



## **EVALUATION OF THE QUALITY OF IMMUNIZATION SERVICES USING LOT QUALITY TECHNIQUE (LQT)**

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**Report prepared by:**

Prof.Dr. Isuf Dedushaj  
Prof.ass.Dr. Isme Humolli

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# Executive summary

Vaccination is considered to be one of the most cost-effective health interventions. To decrease high morbidity and mortality rate, the main objective of the Expanded Programme of Immunization (EPI) is to achieve high coverage rate with all mandatory vaccines, especially among children younger than 12 months.

The epidemiological situation in the country and region determined the introduction of new antigens in the compulsory vaccination schedule (hepatitis B in the year 2003, and Hemophilus Influenza B in the year 2010). The National Institute of Public Health (NIPH) proposed to the Ministry of Health all the changes in EPI.

Using the Lot Quality Technique to investigate coverage rate especially among the children of age group 0-12 months creates a clear view about morbidity and mortality rate of vaccine preventable diseases. To create a precise impression about coverage rate for all vaccines at the municipal level or Kosovo wide, results of the survey can be compared with coverage rate reported by vaccination teams.

In Kosovo, coverage rate for all EPI antigens is over 90%, which gives solid protection against specific vaccine preventable diseases. Coverage rate with hepatitis B vaccine is satisfactory and it is good indicator of parents interest for the vaccine.

The survey is completed in 26 LOTs which are equivalent with 26 municipalities of Kosovo. The minimum sample size in LOT is 15 children in each LOT. The data was collected from the vaccination teams (2 members per team) which were preliminary trained on how to use the two questionnaires: *Infant vaccination form 12-23 months*, and *reasons of the vaccination failure*. The survey covered 390 children of the age group 12-23 month randomly selected.

parents were also asked about possession of the vaccination cards. Out of 390 children covered, 376 or 96.4% of them had vaccination cards and in good condition. In 14 cases parents declared their children had vaccination cards but had lost it for different reasons.

A comparison of the findings of two surveys 2004 and 2010 for possession of vaccination cards, indicated continuous progress. As far as percentages of possession of the vaccination cards is concerned, in the year 2004 it was 88.4% and 96.4% in 2010. During the survey in the year 2004, 38 (9.7%) of guardians of the children declared that their children never had vaccination cards, which was not the case in 2010.

Vaccination status of the children based on vaccination card and history (declaration of the parents) is as follows: 325 or 83.3% of children of the age group 12-23 months were fully vaccinated, 62 (16.1%) partially and only 0.76% of them were classified as not vaccinated. A fully vaccinated child have one dose of BCG, three doses of OPV, DPT and hepatitis B before they turn two.

High vaccination coverage rate was found in the municipalities of: Vushtrri, Ferizaj, Therandë and Rahovec, from 15 interviewed children all of them had full vaccination status (100%). Whereas in municipalities of: Drenas, Gjakovë, Mitrovicë, Gjilan, Kamenicë and Viti from 15 interviewed children, 14 of them (93%) had full vaccinated status. In three other municipalities in Lipjan, Peja, and Klina it was found one child had not been vaccinated at all (no dose of the vaccine at all or only BCG had been administered).

According to the card and history, the distribution of the data was as follows: out of 219 boys, 180 were fully vaccinated and 38 partially. On the one hand, out of 171 girls, 145 of them had been fully vaccinated and 24 partially. On the other hand one boy and two girls were classified as unvaccinated

According to the card, out of 390 children (12-23 months), 375 children or 97.5% of them had BCG vaccine, while taking into consideration parents declaration,, coverage rate with BCG vaccine is 100%. This is proven by presence of the scar among the children involved in the survey.

During the survey 390 children were interviewed of the age group 12-23 months, of which 374 or 97.5% of them have a first dose of the DPT vaccine and have vaccination cards. The second and third doses of the DPT had been received by 370 and 354 children respectively with coverage rate of 97.0% and 94.8% respectively. According to the parents declaration (card and history) first dose of the DPT was received by 388 children with coverage rate of 99.6%.

Coverage rate with OPV vaccine among the children who had vaccination cards was 94.6% with the first dose, 95.3% with the second dose, and 95.7% with the third dose. According to the card and history, coverage rate is from 96.7% with the third dose to 97.5% with the first dose.

The Vaccine against hepatitis B was introduced in the routine vaccination schedule in the year 2003. All children born and living in Kosovo and are at the age of 0, 2 and 4 months received the hepatitis B vaccine. Although it is a newly introduced vaccine in the EPI calendar, coverage rate is relatively high. According to the data found in the vaccination cards, coverage rate with hepatitis B vaccine is 94.5% for the second dose respectively 97.5% for the first dose which is given immediately after delivery. Coverage rate with this vaccine is higher taking into consideration the declaration of the parents, 98.9% for the third dose, and 99.8% for the first one.

Out of 390 interviewed children, 314 of them were vaccinated with MMR vaccine and have vaccination cards, with coverage rate of 76.2%. from that number, 154 were under 15 months and 160 older than 15 month. According to the information that parents provided, with MMR vaccine were vaccinated 325 children or 77.9% of them had been vaccinated.

Routine vaccination in Kosova with DPT and OPV starts at the end of the second month of life and the national policy is to vaccinate all children with three doses of both vaccines before they attain 12 months. Even vaccination with Hepatitis B starts at birth, children are required to complete three doses of the vaccine before 12 months of age. During the survey, interval between doses of the vaccines were relatively satisfactory, with the shortest one 4 weeks and longest one 6 weeks. Average intervals for all antigens were 5 and 6 weeks respectively.

At national level, according to the card, and card and history, coverage rate with all antigens (vaccines) is very high with DPT, OPV and Hepatitis B. Satisfactory coverage rate is also with MMR vaccine too.

Relying on the data from the card, drop out rate for DPT3 in proportion with DPT1 is 0.8%, whereas drop out rate for MMR in proportion with BCG is 17.2%. Drop out rate for MMR vaccine in proportion with the third dose of DPT is 13.7%.

Out of 61 reasons given, 16 of them referred to the fact that the child was sick and so could not be taken for vaccination, 15 or 24.6% of cases referred to other reasons and not very well specified, and in 8 or 13.1% cases interviewers had identified reason that parents were too busy.

Almost all interviewed parents declared that they finished only primary school and only one of them had higher education (no national significance were faced).

# 1. Background

Vaccination is considered to be one of the most cost-effective health interventions. It is estimated that over 2.5 million deaths among children under five are averted through vaccination every year. Vaccination has an advantage in that it can be delivered with very high coverage even in the most underserved areas, thereby preventing disease, disability and death in these marginalized populations. It is important to ensure that right vaccines are administered at the right time. Appropriate policies and strong immunization systems are needed to ensure that potential vaccines are provided safely to every person who needs them.

To decrease high morbidity and mortality rate, the main objective of the Expanded Programme on Immunization is to achieve high coverage rate with all mandatory vaccines, especially among children younger than 12 months.

Different factors were identified, that influence post vaccination immunity level. Knowing these factors is a key issue, and very important on designing policies and health strategies.

In Kosovo, the Expanded Programme of Immunization (EPI) is determined as high priority program. The National Institute of Public Health of Kosova (NIPHK) designed and approved specific EPI programs like: Polio Eradication Program, Neonatal Tetanus Eradication Program, Measles Elimination Program, Control Program of Congenital Rubella, Program on Safety disposal of waste material, and. Program on Safety of the Cold Chain.

Approved Programs and the changes in the Expanded Program of Immunization (EPI), which means introducing new antigen are done based on the recommendations of the World Health Organization (WHO), and in line with the Immunization Policy approved by the Ministry of Health.

Vaccination as a medical process is complicated surgery intervention. Therefore administration of the vaccines requires experience, knowledge and professionalism. Quality of the vaccination services depends on high performance. Thanks to merits of vaccination, Kosovo is declared free of Chicken Pox, Poliomyelitis, and also designed and approved Measles Elimination Program, and Congenital Rubella Control Program.

According to the above principles, the National Institute of Public Health (NIPHK) defined as very useful implementation of the survey "Evaluation of the Quality of Immunization Services using Lot Quality Technique", to have a clear picture of the situation in the field. Lot Quality Technique survey is very fruitful, if the vaccination teams do not know exact number of children to be vaccinated.

The Lot Quality Technique survey gives a possibilities to discover and know the problems and reasons of the vaccination failure, vulnerable groups, identification of the high risk groups and high risk areas. These facts are benefits of the survey.

The Expanded Programme of Immunization (EPI) is continuously supported by UNICEF. From the year 2003, the Ministry of Health through UNICEF purchased all EPI antigens. UNICEF also supported the innovation and maintenance of the Cold Chain, hygienic

disposal of the used materials and many more projects, to increase performance of the vaccination teams.

## 2. Evaluation of the quality of the vaccination services using LOT Quality Technique

The Epidemiological situation in the country and region determined the introduction of the new antigens in the compulsory vaccination schedule (hepatitis B in the year 2003, and Hemophilus Influenza B in the year 2010). NIPH propose to the Ministry of Health all the changes in EPI (table 1).

**Table 1. Mandatory vaccination schedule 2010**

<b>VACCINATION</b>		
<b>Age</b>	<b>Antigens</b>	<b>Administration</b>
0-12 month	BCG	I.d.
0 month	Hepatitis B <sub>1</sub>	I.m.
2 month	DPT <sub>1</sub>	I.m.
	OPV <sub>1</sub>	Per os
	Hepatitis B <sub>2</sub>	I.m.
	Hib <sub>1</sub>	I.m.
3 month	DPT <sub>2</sub>	I.m.
	OPV <sub>2</sub>	Per os
	Hib <sub>2</sub>	I.m.
4 month	DPT <sub>3</sub>	I.m.
	OPV <sub>3</sub>	Per os
	Hepatitis B <sub>3</sub>	I.m.
	Hib <sub>3</sub>	I.m.
12 month	MMR	S.c.

<b>REVACCINATION</b>		
12-18 month	DPT	I.m.
	OPV	Per os
6-7 year	DT	I.m.
	OPV	Per os
	MMR	S.c.
12-13 year	Td	I.m.
	OPV	Per os
18 year	TT	I.m.

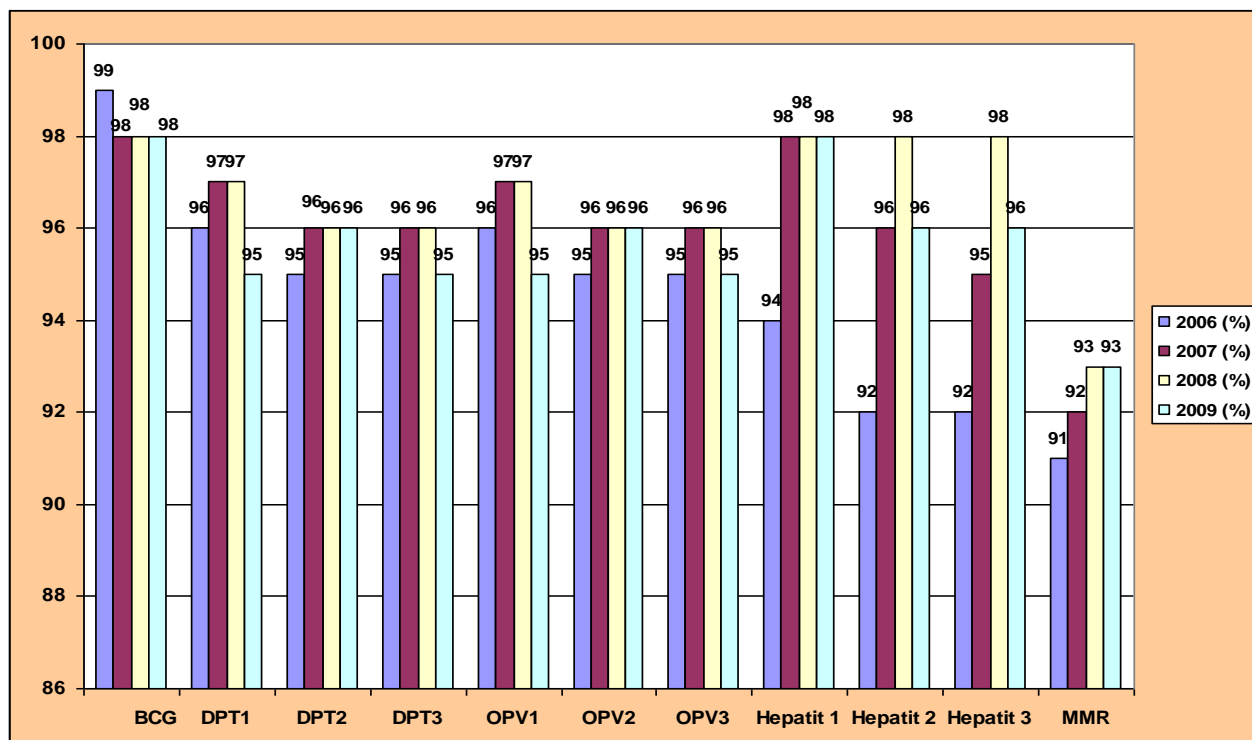
Using Lot Quality Technique to investigate coverage rate especially among the children of age group 0-12 months creates a clear view about morbidity and mortality rate of vaccine preventable diseases. To create a precise expression about coverage rate for all antigens at the municipal level or Kosovo wide, results of the survey can/must compare with coverage rate reported by vaccination teams.

