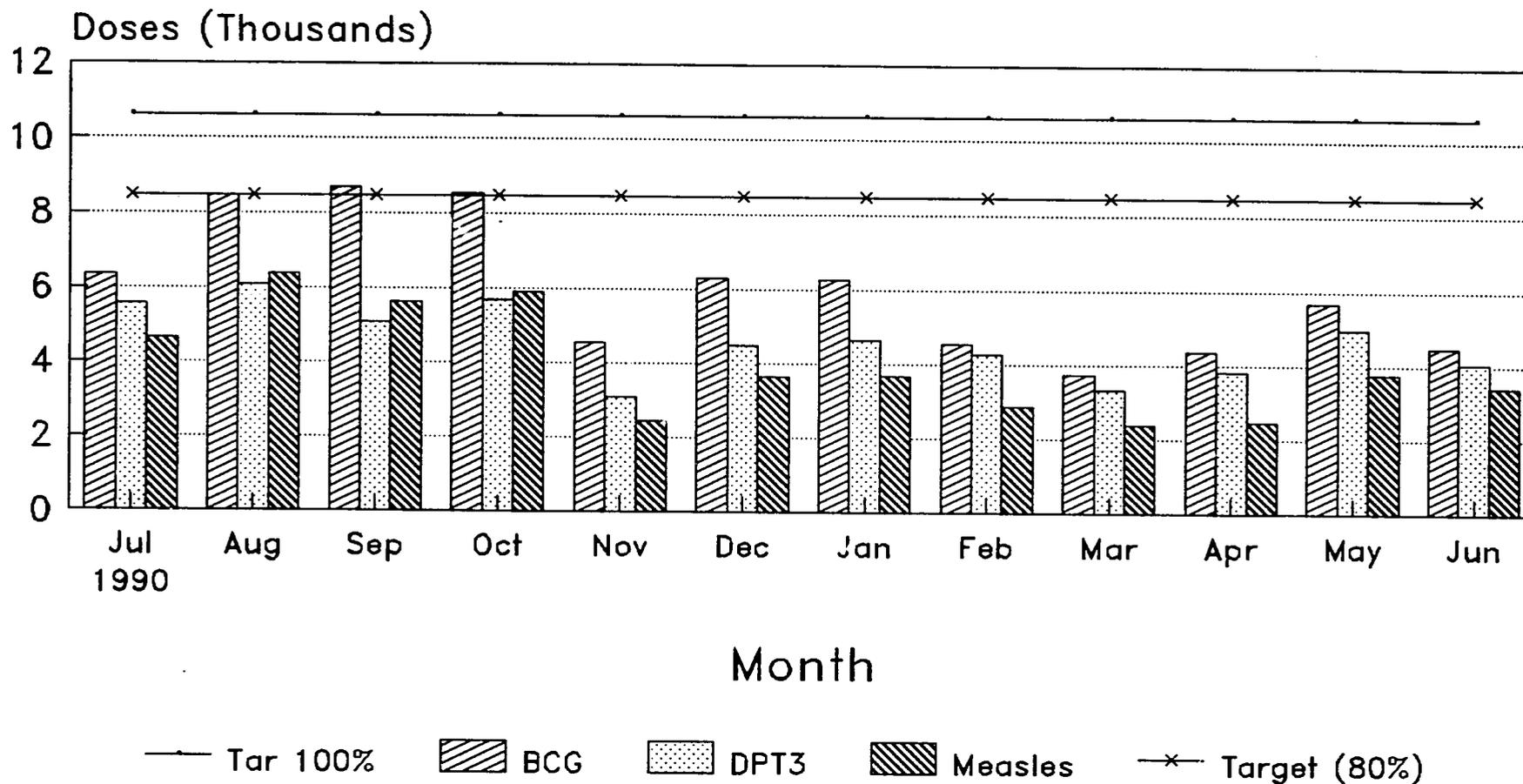
EPI BANGLADESH  
MONTHLY VACCINATION COVERAGE  
MEASLES, 1990/1991



# Monthwise Doses and Target

## Upazilla: Dhaka Mun.

### BGC, DPT3, Measles



**Annex 7: Examples of CEIS Reports for Monitoring Activities  
in Urban Areas**

Bangladesh Monthly Management Report  
 Executive Bangladesh  
 July 1992

ROUTING REPORTS  
 Coverage based on target for year to date

Stratified for UOD/Non UOD Upazilas  
 Ranked on Measles for coverage levels U - 99%