**Table 2. Coverage rate of antigens of Expanded Programme of Immunization in Kosovo, 2006 - 2009**

Antigens	2006 (%)	2007 (%)	2008 (%)	2009 (%)
BCG	99	98	98	98
DPT1	96	97	97	95
DPT2	95	96	96	96
DPT3	95	96	96	95
OPV1	96	97	97	95
OPV2	95	96	96	96
OPV3	95	96	96	95
Hepatitis 1	94	98	98	98
Hepatitis 2	92	96	98	96
Hepatitis 3	92	95	98	96
MMR	91	92	93	93

In Kosovo, coverage rate for all EPI antigens is over 90%, which gives solid protection against specific vaccine preventable diseases. Coverage rate with hepatitis B vaccine is satisfactory and it is good indicator of parents interest for the vaccine. Even, coverage rate with MMR vaccine is above 90%, still it does not create a good protection barrier (95%) to prevent possible outbreaks (Table 2, Graph 1).

**Graph 1. Coverage rate of EPI antigens in Kosovo, 2006 - 2009**



## 2.1. Objectives of the survey

This survey planned to achieve the following objectives:

1. Assess the vaccination status of children between 12-23 months (for each vaccine and their status - fully vaccinated) for the entire Kosovo and disaggregated for each municipality and gender,
2. Assess the time interval between doses of the vaccines for the entire Kosovo and disaggregated for each municipality,
3. Assess if the vaccination is done when the child is at the appropriate age for entire Kosovo and disaggregated for each municipality,
4. Assess the coverage rate according to the vaccination card (on which vaccination is recorded) in Kosovo and for each municipality,
5. Assess the coverage rate according to the history (based on parents declaration in case vaccination card is lost),
6. Assess the development of a scar after the administration of BCG vaccine for entire Kosovo and disaggregated for each municipality,
7. Assess the reasons for vaccination failure for entire Kosovo and disaggregated for each municipality,
8. Assess the health institutions where children receive their vaccines for entire Kosovo and disaggregated for each municipality.

## 2.2. Methodology

The survey was conducted by the NIPH, local EPI managers, and vaccination teams of the Main Family Medicine Center among children 12-23 months old who live in Kosovo. The Target population in this age group is estimated to be 28,000.

Interviewers and supervisors initially tested the questionnaire in the field. To avoid possible bias, it is preferable for interviewers to collect data in a different municipality than the one to which they work. To test bias scale of the mandatory monthly report, interviewers also collected data in their municipality. Data collection was done entirely in two day, and on the third day they were checked and controlled. If the child involved in the survey was not chosen randomly or was not between the age range, the survey was repeated in that municipality.

The Random selection of the samples were done under supervision of the supervisors. Supervisors also assisted interviewers in case of uncertainty or eventual problems.

## 2.3. Sample size

The accuracy level of the survey is set at  $\pm 5\%$ , and the confidence interval is set at 95%. According to the WHO guide book, based on the accuracy and confidential intervals, the minimum sample size for LQT (Lot Quality Technique) survey is **384**. The Number of LOTs were 26, and the minimum sample size 15, then sample size was 390 (children involved in the survey).

## **2.4. Number of LOTS**

In our case, LOT represent municipality. The survey is done in 26 LOTS which are equivalent to 26 municipalities of Kosovo.

## **2.5. Minimum sample size in LOT** was 15 in each LOT.

## **2.6. Data collection** was done using two questionnaires:

1. Infant vaccination form of children 12-23 months (Annex1),
2. Reasons for immunization failure form (Annex1),

## **2.7. Trainings**

The Project conducted training for the supervisors of the interviewers and the interviewers themselves. It was a one day training (for supervisors and interviewers). 8 supervisors and 52 interviewers from each Main Family Medicine Center (2 from each municipality) were trained.

### 3. Results of the survey

During the survey 390 children of the age group 12-23 months were interviewed. Each LOT (municipality) had 15 interviewed children selected randomly (randomize method).

**Table 3. Distribution of the children by possession of the vaccination cards, Kosovo 2010**

Card	Frequency	Percentage
Lost	14	3.6
No	0	0
Yes	376	96.4
<b>Total</b>	<b>390</b>	<b>100</b>

The Core of the survey was the data collected from personal vaccination card of the children. Children's caregivers were asked of their possession of children's vaccination cards. 376 children or 96.4% of them had their vaccination cards in good condition. In 14 cases, parents declared that their children possessed vaccination cards but they had lost them for different reasons (table 3).

**Table 4. Distribution of the children by possession of the vaccination cards, Kosovo 2004-2010**

Card	Frequency		Percentage	
	2004	2010	2004	2010
Lost	7	14	1.8	3.6
No	38	0	9.7	0
Yes	345	376	88.4	96.4
<b>Total</b>	<b>390</b>	<b>390</b>	<b>100</b>	<b>100</b>

A Comparison of the findings of two surveys 2004 and 2010 for the possession of the vaccination cards, indicated a continuous progress. given percentages of the possession of vaccination cards in the year 2004 it was 88.4%, in 2010 it was found to be 96.4%. During the survey in 2004, 38 (9.7%) of children's caregivers declared that their children never had vaccination cards, which was not the case of the survey in 2010. Using "The child Health booklet" had a key role in this issue.

**Table 5. Vaccination status of the children 12-23 month, by card and history, Kosovo 2010**

Vaccination status	No. of children	Percentage
Fully *	325	83.3
Partially	62	16.1
Not vaccinated	3	0.76
<b>Total</b>	<b>390</b>	<b>100.0</b>

\* Fully vaccinated are children who have three doses of DPT, OPV, hepatitis B, and one dose of BCG.

The Vaccination status of the children based on card and history (declaration of the parents) is as follow: 325 or 83.3% of children of the age group 12-23 months are fully vaccinated, 62 (16.1%) partially and only 0.76% of them were classified as not vaccinated.

**Table 6. Comparison of the vaccination status of the children 12-23 months of the LOT-s 2004-2010, by card and history, Kosovo 2010**

Vaccination status	2004		2010	
	No. of children	Percentage	No. of children	Percentage
<b>Fully *</b>	303	77.7	325	83.3
<b>Partially</b>	85	21.8	62	16.1
<b>Not vaccinated</b>	2	0.5	3	0.76
<b>Total</b>	<b>390</b>	<b>100</b>	<b>390</b>	<b>100</b>

Based on card and history, coverage rate among children of one year of age on the survey of 2010 is much higher than coverage rate among same age group of children found during the survey of the year 2004. During LOT 2010, 83.3% of children were fully vaccinated, and 77.7% during the LOT 2004, while, percentage of the children partially vaccinated rapidly decreased.

High vaccination coverage rate was found in the municipalities of: Vushtrri, Ferizaj, Therandë and Rahovec, from 15 interviewed children all of them had fully vaccination status (100%). Whereas in the municipalities of: Drenas, Gjakovë, Mitrovicë, Gjilan, Kamenicë and Viti from 15 interviewed children, 14 of them (93%) had fully vaccinated status. In three other municipalities Lipjan, Peja, and Klina one child had not been vaccinated at all (no dose of the vaccine at all or only BCG was administered).

**Table 7. Vaccination status by gender according to the card and history, Kosovo 2010**

Gender	Not vaccinated	Fully	Partially	Total
<b>Female</b>	2	145	24	171
<b>Male</b>	1	180	38	219
<b>Total</b>	<b>3</b>	<b>325</b>	<b>62</b>	<b>390</b>

The number of children disaggregated by gender was almost equal. On the one hand, From 219 boys, 180 of them were fully vaccinated and 38 partially. Whereas, out of 171 girls, 145 of them were fully vaccinated and 24 partially. On the other hand one boy and two girls were classified as unvaccinated. Unvaccinated children were classified those who had no shot or only one dose of the vaccine.

**Table 8. Children with BCG vaccine, according to the card, card and history, Kosovo 2010**

BCG		No. of children	Percentage
	<b>Card</b>	375	97.5%
	<b>Card+history</b>	390	100%

According to the card, out of 390 children (12-23 months), 375 children or 97.5% of them had BCG vaccine, while taking into consideration the declaration of parents, coverage

rate with BCG vaccine is 100%. This is proven by the presence of the scar among the children involved in the survey.

**Table 9. Comparison of the coverage rate with BCG vaccine, according to the card and card and history, LOT 2004 and 2010**

BCG	2004		2010	
	No.of children	Percentage	No.of children	Percentage
Card	343	85.0	375	97.5
Card + history	387	99.0	390	100

Results of the LOT survey of the year 2010 indicates higher coverage rate with BCG vaccine in relation with the results of the LOT survey of the year 2004. Coverage rate with BCG vaccine according to the card and card and history during the LOT survey 2004 found to be 85% and 99% respectively, findings of the year 2010 are 97.5% based on the card and 100% based on card and history respectively. Findings of the survey 2010 matches with the results of the monthly and annual routine report..

**Table 10. Presence of the scar among the children with BCG vaccine, according to the card and history, Kosovo 2010**

Scar	Frequency	Percentage
Jo	3	0.77
Po	387	99.2

According to the card and history, from all children who were vaccinated with BCG vaccine, 387 or 99.2% of them developed the scar, and only 3 of them or 0.77% did not have the scar. This is a good indicator of the proper administration of the BCG vaccine.

**Table 11. Children vaccinated with DPT vaccine, according to the card and card and history, Kosovo 2010**

	Card		Card + History	
	No of children	%	No of children	%
<b>DPT1</b>	374	97.5	388	99.6
<b>DPT2</b>	370	97.0	385	99.3
<b>DPT3</b>	354	94.8	368	96.9

During the survey 390 children of the age group 12-23 months were interviewed, out of which 374 or 97.5% received the first dose of vaccine and they do have vaccination cards. The second and the third dose had been received by 370 and 354 children with coverage rate of 97.0% and 94.8% respectively. there is a slight decrease of the coverage rate or drop out rate between the second and the third dose of 2.2%. According to the parents declaration (card and history) the first dose of DPT 388 children or 99.6% had received it. Also, according to parents declaration, coverage rate with the second and the third dose decreased slightly to 99.3% and 96.9% respectively.

**Table 12. Comparison of the coverage rate with DPT according to the card, and card and history, LOT 2004 and 2010**

	2004				2010			
	Card		Card & history		Card		Card & history	
	No of children	%	No of children	%	No of children	%	No of children	%
<b>DPT1</b>	343	86	386	98	374	97.5	388	99.6
<b>DPT2</b>	323	84	378	95	370	97.0	385	99.3
<b>DPT3</b>	325	81	366	92	354	94.8	368	96.9

Comparison of the results of two surveys (2004-2010), indicates increase of the coverage rate with three doses of DPT vaccine during the survey of 2010 up to 13% among the children with vaccination cards. Meanwhile, coverage rate with DPT vaccine among the children of the age group 12-24 months according to the card, and card and history have increased from 1.3 to 4.0%. theTime interval between the doses are presented on the table 25.

**Table 13. Children vaccinated with OPV vaccine, according to the card, and card and history, Kosovo 2010**

	Card		Card + History	
	No.children	%	No.children	%
<b>OPV1</b>	360	95.7	373	97.5
<b>OPV2</b>	357	95.3	371	97.3
<b>OPV3</b>	353	94.6	367	96.7

According to the routine vaccination schedule, administration of the DPT and OPV is in the same time (simultaneous administration). During the survey a small difference on the coverage rate between these two vaccines was detected. The Number of children

with OPV vaccine is slightly lower than with DPT vaccine, and this issue should be discussed more deeply. Here are considered two reasons: personal vaccination card is not filled in the proper way, and the parent can not recall whether children received the vaccine against polio.

Coverage rate with OPV vaccine among the children who have vaccination cards was 94.6% with the first dose, 95.3% with the second dose, and 95.7% with the third dose which is 2% lower than with DPT. According to the card and history, coverage rate is from 96.7 with the third dose and 97.5% with the first dose. there is a slight decrease of the coverage rate between the doses (the first and the second, the second and the third, and the first and the third).

**Table 14. Comparison of the coverage rate with OPV vaccine, card, and card and history, LOT 2004 and 2010, Kosovo 2010**

	2004				2010			
	Card		Card & history		Card		Card & history	
	No. children	%	No. children	%	No. children	%	No. children	%
<b>OPV1</b>	342	86	386	98	360	95.7	373	97.5
<b>OPV2</b>	337	84	378	95	357	95.3	371	97.3
<b>OPV3</b>	328	82	369	93	353	94.6	367	96.7

Comparison of the results of the two surveys 2004 and 2010, signify obvious increased coverage rate with OPV vaccine according to the card from 11.3% (second dose) to the 12,6% (third dose). Whereas, according to the data from card and history, coverage rate with OPV vaccine approximately is the same.

**Table 15.Children vaccinated with Hepatitis B vaccine, according to the card, and card and history, Kosovo 2010**

	Card		Card + History	
	No.children	%	No.children	%
<b>Hep B1</b>	375	97.5	389	99.8
<b>Hep B2</b>	374	94.5	386	99.3
<b>Hep B3</b>	368	96.6	383	98.9

Vaccine against Hepatitis B was introduced in the routine vaccination schedule in the year 2003, where all children who were born and lived in Kosovo and of the age 0, 2 and 4 months received the hepatitis B vaccine. Eventhough it was a later introduced vaccine, coverage rate is relatively high. According to the data found in the vaccination card, coverage rate with hepatitis B vaccine is 94.5% for the second dose respectively 97.5% for the first dose which is given immediately after delivery. Coverage rate with this vaccine is higher taking into consideration the declaration of the parents, 98.9% for the third dose, and 99.8% for the first one. there is a slight decrease of the coverage rate between the first and the second dose of 0.5%.

**Table 16. Children vaccinated with MMR vaccine, according to the card, and card and history, Kosovo 2010**

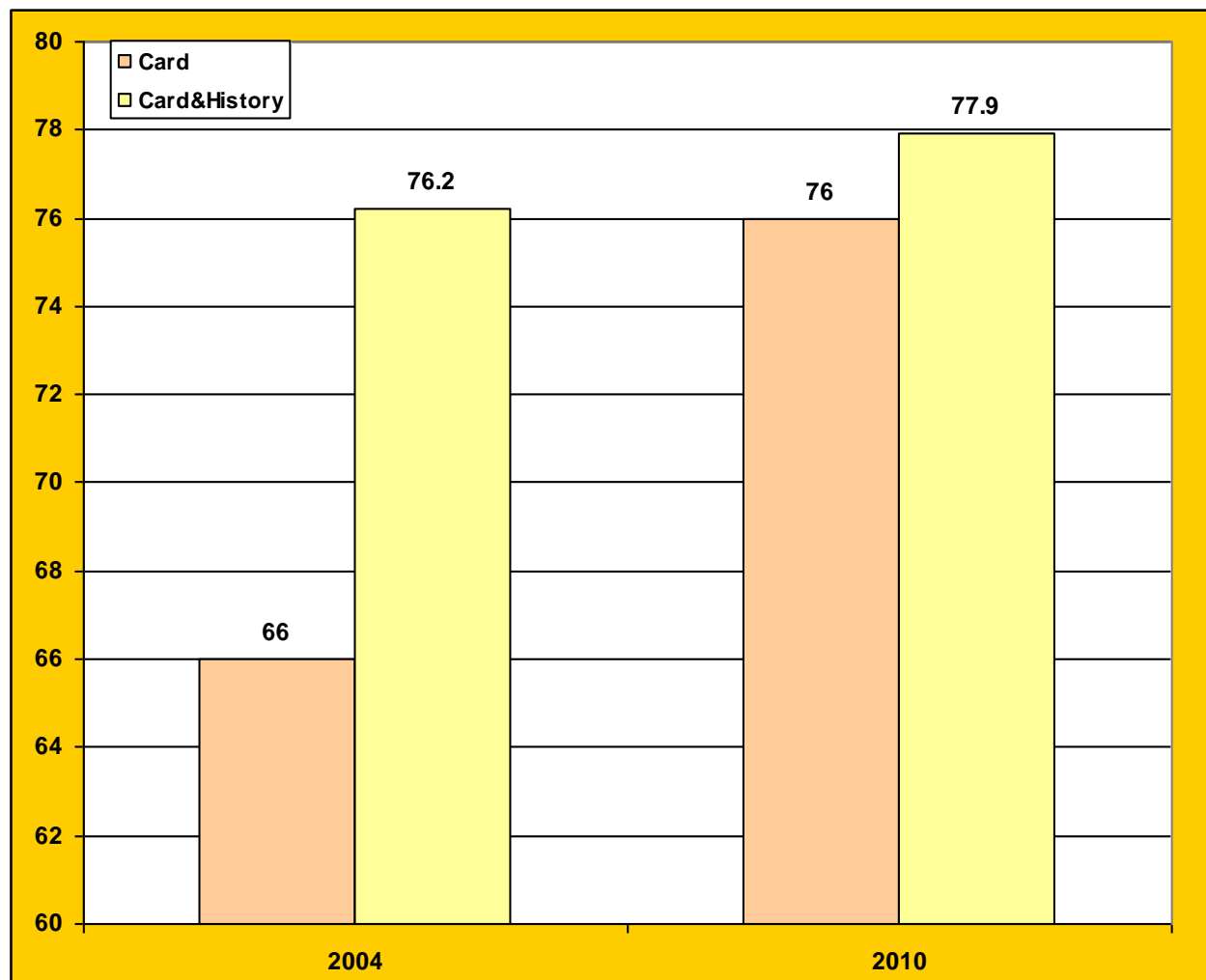
MMR		No. children	(%)
	Card	314	76.2
	Card&History	325	77.9

In the year 2003, in Kosovo the implementation of the Measles Elimination Program started, and in that time 500 000 children of the age group 12 month to 15 years were vaccinated with one dose of Measles and Rubella vaccine nation wide (including the Serbian community). When we add the fact of measles outbreak in surrounding countries, special attention is given to the coverage rate with MMR vaccine. Out of 390 interviewed children, 314 of them were vaccinated with MMR vaccine and have vaccination card, with coverage rate of 76.2%. According to the information that parents provided, with MMR vaccine were vaccinated 325 children or 77.9% of them.

**Table 17. Comparison of the coverage rate with MMR vaccine, LOT 2004 and 2010, Kosovo 2010**

MMR	Card	2004		2010	
		No. children	%	No. children	%
		274	66.0	314	76.2
Card + history	316	76.0	325	77.9	

**Graf 2. Comparison of the coverage rate with MMR vaccine, LOT 2004 and 2010, Kosovo 2010**



In Table 17 and Graph 2 are a comparison of the results of the survey of the year 2004 and 2010 for the coverage rate with MMR vaccine according to the card, and card and history. In both cases, the number of children interviewed were the same 390. Number of children vaccinated with MMR vaccine is higher during the year 2009. While, coverage rate with MMR vaccine among children with vaccination card in the survey of 2004 was 66.0%, in the year 2010 is 76.2%. Coverage rate with MMR vaccine, according to the declaration of the parents in the survey of 2004 was found to be 76.0%, and in the year 2010 is 77.9%.

According to vaccination card, MMR vaccine were also analyzed according to the most frequent age when MMR is given. Children are divided into two group ages: under 15 months and over 15 months (table 18).

**Table 18. The most frequent age of given MMR vaccine, according to the card by LOT, Kosovo 2010**

Number LOT	Name of LOT	Children <15 month	Vaccinated with		Children >15 month	Vaccinated		Total MMR
			MMR	%		MMR	%	
22	Kaçanik	14	8	57.1	1	4	100.0	12
16	Gjilan	7	6	85.7	8	8	100.0	14
28	Dragash	3	1	33.3	10	10	100.0	13
14	Skenderaj	8	4	50.0	7	6	85.7	10
12	Gjakovë	2	2	100.0	13	12	92.3	14
20	Ferizaj	12	12	100.0	3	3	100.0	15
24	Prizren	9	4	44.4	6	3	50.0	7
5	Lipjan	6	3	50.0	9	7	77.7	10
9	Klinë	7	2	28.5	8	3	37.5	5
27	Rahovec	10	10	100	5	5	100.0	15
13	Mitrovicë	12	11	91.6	3	3	100.0	14
15	Vushtrri	13	12	92.3	2	2	100.0	15
6	Drenas	7	7	100.0	8	7	87.5	14
25	Malishevë	6	4	66.6	9	8	88.8	12
1	Prishtinë	8	4	50.0	7	3	42.8	7
3	Obiliq	4	4	100	11	10	91.0	13
4	F.Kosovë	4	1	25.0	11	10	91.0	11
26	Therandë	9	9	100.0	6	6	100.0	15
8	Burim	4	3	75.0	11	6	54.5	9
19	Novo Bërd	9	9	1000.0	6	6	100.0	15
21	Shtime	8	8	100	7	6	85.7	14
10	Deçan	3	1	33.3	12	7	58.3	8
17	Kamenicë	7	6	85.7	8	7	87.5	13
7	Pejë	6	4	66.6	9	9	100.0	13
18	Viti	9	8	88.8	6	6	100.0	14
2	Podujevë	7	4	57.1	8	8	100.0	12
	<b>Kosova</b>	<b>194</b>	<b>154</b>	<b>79.4</b>	<b>196</b>	<b>160</b>	<b>82.1</b>	<b>314</b>

out of 390 children covered in the survey, 194 of them were under 15 month, while 154 or 79.4% of them were vaccinated with MMR vaccine. Whereas, 196 children were over 15 month, while 160 or 82.1% of them were vaccinated with MMR vaccine (data are based on vaccination card).

A Major concern is the fact that no evidence was found in municipality of Fushë Kosova and Deçan, where only one child under 15 month was vaccinated with MMR vaccine.

It is important that after the survey in 2004 interval time of vaccination with MMR vaccine is shorter.

**Table 19. Number of vaccinated children by LOT's according to the cards and history, Kosovo 2010**

Card / history	LOT by number																											
	1	2	3	4	5	6	7	8	9	10	12	13	14	15	16	17	18	19	20	21	22	24	25	26	27	28		
BCG (scar)	15	14	15	15	14	13	15	15	15	15	14	14	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	
BCG	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	
Cik*Sc-	0	1	0	0	1	2	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
DPT1	15	15	15	15	14	15	15	15	15	14	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15		
DPT2	15	15	15	13	14	15	15	15	14	14	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15		
DPT3	15	15	14	13	14	15	15	15	14	12	15	15	15	15	15	15	14	15	15	15	15	15	15	15	15	15		
OPV1	15	15	15	15	14	15	15	15	14	14	15	15	15	15	15	15	14	15	15	15	15	15	15	15	15	15		
OPV2	15	15	15	13	14	15	15	14	14	14	15	15	15	15	15	15	14	15	15	15	15	15	15	15	15	15		
OPV3	15	15	14	12	14	15	15	14	14	12	15	15	15	15	15	15	14	15	15	15	15	15	15	15	15	15		
HEP. B1	15	15	15	15	14	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15		
HEP. B2	15	15	15	15	14	15	15	15	15	14	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15		
HEP. B3	15	15	14	13	14	15	15	14	15	13	15	15	15	15	15	15	14	15	15	15	15	15	15	15	15	15		
MMR	7	12	13	11	10	14	13	10	10	8	14	14	11	15	14	14	14	15	15	14	14	7	12	15	15	13		
Fully vaccinated	7	12	13	11	10	14	13	11	10	8	14	14	11	15	14	14	14	15	15	14	14	7	12	15	15	13		
Partially vaccinated	8	3	2	4	4	1	2	4	5	6	1	1	4	0	1	1	1	0	0	1	1	8	3	0	0	2		
Vaccinated < 1 year	15	15	14	12	14	15	15	14	14	12	15	15	15	15	15	14	14	15	15	15	15	15	15	15	15	15		
Unvaccin.	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

According to the card and history, LOTs: 15, 19, 20, 26 and 27 were very successful, all the children were fully vaccinated. On the other hand, 14 children fully vaccinated were at the LOTs: 6, 12, 13, 16, 17, 18, 21 and 22. LOTs 1, 10 and 24, had only 7 and 8 children fully vaccinated respectively.