Rank	Location	Target	ECG Cov	JPT1 Cov	JPT3 Cov	Measles Cov	P. Women IT 2 Cov	DPT1 - DPT Droo Out	JPT1 - Measles Droo Out	IT 1 - IT 2 Droo Out
<b>Dr. Seraj:</b>										
1.	135 Feni Mun.	90	291%	266%	219%	219%	194%	18%	18%	1%
2.	19 Cox's Bazar Mu	94	135%	144%	134%	154%	104%	45%	37%	18%
3.	41 Lakshmipur Mun	120	111%	108%	96%	117%	65%	12%	6%	40%
4.	51 Bandarban Mun.	32	141%	159%	134%	113%	65%	16%	29%	35%
5.	126 Noakhali Mun.	187	123%	121%	95%	110%	61%	22%	10%	41%
6.	3 Chittagong Mun	4402	127%	120%	110%	106%	57%	8%	11%	7%
7.	32 Khaorachari Mu	66	126%	121%	123%	100%	62%	-1%	18%	38%
8.	130 Begumganj Mun.	220	79%	79%	88%	88%	38%	-11%	-11%	4%
9.	43 Rangamati Mun.	115	63%	63%	67%	48%	0%	-5%	5%	100%
=====										
	<b>Dr. Seraj:</b>	<b>5326</b>	<b>128%</b>	<b>122%</b>	<b>110%</b>	<b>107%</b>	<b>58%</b>	<b>9%</b>	<b>12%</b>	<b>62%</b>
<b>Dr. Bari:</b>										
1.	113 Breenanganj Mun	80	148%	168%	129%	125%	66%	23%	25%	51%
2.	122 Habiganj Mun.	75	167%	158%	120%	119%	63%	36%	37%	53%
3.	113 Sunamganj Mun.	58	193%	176%	109%	116%	106%	38%	34%	49%
4.	112 Moulvibazar Mu	52	138%	138%	123%	100%	88%	11%	28%	29%
5.	70 B. Baria Mun.	277	139%	138%	104%	95%	80%	24%	31%	48%
6.	81 Chandour Mun.	271	101%	97%	79%	82%	64%	19%	16%	32%
7.	55 Comilla Mun.	582	88%	83%	60%	56%	48%	27%	33%	34%
8.	94 Sylhet Mun.	533	70%	69%	46%	40%	37%	33%	41%	0%
9.	63 Laksham Mun.	1510	12%	11%	8%	10%	8%	28%	11%	-4%
10.	76 Hajiganj Mun.	628	7%	9%	7%	9%	3%	19%	0%	18%
=====										
	<b>Dr. Bari:</b>	<b>4066</b>	<b>54%</b>	<b>53%</b>	<b>39%</b>	<b>38%</b>	<b>30%</b>	<b>27%</b>	<b>29%</b>	<b>33%</b>
<b>Dr. Jinnah:</b>										
1.	274 Jamalour Mun.	290	93%	90%	124%	110%	38%	-38%	-23%	25%
2.	269 Netrakona Mun.	119	145%	144%	90%	97%	61%	37%	32%	49%
3.	281 Sherour Mun.	153	98%	115%	88%	77%	60%	23%	33%	8%
4.	270 Mohongonj Mun.	32	87%	179%	150%	58%	55%	16%	68%	8%
5.	147 Dhaka Mun.	10850	44%	43%	36%	34%	29%	15%	20%	9%
=====										
	<b>Dr. Jinnah:</b>	<b>11450</b>	<b>47%</b>	<b>47%</b>	<b>40%</b>	<b>38%</b>	<b>30%</b>	<b>14%</b>	<b>20%</b>	<b>11%</b>

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stratified for UOO/Non UOO Upazilas  
 Ranked on Measles for coverage levels 0 - 99%

Rank Location	Target	BCG Cov	DPT 1 Cov	DPT3 Cov	Measles Cov	P. Women IT 2 Cov	OPT1 - DPT Drop Out	OPT1 - Measles Drop Out	TT 1 - TT 2 Drop Out
Dr. Jinnah	11450	47%	47%	40%	38%	30%	14%	30%	11%
Dr. Hossain	5000	30%	37%	35%	33%	40%	15%	19%	37%
Dr. Roy	3396	36%	37%	39%	33%	40%	13%	6%	27%
Dr. Islam	1227	31%	39%	34%	37%	53%	-6%	2%	17%
Dr. Hamid	4738	37%	37%	38%	38%	48%	-13%	-14%	9%
Non UOO Upazilas	252185	31%	30%	26%	33%	30%	4%	3%	9%
(cums)	287988	39%	38%	34%	31%	32%	5%	3%	15%

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Stratified for Urban/Non Urban; limited to Urban  
Ranked on Measles for coverage levels 0 - 99%

Rank	Location	Target	BCG Cov	DPT 1 Cov	DPT 3 Cov	Measles Cov	P. Measles TT 2 Cov	DPT1 -		
								DPT Drop Out	Measles Drop Out	TT 1 - TT 2 Drop Out
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1.	135 Feni Mun.	96	291%	266%	219%	219%	194%	18%	18%	1%
2.	470 Bogra Mun.	357	124%	122%	139%	209%	74%	-14%	-70%	16%
3.	241 Bourisour Mun.	45	156%	211%	110%	189%	46%	46%	11%	72%
4.	414 Rajshahi Mun.	803	136%	136%	164%	162%	69%	-20%	-19%	-13%
5.	19 Cox's Bazar Mu	94	235%	244%	134%	154%	104%	45%	37%	18%
6.	341 Kokespur Mun.	27	152%	148%	130%	152%	126%	13%	-3%	-11%
7.	350 Kumarkhali Mun	44	173%	218%	155%	132%	102%	29%	40%	23%
8.	113 Sreebanganj Mun	66	148%	168%	129%	125%	66%	23%	25%	51%
9.	535 Fulbari Mun.	62	139%	152%	148%	124%	83%	2%	18%	52%
10.	122 Habiganj Mun.	75	167%	188%	120%	119%	63%	36%	37%	53%
11.	141 Lakshmapur Mun	120	111%	108%	96%	117%	65%	12%	-8%	40%
12.	397 Jhalakathi Mun	103	118%	103%	137%	117%	118%	-33%	-13%	-19%
13.	105 Sunamganj Mun.	58	193%	176%	109%	116%	106%	38%	34%	49%
14.	155 Manikganj Mun.	117	89%	78%	100%	115%	46%	-29%	-48%	50%
15.	339 Jhenaidah Mun.	152	95%	155%	129%	114%	95%	17%	26%	27%
16.	51 Sandarban Mun.	32	141%	159%	134%	113%	65%	16%	29%	35%
17.	398 Malchiti Mun.	77	70%	65%	113%	112%	83%	-74%	-72%	-356%
18.	126 Noakhali Mun.	187	123%	121%	95%	110%	61%	22%	10%	41%
19.	274 Jamalpur Mun.	290	93%	90%	124%	110%	38%	-38%	-23%	25%
20.	3 Chittagong Mun	4462	127%	120%	110%	106%	57%	8%	11%	7%
21.	240 Muktagacha Mun	52	196%	94%	160%	104%	24%	-69%	-10%	7%
22.	346 Kotchandpur Mu	65	69%	74%	74%	103%	39%	0%	-40%	40%
23.	221 Shariatpur Mun	83	162%	169%	101%	102%	61%	40%	40%	45%
24.	32 Khagrachari Mu	66	126%	121%	123%	100%	62%	1%	18%	38%
25.	112 Moulvibazar Mu	52	138%	138%	123%	100%	88%	11%	28%	29%
26.	432 Naogaon Mun.	168	79%	77%	160%	100%	43%	-107%	-29%	20%
27.	246 Ashorgonaj Mu	165	155%	154%	88%	99%	67%	43%	36%	46%
28.	162 Narasingdi Mun.	243	103%	106%	106%	98%	44%	0%	8%	42%
29.	257 Bhairab Mun.	201	131%	121%	77%	97%	48%	37%	20%	51%
30.	269 Metrakona Mun.	119	145%	144%	90%	97%	61%	37%	32%	49%
31.	420 Mowabgonj Mun.	278	96%	95%	95%	97%	33%	1%	-2%	-3%
32.	70 B.Baria Mun.	277	139%	138%	104%	95%	80%	24%	31%	48%
33.	181 Gazipur Mun.	184	139%	154%	102%	95%	67%	34%	38%	37%
34.	182 Tongi Mun.	391	125%	111%	101%	95%	55%	9%	14%	44%
35.	385 Bhola Mun.	104	96%	105%	88%	94%	39%	16%	10%	52%
36.	473 Sherpur Beg Mu	35	114%	114%	111%	94%	100%	3%	18%	11%
37.	369 Barisal Mun.	547	93%	89%	100%	90%	56%	-13%	-2%	28%
38.	136 Begunanj Mun.	226	79%	79%	88%	88%	38%	-11%	-11%	4%
39.	305 Mongla Mun.	95	122%	122%	86%	88%	42%	29%	27%	30%