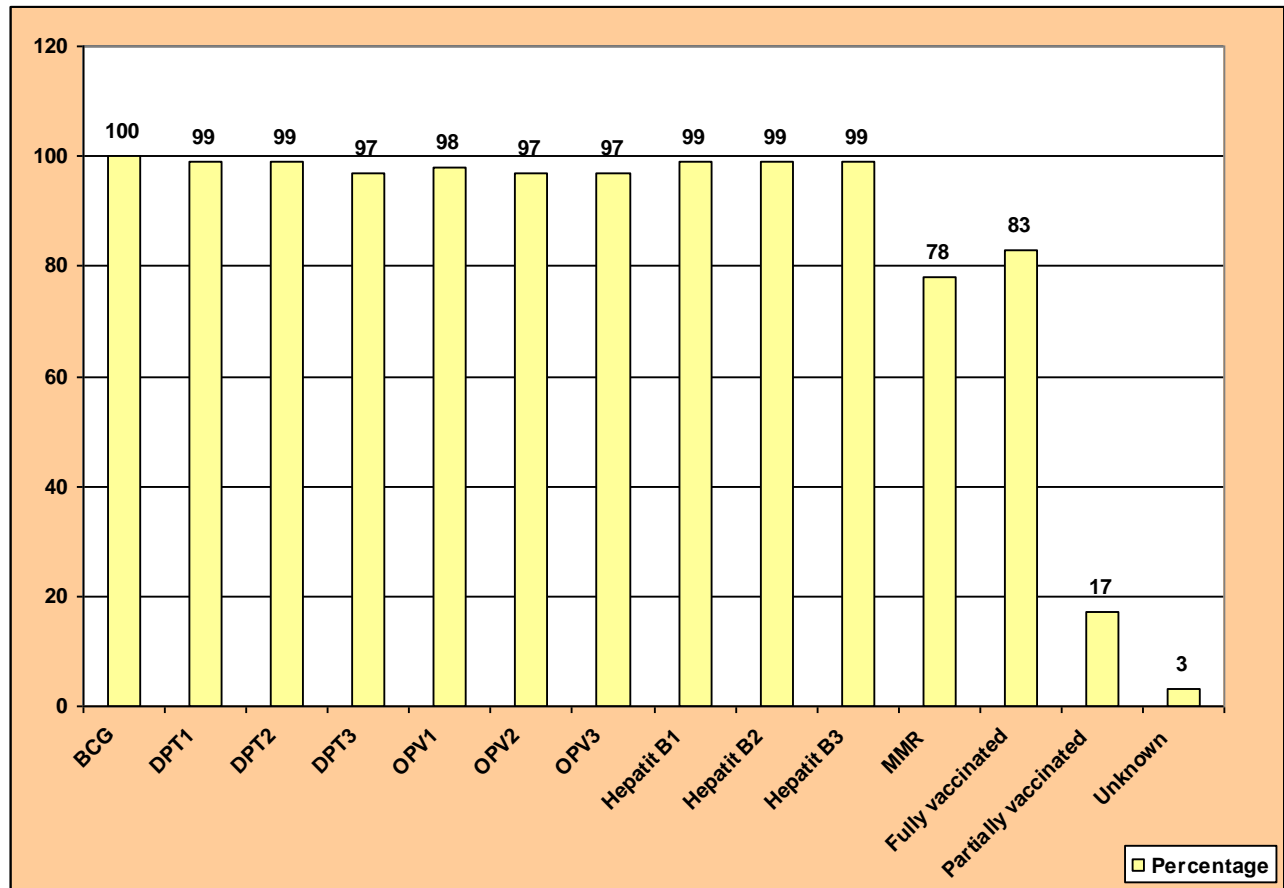
High drop out rate, it is obvious entire same antigens and MMR vaccine. Out of 390 covered children, 3 of them were defined as not vaccinated (LOTs 5, 7, and 9).

**Table 20. Coverage rate for each antigen according to card and history, Kosovo 2010**

<b>Antigens</b>	<b>Coverage (%)</b>
<b>BCG</b>	100
<b>DPT1</b>	99
<b>DPT2</b>	99
<b>DPT3</b>	97
<b>OPV1</b>	98
<b>OPV2</b>	97
<b>OPV3</b>	97
<b>Hepatitis B1</b>	99
<b>Hepatitis B2</b>	99
<b>Hepatitis B3</b>	99
<b>MMR</b>	78
<b>Fully vaccinated</b>	83
<b>Partially vaccinated</b>	14
<b>Unknown</b>	3

Coverage rate for each antigen is relatively high according to the card and history. It is small difference of 1% between the first dose of DPT (99%) and OPV (98%). Relatively satisfied coverage rate was found to be with MMR vaccine (78%). Coverage rate with three doses of hepatitis B vaccine it is very high (Table 20, Graph 3).

**Graph 3. Coverage rate with all antigens according to the card and history, Kosovo 2010**

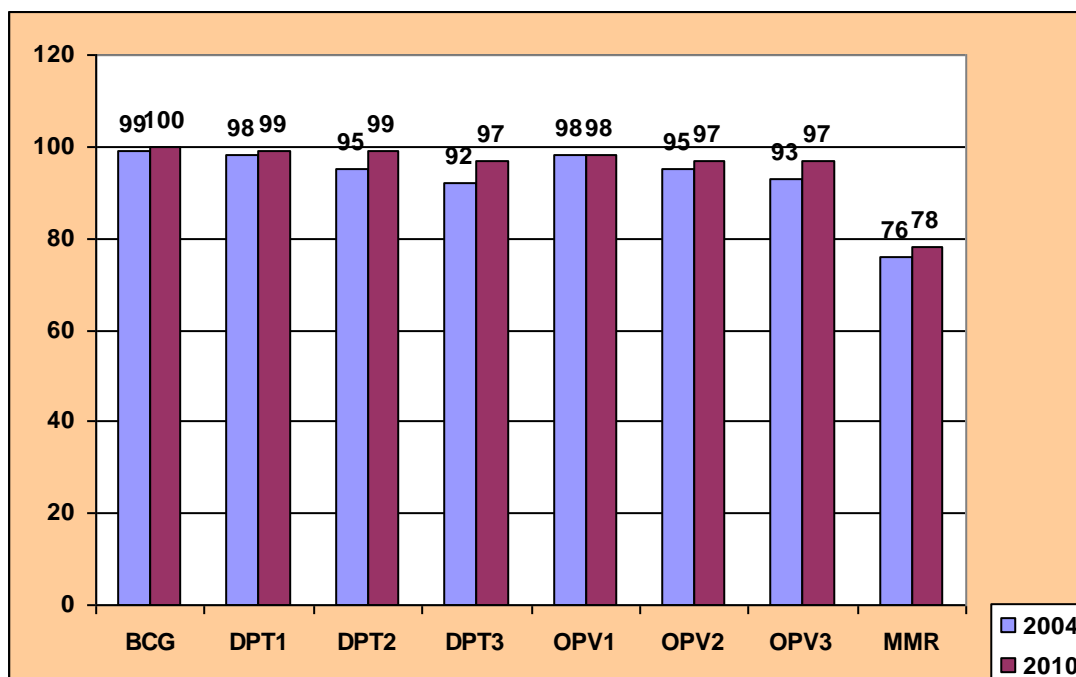


A Comparison of the results of the surveys 2010 and 2004, signify an increase in the coverage rate with all antigen during the survey of the year 2010. An Obvious increase is realized with the third dose of DPT (92% with 97%) and OPV (93% with 97%). there is no noted increase with the coverage rate of MMR vaccine (76% with 78%) during the survey of the year 2010 in comparison with survey of the year 2004 (Table 21, Graph 4).

**Table 21. Comparison of the coverage rate for each antigen, according to the card and history, LOT 2004 and 2010, Kosovo 2010**

Antigens	2004	2010
<b>BCG</b>	99	100
<b>DPT1</b>	98	99
<b>DPT2</b>	95	99
<b>DPT3</b>	92	97
<b>OPV1</b>	98	98
<b>OPV2</b>	95	97
<b>OPV3</b>	93	97
<b>MMR</b>	76	78

**Graf 4. Comparison of the coverage rate for each antigen, according to the card and history, LOT 2004 and 2010, Kosovo 2010**



**Table 22. Number of vaccinated children by LOTs according to the card, Kosovo 2010**

Card	LOTs by numbers																											
	1	2	3	4	5	6	7	8	9	10	12	13	14	15	16	17	18	19	20	21	22	24	25	26	27	28		
BCG (scar)	15	15	15	15	15	14	15	14	14	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15		
BCG	15	15	15	15	15	15	15	10	9	15	15	15	14	15	15	14	15	15	15	15	13	15	15	15	15	15		
cr*Sc-	0	1	0	0	1	2	0	3	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
DPT1	15	15	15	15	14	15	15	11	9	14	15	15	14	15	15	14	15	15	15	15	13	15	15	15	15	15		
DPT2	15	15	15	13	14	15	15	10	8	14	15	15	14	15	15	14	15	15	15	15	13	15	15	15	15	15		
DPT3	15	15	14	13	14	15	15	10	8	12	15	15	14	15	15	14	14	15	15	15	13	15	15	15	15	15		
OPV1	15	15	15	15	14	15	15	11	8	14	15	15	14	15	15	14	14	15	15	15	13	15	15	15	15	15		
OPV2	15	15	15	13	14	15	15	10	8	14	15	15	14	15	15	14	14	15	15	15	13	15	15	15	15	15		
OPV3	15	15	14	12	14	15	15	10	8	12	15	15	14	15	15	14	14	15	15	15	13	15	15	15	15	15		
HEP. B1	15	15	15	15	14	15	15	11	9	15	15	15	14	15	15	14	15	15	15	15	13	15	15	15	15	15		
HEP. B2	15	15	15	15	14	15	15	11	9	14	15	15	14	15	15	14	15	15	15	15	13	15	15	15	15	15		
HEP. B3	15	15	14	13	14	15	15	10	9	13	15	15	14	15	15	14	14	15	15	15	12	15	15	15	15	15		
MMR	7	12	13	11	10	14	13	9	5	8	14	14	10	15	14	13	14	15	15	14	12	7	12	15	15	13		
Fully vaccinated	7	12	13	11	10	14	13	9	5	8	14	14	10	15	14	13	14	15	15	14	12	7	12	15	15	13		
Partially vaccinated	8	3	2	4	4	1	2	2	5	6	1	1	4	0	1	1	1	0	0	1	1	8	3	0	0	2		
Vaccinated < 1year	15	15	14	12	14	15	15	9	10	11	15	15	14	15	15	14	14	15	15	15	12	15	15	15	15	15		
Children with card	15	15	15	15	15	15	15	11	9	15	15	15	14	15	15	14	15	15	15	15	13	15	15	15	15	15		
Lost card	0	0	0	0	0	0	0	4	6	0	0	0	1	0	0	1	0	0	0	0	2	0	0	0	0	0		

According to the data from vaccination cards, five LOTs: 15, 19, 20, 26 and 27 have all children (15) vaccinated with all antigens in the recommended time. Whereas, LOTs: 6, 12, 13, 16 18, and 21 had 14 children fully vaccinated (missed one dose of MMR-vaccine). LOTs 1, 8, 9, and 24 had 5, 7 and 9 children fully vaccinated respectively. Vaccinated children before the first year of age is satisfactory except for MMR vaccine.