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Rank	Location	Target	BCG Cov	DPT 1 Cov	DPT3 Cov	Measles Cov	P. Women TT 2 Cov	DPT1 - DPT Drop Out	DPT1 - Measles Drop Out	TT 1 - Drop Out	TT 2 Drop Out
40.	479 Joybarhat Mun.	117	116%	122%	101%	88%	151%	17%	28%	-8%	
41.	195 Bopalpur Mun.	100	99%	92%	66%	87%	55%	28%	5%	14%	
42.	520 Lalmonirhat Mu	115	84%	94%	90%	86%	38%	5%	8%	22%	
43.	482 Rangpur Mun.	485	59%	62%	85%	85%	31%	-38%	-37%	12%	
44.	514 Kurigram Mun.	151	80%	81%	97%	85%	26%	-20%	-5%	44%	
45.	81 Chandpur Mun.	271	101%	97%	79%	82%	64%	19%	16%	32%	
46.	332 Magura Mun.	89	96%	96%	134%	81%	153%	-40%	15%	-84%	
47.	548 Panchagarh Mun	68	88%	88%	134%	81%	23%	-52%	8%	5%	
48.	322 Jessore Mun.	471	74%	75%	71%	78%	57%	5%	-4%	35%	
49.	377 Patuakhali Mun	152	101%	98%	107%	78%	46%	-9%	20%	14%	
50.	281 Sherpur Mun.	153	98%	115%	88%	77%	60%	23%	33%	8%	
51.	306 Satkhira Mun.	165	100%	99%	62%	76%	43%	37%	24%	52%	
52.	174 Munshiganj Mun	117	98%	79%	95%	74%	76%	-21%	5%	15%	
53.	502 Saidpur Mun.	400	63%	62%	76%	73%	31%	-23%	-18%	34%	
54.	304 Bagerhat Mun.	122	87%	88%	69%	72%	26%	21%	18%	22%	
55.	503 Nilphamari Mun	94	88%	88%	68%	71%	33%	23%	19%	20%	
56.	392 Pirojpur Mun.	87	108%	98%	77%	70%	67%	21%	28%	3%	
57.	427 Natore Mun.	99	73%	70%	94%	69%	129%	-35%	1%	-8%	
58.	534 Dinajpur Mun.	306	75%	73%	64%	68%	28%	15%	7%	25%	
59.	200 Faridpur Mun.	211	96%	94%	78%	66%	59%	18%	30%	11%	
60.	336 Alandanga Mun.	53	89%	79%	81%	66%	72%	-2%	17%	-5%	
61.	447 Pabna Mun.	345	60%	56%	56%	64%	35%	0%	-15%	3%	
62.	359 Meherpur Mun.	75	80%	80%	71%	63%	56%	12%	22%	41%	
63.	349 Bheramara Mun.	58	38%	38%	50%	59%	24%	-32%	-55%	-78%	
64.	451 Sirajganj Mun.	338	73%	69%	67%	59%	44%	3%	15%	27%	
65.	270 Mohonsonj Mun.	38	87%	179%	150%	58%	53%	16%	68%	8%	
66.	326 Narail Mun.	98	44%	44%	54%	58%	53%	-23%	-33%	-54%	
67.	540 Thakurgaon Mun	106	67%	67%	51%	58%	36%	24%	14%	6%	
68.	327 Kalia Mun.	70	57%	51%	79%	57%	16%	-53%	-11%	35%	
69.	450 Iswardi Mun.	228	72%	72%	63%	57%	37%	15%	21%	29%	
70.	55 Comilla Mun.	582	88%	83%	60%	56%	48%	27%	33%	34%	
71.	187 Tangail Mun.	245	68%	71%	64%	55%	48%	9%	23%	43%	
72.	355 Chaudanga Mun.	240	45%	45%	49%	54%	40%	-8%	-20%	-7%	
73.	234 Mymensingh Mun	604	65%	61%	57%	53%	28%	6%	13%	23%	
74.	404 Barisal Mun.	51	22%	33%	33%	53%	5%	6%	-50%	0%	
75.	294 Khulna Mun.	2044	55%	52%	43%	51%	27%	18%	3%	32%	
76.	168 Narayanganj Mu	1283	61%	58%	55%	50%	37%	5%	15%	32%	
77.	214 Madaripur Mun.	202	64%	68%	39%	50%	52%	43%	28%	23%	
78.	43 Rangamati Mun.	115	63%	63%	67%	48%	0%	-5%	25%	100%	
79.	209 Rajbari Mun.	122	70%	65%	49%	47%	42%	24%	28%	58%	

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Rank	Location	Target	BCG Cov	DPT 1 Cov	DPT 2 Cov	Measles Cov	P. Measles TT 2 Cov	DPT1 - DPT Drop Out	DPT1 - Measles TT 1 - TT 2	
									Drop Out	Drop Out
80.	342 Kushtia Mun.	237	49%	46%	46%	44%	32%	0%	5%	44%
81.	536 Parbatipur Mun	60	40%	38%	33%	43%	7%	9%	-13%	-150%
82.	94 Sylhet Mun.	533	70%	69%	46%	40%	37%	33%	41%	0%
83.	258 Rajshahi Mun.	56	75%	105%	57%	34%	22%	46%	66%	26%
84.	147 Dhaka Mun.	10050	44%	43%	34%	34%	29%	15%	20%	9%
85.	63 Lakshem Mun.	1510	12%	11%	8%	10%	8%	28%	11%	-4%
86.	76 Hajiganj Mun.	628	7%	9%	7%	9%	3%	19%	0%	18%
87.	227 Gopalganj Mun.	577	9%	9%	10%	7%	5%	-6%	19%	-13%
88.	496 Gaibandha Mun.	125	..	..	..	..	..	..	..	..
-----										
	(cum)	35803	73%	72%	66%	64%	40%	9%	11%	37%
-----										
	(cum)	35803	73%	72%	66%	64%	40%	9%	11%	37%