There is no high number of children with lost cards but there is a high number of children who never had vaccination cards especially children of the LOTs 8 and 9. Children with no vaccination cards belonged to all communities (excluding Serbian), and vast majority are K-albanians. According to the parents declaration their level of education was the following: mostly mothers finished primary school, and fathers secondary school, and with average economic situation.

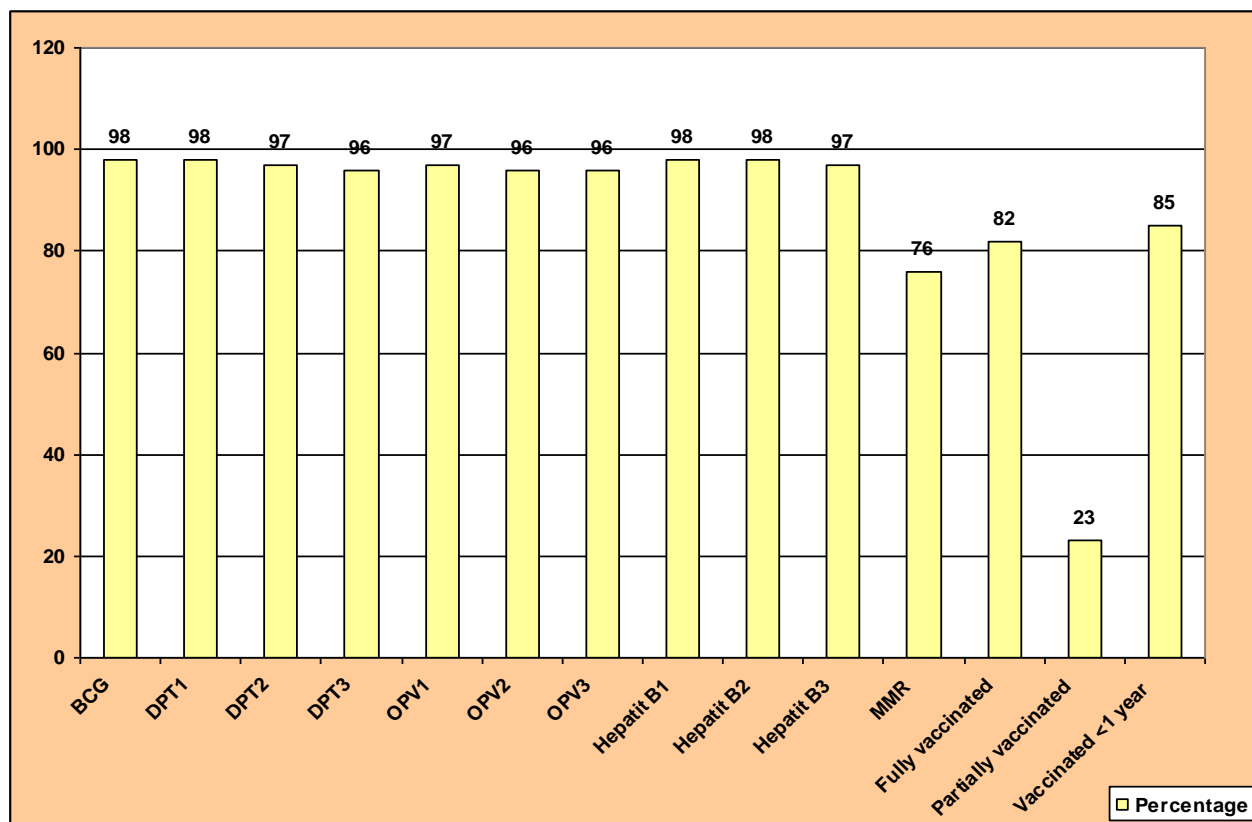
**Table 23. Coverage rate by each antigen according to the card, Kosovo 2010**

<b>Antigens</b>	<b>Percentage (%)</b>
<b>BCG</b>	98
<b>DPT1</b>	98
<b>DPT2</b>	97
<b>DPT3</b>	96
<b>OPV1</b>	97
<b>OPV2</b>	96
<b>OPV3</b>	96
<b>Hepatitis B1</b>	98
<b>Hepatitis B2</b>	98
<b>Hepatitis B3</b>	97
<b>MMR</b>	76
<b>Fully vaccinated</b>	82
<b>Partially vaccinated</b>	23
<b>Vaccinated before 1 year of age</b>	95

According to the data on the card, coverage rate is a little bit lower than coverage rate according to card and history. Coverage rate of MMR vaccine decreased from 78% to 76%.

Coverage rate of the fully vaccinated children is 82%, and 95% is coverage rate of vaccinated children before one year of age (Table 23, Graph 5).

**Graph 5. Coverage rate with all antigens according to the card, Kosovo 2010**



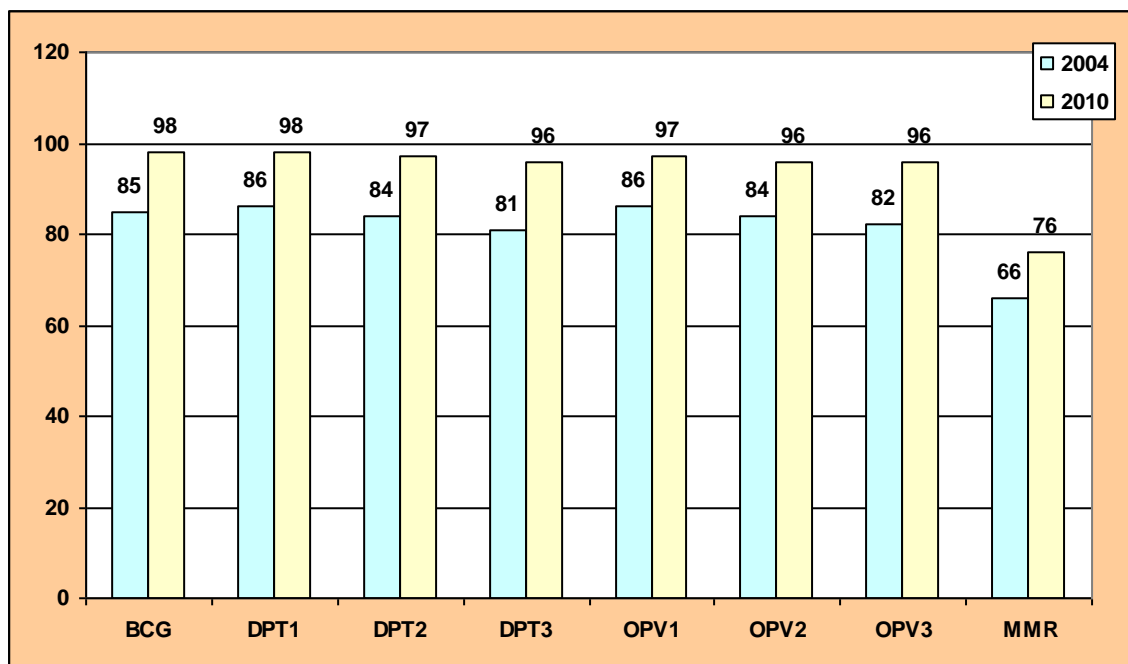
Comparison of coverage rate by each antigen according to the card of the survey of the years 2004, and 2010, presented in the table 24, indicates higher coverage rate in the survey of 2010 with all antigens overall Kosovo. Coverage rate increased from 10% with MMR to 15% with DPT3 vaccine.

**Table 24. Comparison of coverage rate by each antigen according to card, LOT 2004 and 2010, Kosovo 2010**

Antigens	2004	2010
BCG	85	98
DPT1	86	98
DPT2	84	97
DPT3	81	96
OPV1	86	97
OPV2	84	96
OPV3	82	96
MMR	66	76

Vaccination coverage rate increased for OPV vaccine too, from 11% for the first dose to 14% for the second one (Table 24, Graph 6).

**Graph 6. Comparison of the coverage rate with all antigens according to the card LOT 2004 and 2010, Kosovo 2010**



**Table 25. Time interval between doses for antigens DPT/OPV/hepatitis B according to the card, Kosovo 2010**

ANTIGENS	N	Reccommended interval	The shortest interval	The longest interval	Average interval
DPT1-DPT2	370	Four weeks (28 days)	4 weeks (280 fëmijë)	7 weeks (90 children)	5 weeks
DPT2-DPT3	366	Four weeks (28 days)	4 weeks (248 fëmijë)	9 weeks (118 children)	6 weeks
OPV1-OPV2	369	Four weeks (28 days)	4 weeks (279 fëmijë)	7 weeks (90 children)	5 weeks
OPV2-OPV3	365	Four weeks (28 days)	4 weeks (248 fëmijë)	9 weeks (117 children)	6 weeks
HepB1-HepB2	374	Four weeks (28 days)	4 weeks (308 fëmijë)	7 weeks (66 children)	5 weeks
HepB2-HepB3	367	Four weeks (28 days)	4 weeks (341 fëmijë)	9 weeks (26 children)	6 weeks

Routine vaccination in Kosovo with DPT/OPV starts at the end of the second month of life and the national policy requests to vaccinate all children with three doses of both vaccines DPT/OPV before 12 months. Even vaccination with Hepatitis B vaccine starts at birth, children need to complete three doses of the vaccine before 12 months of age. During the survey, interval between doses of the vaccines were relatively satisfactory, the shortest one 4 weeks and longer one 6 weeks. The Average interval for all antigens were 5 and 6 weeks respectively.

**Table 26. Drop out rate by LOTs for selected antigens according to the card, Kosovo 2010**

Lot no.	Municipality	DPT1/DPT3 %	BCG/MMR%	DPT3/MMR%
22	Kaçanik	0.0	13.3	0.0
16	Gjilan	0.0	6.7	6.7
28	Dragash	0.0	13.3	0.0
14	Skenderaj	0.0	26.6	21.4
12	Gjakova	0.0	6.7	6.7
20	Ferizaj	0.0	0.0	0.0
24	Prizren	0.0	53.3	53.3
5	Lipjan	0.0	33.3	28.8
9	Klina	0.0	33.3	37.5
27	Rahovec	0.0	0.0	0.0
13	Mitrovica	0.0	6.7	6.7
15	Vushtrri	0.0	0.0	0.0
6	Drenas	0.0	7.1	6.7
25	Malishevë	0.0	20.0	20.0
1	Prishtinë	0.0	53.3	53.3
3	Obiliq	0.0	13.3	7.1
4	F.Kosovë	0.0	26.6	15.4
26	Therandë	0.0	0.0	0.0
8	Burim	0.0	26.6	10.0
19	N.Bërd	0.0	0.0	6.7
21	Shtime	0.0	6.7	6.7
10	Deçan	13.3	46.6	33.3
17	Kamenicë	0.0	13.3	7.1
7	Pejë	0.0	13.3	13.3
18	Viti	6.7	6.7	0.0
2	Podujevë	0.0	20.0	20.0
<b>Kosovo</b>		<b>0.8</b>	<b>17.2</b>	<b>13.7</b>

At the level of Kosovo, relying on the data from the card, drop out rate for DPT3 in proportion with DPT1 is 0.8%, whereas drop out rate for MMR in proportion with BCG is 17.2%. Drop out rate for MMR vaccine in proportion with the third dose of DPT is 13.7%. Results shows that drop out rate for MMR vaccine in both cases and at the level of Kosovo is very high, knowing that acceptable drop out rate should not be higher than 10%.

At the level of municipality, high drop out rate for MMR vaccine was in Prizren 53.3% in proportion with the children vaccinated with BCG vaccine in Deçan drop out rate for MMR vaccine in proportion with the children vaccinated with BCG vaccine is 46.6%. These two municipalities have high drop out rate for MMR vaccine in proportion with third dose of DPT, 53.3% and 33.3% respectively.

**Table 27. Drop out rate by LOTs for selected antigens according to the card, Kosovo 2004**

Lot no.	Municipality	DPT1/DPT3 %	BCG/MMR%	DPT3/MMR%
22	Kaçanik	0.0	21.4	21.4
16	Gjilan	7.7	15.4	8.3
28	Dragash	50.0	93.3	0.0
14	Skenderaj	0.0	23.0	23.0
12	Gjakova	7.1	14.3	7.7
20	Ferizaj	15.3	23.0	9.1
24	Prizren	0.0	60.0	60.0
5	Lipjan	0.0	15.4	15.4
9	Klina	0.0	20.0	20.0
27	Rahovec	0.0	0.0	0.0
13	Mitrovica	0.0	21.4	21.4
15	Vushtrri	13.3	13.3	0.0
6	Drenas	0.0	0.0	0.0
25	Malishevë	0.0	0.0	0.0
1	Prishtinë	0.0	25.0	30.8
3	Obiliq	0.0	6.7	6.7
4	F.Kosovë	7.1	21.4	15.4
26	Therandë	0.0	20.0	20.0
8	Burim	0.0	21.4	21.4
19	N.Bërd	0.0	18.2	18.2
21	Shtime	26.6	6.7	- 27.3
10	Deçan	0.0	30.8	30.8
17	Kamenicë	0.0	33.3	33.3
7	Pejë	7.7	46.7	33.3
18	Viti	20.0	26.7	15.4
2	Podujevë	13.3	33.3	23.1
<b>Kosovo</b>		<b>5.24</b>	<b>20.1</b>	<b>15.7</b>

Comparison of the drop out rates of the two surveys 2010 and 2004 (table 25 and 26) shows decrease of the drop out rate during these years. Decrease of the drop out rate is present at all categories.

Drop out rate is present at all children (excluding K-Serbs). According to the parents declaration their level of education was: mostly mothers finished primary school, and fathers secondary school, and have average economic standard.

**Table 28. The most frequent health institutions used for children vaccination, according to the card and history, Kosovo 2010**

Antigens	Health institutions that implement vaccination									
	MFMC		Ambulance		Hospital		Mobile		Total	
	n	%	n	%	n	%	n	%	n	%
<b>BCG</b>	30	7.6	2	0.5	358	91.8	0	0.0	390	100
<b>DPT1</b>	168	43.3	173	44.6	0	0	47	12.1	388	100
<b>DPT2</b>	170	44.2	156	40.5	0	0	59	15.3	385	100
<b>DPT3</b>	157	41.2	172	45.2	0	0	52	13.6	381	100
<b>OPV1</b>	165	42.7	173	44.8	0	0	48	12.4	386	100
<b>OPV2</b>	155	40.5	170	44.4	0	0	58	15.1	383	100
<b>OPV3</b>	162	42.7	165	43.5	0	0	52	13.7	379	100
<b>Hepatitis 1</b>	30	7.7	0	0	359	92.0	0	0	389	100
<b>Hepatitis 2</b>	168	43.3	173	44.6	0	0	47	12.1	388	100
<b>Hepatitis 3</b>	158	41.3	172	45.2	0	0	52	13.6	382	100
<b>MMR</b>	126	38.8	144	44.3	0	0	55	16.9	325	100

According to the analysis done, it was noticed that parents use all health institutions to vaccinate their children. Selection of the health institution depends on how far the institution is located. Except, for BCG and Hepatitis B vaccines that are exclusively administered in hospitals 91.8% and 92.0% respectively, other institutions approximately in same proportions are visited from parents for child vaccination. Mobile vaccination services are being conducted for some remote rural areas. Community family nurses should take on this role in the future.

**Table 29. Reasons stated by parents for vaccination failure among the children partially vaccinated or unvaccinated, Kosovo 2010**

<b>Reasons for failure</b>	<b>Number</b>	<b>%</b>
<b>Not aware about the need for vaccination</b>	0	0
<b>Not aware about next dose</b>	0	0
<b>Location and/or time for vaccination unknown</b>	0	0
<b>Fear from side effects</b>	0	0
<b>Fear from injections</b>	0	0
<b>Rumors (specify, vaccines cause sterility, damage health etc)</b>	0	0
<b>Vaccination place too far</b>	0	0
<b>Time for vaccination inappropriate</b>	0	0
<b>Vaccinator is missing</b>	1	1.64
<b>Vaccinator told that child is fully vaccinated</b>	5	8.20
<b>Vaccine is missing</b>	0	0
<b>Parents too busy</b>	8	13.10
<b>Family problems including mother's sickness</b>	6	9.80
<b>Sick child-not brought</b>	16	26.20
<b>Sick child brought, but not vaccinated</b>	10	16.40
<b>Too long waiting time</b>	0	0
<b>Other (specify)</b>	15	24.60
<b>TOTAL</b>	<b>61</b>	<b>100</b>

From all unvaccinated children or partially vaccinated were identified 61 the most common reasons for failure of the vaccination. Out of 61 given reasons, 16 of them referred to the fact that the child was sick and could not be taken for vaccination, 15 or 24.6% of cases referred to other reasons and not very well specified, and in 8 or 13.1% cases, interviewers identified reasons such as parents were too busy.

Almost all interviewed parents declared that they finished only primary school and only one of them had high education school (no national significance were faced).

## 4. Conclusions

1. Based on monthly and annual routine report, coverage rate with all antigens is high from 99% for BCG vaccine to 93% for MMR vaccine,
2. The Survey covered 390 children of the age group 12-23 month, using Lot Quality Technique to analyze coverage rate with all antigens,
3. From all interviewed children (390), 376 or 96.4% of them have vaccination cards, 14 or 3.6% of them lost vaccination cards and there no child that had never had a vaccination card was found.,
4. Comparison of possession of the vaccination card of the survey 2010 with 2004, shows higher rate among children interviewed during the survey 2010 (96.4%) in proportion of the children interviewed during the survey 2004 (88.4%),
5. High rate of possession of the vaccination card is very much related with possession "Child Health Booklet" that children get after they were born,
6. According to the card and history, the number of fully vaccinated children is 83.3%, partially vaccinated 16.1%, and never vaccinated are only 0.76% of them,
7. Comparison of two surveys 2004 and 2010, high number of fully vaccinated children was found in the survey of the year 2010 (325 – 96.4% with 303 – 88.4%),
8. According to the card and history, vaccination status of the boys was more satisfactory. From 390 covered children, 219 were boys (180 fully vaccinated, 38 partially, and 1 not vaccinated), and 171 were girls (145 fully vaccinated, 24 partially, and 3 not vaccinated),
9. Coverage rate for BCG vaccine is 97.5% among the children who have vaccination cards. According to the card and history coverage rate with BCG vaccine is 100%,
10. A Scar is developed on 99.2% of the vaccinated children with BCG vaccine, which mean technique of administration of the BCG vaccine are very correct,
11. According to the card and history, coverage rate with three doses of DPT and OPV is over 95%,
12. Eventhough, DPT and OPV are given simultaneously there is a slight different of 2% on coverage rate in favor of DPT vaccine,
13. In comparison with the survey of the year 2004, coverage rate with DPT and OPV on the survey of the year 2010 increased from 13% among children with card, to 17% according to the card and history,
14. Hepatitis B vaccine was introduced in routine vaccination schedule in 2003. After six years, coverage rate with this vaccine is quite high, 97.5% for the first dose, 94.5% second dose, and 96.6% third dose (according to the card). According to the card and history coverage rate with Hepatitis B vaccine is from 98.9% third dose to 99.8% for the first dose,
15. Coverage rate with MMR was 76.2% among the children who had a card, and 77.9% according to the card and history,
16. A Comparison of the results of the LOT 2004 and 2010, among the children with vaccination cards for MMR vaccine is higher in 2010 (2004 = 66.0%, 2010 = 76.2%),
17. Out of 390 children covered by the survey, 315 had MMR vaccine, 154 or 79.4% of them are under 15 months of age and had MMR vaccine,
18. Time of administration of the MMR vaccine is shortened according to the survey of the year 2010 in comparison with the results of the survey of the year 2004, and express the importance of defining the time of administration on routine vaccination schedule,

19. According to the card and history, five municipalities have all (15) fully vaccinated children. Also, are found it 3 children defined as unvaccinated,
20. According to the card and history, 83% of children were fully vaccinated, 14% partially and only 3% were defined as unknown,
21. According to the card, 82% of the children were fully vaccinated, 23% partially, and 85% of them were vaccinated before 1 year of age,
22. Drop out rate between the doses of the same antigens it is not very high (DPT3 in proportion with DPT1, 0.8%),
23. Drop out rate with MMR vaccine in proportion with BCG and DPT3 is quite high, 17.2% respectively 13.7%,
24. Time interval between the doses is satisfied, and it is from 4 weeks to 6 weeks,
25. The most frequented institutions are the Main Family Medicine Center (Health Houses) and punctas, except for BCG and first dose of the hepatitis B vaccine where 91.8% respectively 92% of them were administered in the birthing centers or hospital,
26. Reasons of vaccination failure are: sick child, other reasons but not specified, and sick child was sent to family center but not vaccinated.

## 5. Recommendations

1. Using “Child Health Booklet” from all health institutions because of the positive effects created,
2. Vaccination teams should take care that all children should have and explain to the parents about importance to possess the “Child Health Booklet”,
3. Unvaccinated children of all communities including RAE community, should be identified and vaccinated with all antigens depending on their age and vaccination schedule,
4. It is necessary to organize local vaccination campaigns for the children who were not vaccinated with MMR and OPV vaccine with lower coverage,
5. Even when the child is sick, he/she should be brought for vaccination. Only health personnels should determine the possibility for contraindications,
6. Vaccination teams should always respect simultaneous administrations of the vaccines,
7. Personal vaccination cards and card on database must be filled in clear and proper way (not only to put +),
8. Opening new vaccination units to avoid campaign form of the vaccination,
9. Parents have to know, the exact date, time and place of the next vaccination,
10. To strengthen communication with parents (mother and father) for more easy access to vaccination services,
11. To support different social mobilization activities through media, schools and other organizations.

# Annex 1. – Forms

## Infant immunization 12 – 23 months

Lot sample size: 15

Lot number _____ Date ...../...../2010 Range of birth dates: From 24/05/2008 Until 26/05/2009	N A M E							TOTAL		
								Card	Card + History	Vaccine not given Not valid
Child number in LOT		1	2	3	4	5	6			
Gender (F/M)										
Birth date (D/M/Y)										
Immunization card	Yes/No/Lost									
BCG	Scar: Yes/No									
	Date/+0									
	Source									
DPT 1	Date/+0									
	Source									
DPT 2	Date/+0									
	Source									
DPT 3	Date/+0									
	Source									
OPV 1	Date/+0									
	Source									
OPV 2	Date/+0									
	Source									
OPV 3	Date/+0									
	Source									
MMR	Date/+0									
	Source									
Hepatitis B 1	Date/+0									
	Source									
Hepatitis B 2	Date/+0									
	Source									
Hepatitis B 3	Date/+0									
	Source									
Immunization status	Not immunized									
	Partially									
	Fully									
Fully immunized before one year, except MMR	Yes/No/Unknown							Yes	No	Unknown

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

Signature \_\_\_\_\_

Number of houses visited \_\_\_\_\_

## REASONS FOR IMMUNIZATION FAILURE

Lot number -----		<b>NOTE: ASK ONLY ONE QUESTION:</b> why was the child not fully immunized?  Mark (X) the single most important reason according to your judgment						
Date -----								
Child number in LOT		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	Total
Immunization status	Not immunized							
	Partially immunized							
	Fully immunized							
a. Unaware of need for immunization								
b. Unaware of need to return for next dose								
c. Place and/or time of immunization unknown								
d. Fear of sides effects								
e. Fear of injections								
f. Rumors (specify)								
g. Place of immunization to far away								
h. Time of immunization inconvenient								
i. Vaccinator absent								
j. Vaccinator told mother that child is fously immunized								
k. Vaccine not available								
l. Parent too busy								
m. Family problem including illness of mother								
n. Child ill – not brought								
o. Child ill – brought but not given immunization								
p. Long waiting time								
r. Other (specify)								
Age of mother								
Parents level of education								

### THE END OF INTERVIEW

Please, don't forget to thank the mother of the child for her time and for answering to your questions.

## Annex 2. – Coverage rate by card

Coverage rate DPT1 (card)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	13	0.867	0.019
16	Gjilan	115000	0.055	15	15	1.000	0.055
28	Dragash	38000	0.018	15	15	1.000	0.018
14	Skenderaj	56000	0.027	15	14	0.933	0.025
12	Gjakovë	115000	0.055	15	15	1.000	0.055
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	15	1.000	0.096
5	Lipjan	74000	0.035	15	14	0.933	0.033
9	Klinë	44000	0.021	15	9	0.600	0.013
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	15	1.000	0.050
15	Vushtrri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	15	1.000	0.027
25	Malishevë	52000	0.025	15	15	1.000	0.025
1	Prishtinë	300000	0.143	15	15	1.000	0.143
3	Obiliq	74000	0.035	15	15	1.000	0.035
4	F.Kosovë	35000	0.017	15	15	1.000	0.017
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	11	0.733	0.016
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	15	1.000	0.013
10	Deçan	45000	0.022	15	14	0.933	0.020
17	Kamenicë	60000	0.029	15	14	0.933	0.027
7	Pejë	115000	0.055	15	15	1.000	0.055
18	Viti	65000	0.031	15	15	1.000	0.031
2	Podujevë	97000	0.046	15	15	1.000	0.046
	Kosova	2091000	1.000	390	374	0.959	0.975

Coverage rate DPT2 (card)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	13	0.867	0.019
16	Gjilan	115000	0.055	15	15	1.000	0.055
28	Dragash	38000	0.018	15	15	1.000	0.018
14	Skenderaj	56000	0.027	15	14	0.933	0.025
12	Gjakovë	115000	0.055	15	15	1.000	0.055
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	15	1.000	0.096
5	Lipjan	74000	0.035	15	14	0.933	0.033
9	Klinë	44000	0.021	15	8	0.533	0.011
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	15	1.000	0.050
15	Vushtrri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	15	1.000	0.027
25	Malishevë	52000	0.025	15	15	1.000	0.025
1	Prishtinë	300000	0.143	15	15	1.000	0.143
3	Obiliq	74000	0.035	15	15	1.000	0.035
4	F.Kosovë	35000	0.017	15	13	0.867	0.015
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	10	0.667	0.015
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	15	1.000	0.013
10	Deçan	45000	0.022	15	14	0.933	0.020
17	Kamenicë	60000	0.029	15	14	0.933	0.027
7	Pejë	115000	0.055	15	15	1.000	0.055
18	Viti	65000	0.031	15	15	1.000	0.031
2	Podujevë	97000	0.046	15	15	1.000	0.046
	Kosovo	2091000	1.000	390	370	0.949	0.970

Coverage rate DPT3 (card)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	13	0.867	0.019
16	Gjilan	115000	0.055	15	15	1.000	0.055
28	Dragash	38000	0.018	15	15	1.000	0.018
14	Skenderaj	56000	0.027	15	14	0.933	0.025
12	Gjakovë	115000	0.055	15	15	1.000	0.055
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	15	1.000	0.096
5	Lipjan	74000	0.035	15	14	0.933	0.033
9	Klinë	44000	0.021	15	8	0.533	0.011
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	15	1.000	0.050
15	Vushtri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	15	1.000	0.027
25	Malishevë	52000	0.025	15	15	1.000	0.025
1	Prishtinë	300000	0.143	15	15	1.000	0.143
3	Obiliq	74000	0.035	15	14	0.933	0.033
4	F.Kosovë	35000	0.017	15	13	0.867	0.015
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	10	0.667	0.015
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	15	1.000	0.013
10	Deçan	45000	0.022	15	12	0.800	0.017
17	Kamenicë	60000	0.029	15	14	0.933	0.027
7	Pejë	115000	0.055	15	15	1.000	0.055
18	Viti	65000	0.031	15	14	0.933	0.029
2	Podujevë	97000	0.046	15	15	1.000	0.046
	Kosovo	2091000	1.000	390	366	0.938	0.963

Coverage rate OPV1 (card)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	13	0.867	0.019
16	Gjilan	115000	0.055	15	15	1.000	0.055
28	Dragash	38000	0.018	15	15	1.000	0.018
14	Skenderaj	56000	0.027	15	14	0.933	0.025
12	Gjakovë	115000	0.055	15	15	1.000	0.055
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	15	1.000	0.096
5	Lipjan	74000	0.035	15	14	0.933	0.033
9	Klinë	44000	0.021	16	8	0.500	0.011
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	15	1.000	0.050
15	Vushtri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	15	1.000	0.027
25	Malishevë	52000	0.025	15	15	1.000	0.025
1	Prishtinë	300000	0.143	15	15	1.000	0.143
3	Obiliq	74000	0.035	15	15	1.000	0.035
4	F.Kosovë	35000	0.017	15	15	1.000	0.017
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	11	0.733	0.016
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	15	1.000	0.013
10	Deçan	45000	0.022	15	14	0.933	0.020
17	Kamenicë	60000	0.029	15	14	0.933	0.027
7	Pejë	115000	0.055	15	15	1.000	0.055
18	Viti	65000	0.031	15	14	0.933	0.029
2	Podujevë	97000	0.046	15	15	1.000	0.046
	Kosovo	2091000	1.000	391	372	0.951	0.971

Coverage rate OPV2 (card)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	13	0.867	0.019
16	Gjilan	115000	0.055	15	15	1.000	0.055
28	Dragash	38000	0.018	15	15	1.000	0.018
14	Skenderaj	56000	0.027	15	14	0.933	0.025
12	Gjakovë	115000	0.055	15	15	1.000	0.055
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	15	1.000	0.096
5	Lipjan	74000	0.035	15	14	0.933	0.033
9	Klinë	44000	0.021	16	8	0.500	0.011
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	15	1.000	0.050
15	Vushtri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	15	1.000	0.027
25	Malishevë	52000	0.025	15	15	1.000	0.025
1	Prishtinë	300000	0.143	15	15	1.000	0.143
3	Obiliq	74000	0.035	15	15	1.000	0.035
4	F.Kosovë	35000	0.017	15	13	0.867	0.015
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	10	0.667	0.015
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	15	1.000	0.013
10	Deçan	45000	0.022	15	14	0.933	0.020
17	Kamenicë	60000	0.029	15	14	0.933	0.027
7	Pejë	115000	0.055	15	15	1.000	0.055
18	Viti	65000	0.031	15	14	0.933	0.029
2	Podujevë	97000	0.046	15	15	1.000	0.046
	Kosovo	2091000	1.000	391	369	0.944	0.967

Coverage rate OPV3 (card)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	13	0.867	0.019
16	Gjilan	115000	0.055	15	15	1.000	0.055
28	Dragash	38000	0.018	15	15	1.000	0.018
14	Skenderaj	56000	0.027	15	14	0.933	0.025
12	Gjakovë	115000	0.055	15	15	1.000	0.055
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	15	1.000	0.096
5	Lipjan	74000	0.035	15	14	0.933	0.033
9	Klinë	44000	0.021	16	8	0.500	0.011
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	15	1.000	0.050
15	Vushtri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	15	1.000	0.027
25	Malishevë	52000	0.025	15	15	1.000	0.025
1	Prishtinë	300000	0.143	15	15	1.000	0.143
3	Obiliq	74000	0.035	15	14	0.933	0.033
4	F.Kosovë	35000	0.017	15	12	0.800	0.013
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	10	0.667	0.015
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	15	1.000	0.013
10	Deçan	45000	0.022	15	12	0.800	0.017
17	Kamenicë	60000	0.029	15	14	0.933	0.027
7	Pejë	115000	0.055	15	15	1.000	0.055
18	Viti	65000	0.031	15	14	0.933	0.029
2	Podujevë	97000	0.046	15	15	1.000	0.046
	Kosovo	2091000	1.000	391	365	0.934	0.961

Coverage rate BCG (card)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	13	0.867	0.019
16	Gjilan	115000	0.055	15	15	1.000	0.055
28	Dragash	38000	0.018	15	15	1.000	0.018
14	Skenderaj	56000	0.027	15	14	0.933	0.025
12	Gjakovë	115000	0.055	15	15	1.000	0.055
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	15	1.000	0.096
5	Lipjan	74000	0.035	15	15	1.000	0.035
9	Klinë	44000	0.021	15	9	0.600	0.013
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	15	1.000	0.050
15	Vushtri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	15	1.000	0.027
25	Malishevë	52000	0.025	15	15	1.000	0.025
1	Prishtinë	300000	0.143	15	15	1.000	0.143
3	Obiliq	74000	0.035	15	15	1.000	0.035
4	F.Kosovë	35000	0.017	15	15	1.000	0.017
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	10	0.667	0.015
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	15	1.000	0.013
10	Deçan	45000	0.022	15	15	1.000	0.022
17	Kamenicë	60000	0.029	15	14	0.933	0.027
7	Pejë	115000	0.055	15	15	1.000	0.055
18	Viti	65000	0.031	15	15	1.000	0.031
2	Podujevë	97000	0.046	15	15	1.000	0.046
	Kosovo	2091000	1.000	390	375	0.962	0.978

Coverage rate Hepatitis B1 (card)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	13	0.867	0.019
16	Gjilan	115000	0.055	15	15	1.000	0.055
28	Dragash	38000	0.018	15	15	1.000	0.018
14	Skenderaj	56000	0.027	15	14	0.933	0.025
12	Gjakovë	115000	0.055	15	15	1.000	0.055
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	15	1.000	0.096
5	Lipjan	74000	0.035	15	14	0.933	0.033
9	Klinë	44000	0.021	15	9	0.600	0.013
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	15	1.000	0.050
15	Vushtri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	15	1.000	0.027
25	Malishevë	52000	0.025	15	15	1.000	0.025
1	Prishtinë	300000	0.143	15	15	1.000	0.143
3	Obiliq	74000	0.035	15	15	1.000	0.035
4	F.Kosovë	35000	0.017	15	15	1.000	0.017
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	11	0.733	0.016
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	15	1.000	0.013
10	Deçan	45000	0.022	15	15	1.000	0.022
17	Kamenicë	60000	0.029	15	14	0.933	0.027
7	Pejë	115000	0.055	15	15	1.000	0.055
18	Viti	65000	0.031	15	15	1.000	0.031
2	Podujevë	97000	0.046	15	15	1.000	0.046
	Kosovo	2091000	1.000	390	375	0.962	0.977

Coverage rate Hepatitis B2 (card)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	13	0.867	0.019
16	Gjilan	115000	0.055	15	15	1.000	0.055
28	Dragash	38000	0.018	15	15	1.000	0.018
14	Skenderaj	56000	0.027	15	14	0.933	0.025
12	Gjakovë	115000	0.055	15	15	1.000	0.055
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	15	1.000	0.096
5	Lipjan	74000	0.035	15	14	0.933	0.033
9	Klinë	44000	0.021	15	9	0.600	0.013
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	15	1.000	0.050
15	Vushtri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	15	1.000	0.027
25	Malishevë	52000	0.025	15	15	1.000	0.025
1	Prishtinë	300000	0.143	15	15	1.000	0.143
3	Obiliq	74000	0.035	15	15	1.000	0.035
4	F.Kosovë	35000	0.017	15	15	1.000	0.017
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	11	0.733	0.016
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	15	1.000	0.013
10	Deçan	45000	0.022	15	14	0.933	0.020
17	Kamenicë	60000	0.029	15	14	0.933	0.027
7	Pejë	115000	0.055	15	15	1.000	0.055
18	Viti	65000	0.031	15	15	1.000	0.031
2	Podujevë	97000	0.046	15	15	1.000	0.046
	Kosovo	2091000	1.000	390	374	0.959	0.975

Coverage rate Hepatitis B3 (card)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	12	0.800	0.017
16	Gjilan	115000	0.055	15	15	1.000	0.055
28	Dragash	38000	0.018	15	15	1.000	0.018
14	Skenderaj	56000	0.027	15	14	0.933	0.025
12	Gjakovë	115000	0.055	15	15	1.000	0.055
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	15	1.000	0.096
5	Lipjan	74000	0.035	15	14	0.933	0.033
9	Klinë	44000	0.021	15	9	0.600	0.013
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	15	1.000	0.050
15	Vushtri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	15	1.000	0.027
25	Malishevë	52000	0.025	15	15	1.000	0.025
1	Prishtinë	300000	0.143	15	15	1.000	0.143
3	Obiliq	74000	0.035	15	14	0.933	0.033
4	F.Kosovë	35000	0.017	15	13	0.867	0.015
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	10	0.667	0.015
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	15	1.000	0.013
10	Deçan	45000	0.022	15	13	0.867	0.019
17	Kamenicë	60000	0.029	15	14	0.933	0.027
7	Pejë	115000	0.055	15	15	1.000	0.055
18	Viti	65000	0.031	15	15	1.000	0.031
2	Podujevë	97000	0.046	15	15	1.000	0.046
	Kosovo	2091000	1.000	390	368	0.944	0.966

Coverage rate MMR (card)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	12	0.800	0.017
16	Gjilan	115000	0.055	15	14	0.933	0.051
28	Dragash	38000	0.018	15	13	0.867	0.016
14	Skenderaj	56000	0.027	15	10	0.667	0.018
12	Gjakovë	115000	0.055	15	14	0.933	0.051
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	7	0.467	0.045
5	Lipjan	74000	0.035	15	10	0.667	0.024
9	Klinë	44000	0.021	15	5	0.333	0.007
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	14	0.933	0.047
15	Vushtri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	14	0.933	0.025
25	Malishevë	52000	0.025	15	12	0.800	0.020
1	Prishtinë	300000	0.143	15	7	0.467	0.067
3	Obiliq	74000	0.035	15	13	0.867	0.031
4	F.Kosovë	35000	0.017	15	11	0.733	0.012
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	9	0.600	0.013
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	14	0.933	0.012
10	Deçan	45000	0.022	15	8	0.533	0.011
17	Kamenicë	60000	0.029	15	13	0.867	0.025
7	Pejë	115000	0.055	15	13	0.867	0.048
18	Viti	65000	0.031	15	14	0.933	0.029
2	Podujevë	97000	0.046	15	12	0.800	0.037
	Kosovo	2091000	1.000	390	314	0.805	0.762

## Annex 3. – Coverage rate by card and history

Coverage rate DPT1 (card and history)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	15	1.000	0.022
16	Gjilan	115000	0.055	15	15	1.000	0.055
28	Dragash	38000	0.018	15	15	1.000	0.018
14	Skenderaj	56000	0.027	15	15	1.000	0.027
12	Gjakovë	115000	0.055	15	15	1.000	0.055
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	15	1.000	0.096
5	Lipjan	74000	0.035	15	14	0.933	0.033
9	Klinë	44000	0.021	15	15	1.000	0.021
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	15	1.000	0.050
15	Vushtrri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	15	1.000	0.027
25	Malishevë	52000	0.025	15	15	1.000	0.025
1	Prishtinë	300000	0.143	15	15	1.000	0.143
3	Obiliq	74000	0.035	15	15	1.000	0.035
4	F.Kosovë	35000	0.017	15	15	1.000	0.017
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	15	1.000	0.022
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	15	1.000	0.013
10	Deçan	45000	0.022	15	14	0.933	0.020
17	Kamenicë	60000	0.029	15	15	1.000	0.029
7	Pejë	115000	0.055	15	15	1.000	0.055
18	Viti	65000	0.031	15	15	1.000	0.031
2	Podujevë	97000	0.046	15	15	1.000	0.046
	Kosova	2091000	1.000	390	388	0.995	0.996

Coverage rate DPT2 (card and history)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	15	1.000	0.022
16	Gjilan	115000	0.055	15	15	1.000	0.055
28	Dragash	38000	0.018	15	15	1.000	0.018
14	Skenderaj	56000	0.027	15	15	1.000	0.027
12	Gjakovë	115000	0.055	15	15	1.000	0.055
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	15	1.000	0.096
5	Lipjan	74000	0.035	15	14	0.933	0.033
9	Klinë	44000	0.021	15	14	0.933	0.020
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	15	1.000	0.050
15	Vushtrri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	15	1.000	0.027
25	Malishevë	52000	0.025	15	15	1.000	0.025
1	Prishtinë	300000	0.143	15	15	1.000	0.143
3	Obiliq	74000	0.035	15	15	1.000	0.035
4	F.Kosovë	35000	0.017	15	13	0.867	0.015
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	15	1.000	0.022
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	15	1.000	0.013
10	Deçan	45000	0.022	15	14	0.933	0.020
17	Kamenicë	60000	0.029	15	15	1.000	0.029
7	Pejë	115000	0.055	15	15	1.000	0.055
18	Viti	65000	0.031	15	15	1.000	0.031
2	Podujevë	97000	0.046	15	15	1.000	0.046
	Kosovo	2091000	1.000	390	385	0.987	0.993

Coverage rate DPT3 (card and history)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	15	1.000	0.022
16	Gjilan	115000	0.055	15	15	1.000	0.055
28	Dragash	38000	0.018	15	15	1.000	0.018
14	Skenderaj	56000	0.027	15	15	1.000	0.027
12	Gjakovë	115000	0.055	15	15	1.000	0.055
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	15	1.000	0.096
5	Lipjan	74000	0.035	15	14	0.933	0.033
9	Klinë	44000	0.021	15	14	0.933	0.020
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	15	1.000	0.050
15	Vushtrri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	15	1.000	0.027
25	Malishevë	52000	0.025	15	15	1.000	0.025
1	Prishtinë	300000	0.143	15	15	1.000	0.143
3	Obiliq	74000	0.035	15	14	0.933	0.033
4	F.Kosovë	35000	0.017	15	13	0.867	0.015
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	14	0.933	0.021
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	15	1.000	0.013
10	Deçan	45000	0.022	15	12	0.800	0.017
17	Kamenicë	60000	0.029	15	15	1.000	0.029
7	Pejë	115000	0.055	15	15	1.000	0.055
18	Viti	65000	0.031	15	14	0.933	0.029
2	Podujevë	97000	0.046	15	15	1.000	0.046
	Kosovo	2091000	1.000	390	380	0.974	0.984

Coverage rate OPV1 (card and history)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	15	1.000	0.022
16	Gjilan	115000	0.055	15	15	1.000	0.055
28	Dragash	38000	0.018	15	15	1.000	0.018
14	Skenderaj	56000	0.027	15	15	1.000	0.027
12	Gjakovë	115000	0.055	15	15	1.000	0.055
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	15	1.000	0.096
5	Lipjan	74000	0.035	15	14	0.933	0.033
9	Klinë	44000	0.021	16	14	0.875	0.018
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	15	1.000	0.050
15	Vushtrri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	15	1.000	0.027
25	Malishevë	52000	0.025	15	15	1.000	0.025
1	Prishtinë	300000	0.143	15	15	1.000	0.143
3	Obiliq	74000	0.035	15	15	1.000	0.035
4	F.Kosovë	35000	0.017	15	15	1.000	0.017
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	14	0.933	0.021
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	15	1.000	0.013
10	Deçan	45000	0.022	15	14	0.933	0.020
17	Kamenicë	60000	0.029	15	15	1.000	0.029
7	Pejë	115000	0.055	15	15	1.000	0.055
18	Viti	65000	0.031	15	14	0.933	0.029
2	Podujevë	97000	0.046	15	15	1.000	0.046
	Kosovo	2091000	1.000	391	385	0.985	0.990

Coverage rate OPV2 (card and history)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	15	1.000	0.022
16	Gjilan	115000	0.055	15	15	1.000	0.055
28	Dragash	38000	0.018	15	15	1.000	0.018
14	Skenderaj	56000	0.027	15	15	1.000	0.027
12	Gjakovë	115000	0.055	15	15	1.000	0.055
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	15	1.000	0.096
5	Lipjan	74000	0.035	15	14	0.933	0.033
9	Klinë	44000	0.021	16	14	0.875	0.018
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	15	1.000	0.050
15	Vushtrri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	15	1.000	0.027
25	Malishevë	52000	0.025	15	15	1.000	0.025
1	Prishtinë	300000	0.143	15	15	1.000	0.143
3	Obiliq	74000	0.035	15	15	1.000	0.035
4	F.Kosovë	35000	0.017	15	13	0.867	0.015
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	14	0.933	0.021
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	15	1.000	0.013
10	Deçan	45000	0.022	15	14	0.933	0.020
17	Kamenicë	60000	0.029	15	15	1.000	0.029
7	Pejë	115000	0.055	15	15	1.000	0.055
18	Viti	65000	0.031	15	14	0.933	0.029
2	Podujevë	97000	0.046	15	15	1.000	0.046
	Kosovo	2091000	1.000	391	383	0.980	0.988

Coverage rate OPV3 (card and history)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	15	1.000	0.022
16	Gjilan	115000	0.055	15	15	1.000	0.055
28	Dragash	38000	0.018	15	15	1.000	0.018
14	Skenderaj	56000	0.027	15	15	1.000	0.027
12	Gjakovë	115000	0.055	15	15	1.000	0.055
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	15	1.000	0.096
5	Lipjan	74000	0.035	15	14	0.933	0.033
9	Klinë	44000	0.021	16	14	0.875	0.018
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	15	1.000	0.050
15	Vushtrri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	15	1.000	0.027
25	Malishevë	52000	0.025	15	15	1.000	0.025
1	Prishtinë	300000	0.143	15	15	1.000	0.143
3	Obiliq	74000	0.035	15	14	0.933	0.033
4	F.Kosovë	35000	0.017	15	12	0.800	0.013
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	14	0.933	0.021
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	15	1.000	0.013
10	Deçan	45000	0.022	15	12	0.800	0.017
17	Kamenicë	60000	0.029	15	15	1.000	0.029
7	Pejë	115000	0.055	15	15	1.000	0.055
18	Viti	65000	0.031	15	14	0.933	0.029
2	Podujevë	97000	0.046	15	15	1.000	0.046
	Kosovo	2091000	1.000	391	379	0.969	0.981

Coverage rate BCG (card and history)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	15	1.000	0.022
16	Gjilan	115000	0.055	15	15	1.000	0.055
28	Dragash	38000	0.018	15	15	1.000	0.018
14	Skenderaj	56000	0.027	15	15	1.000	0.027
12	Gjakovë	115000	0.055	15	15	1.000	0.055
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	15	1.000	0.096
5	Lipjan	74000	0.035	15	15	1.000	0.035
9	Klinë	44000	0.021	15	15	1.000	0.021
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	15	1.000	0.050
15	Vushtrri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	15	1.000	0.027
25	Malishevë	52000	0.025	15	15	1.000	0.025
1	Prishtinë	300000	0.143	15	15	1.000	0.143
3	Obiliq	74000	0.035	15	15	1.000	0.035
4	F.Kosovë	35000	0.017	15	15	1.000	0.017
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	15	1.000	0.022
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	15	1.000	0.013
10	Deçan	45000	0.022	15	15	1.000	0.022
17	Kamenicë	60000	0.029	15	15	1.000	0.029
7	Pejë	115000	0.055	15	15	1.000	0.055
18	Viti	65000	0.031	15	15	1.000	0.031
2	Podujevë	97000	0.046	15	15	1.000	0.046
	Kosovo	2091000	1.000	390	390	1.000	1.000

Coverage rate Hepatitis B1 (card and history)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	15	1.000	0.022
16	Gjilan	115000	0.055	15	15	1.000	0.055
28	Dragash	38000	0.018	15	15	1.000	0.018
14	Skenderaj	56000	0.027	15	15	1.000	0.027
12	Gjakovë	115000	0.055	15	15	1.000	0.055
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	15	1.000	0.096
5	Lipjan	74000	0.035	15	14	0.933	0.033
9	Klinë	44000	0.021	15	15	1.000	0.021
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	15	1.000	0.050
15	Vushtrri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	15	1.000	0.027
25	Malishevë	52000	0.025	15	15	1.000	0.025
1	Prishtinë	300000	0.143	15	15	1.000	0.143
3	Obiliq	74000	0.035	15	15	1.000	0.035
4	F.Kosovë	35000	0.017	15	15	1.000	0.017
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	15	1.000	0.022
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	15	1.000	0.013
10	Deçan	45000	0.022	15	15	1.000	0.022
17	Kamenicë	60000	0.029	15	15	1.000	0.029
7	Pejë	115000	0.055	15	15	1.000	0.055
18	Viti	65000	0.031	15	15	1.000	0.031
2	Podujevë	97000	0.046	15	15	1.000	0.046
	Kosovo	2091000	1.000	390	389	0.997	0.998

Coverage rate Hepatitis B2 (card and history)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	13	0.867	0.019
16	Gjilan	115000	0.055	15	15	1.000	0.055
28	Dragash	38000	0.018	15	15	1.000	0.018
14	Skenderaj	56000	0.027	15	15	1.000	0.027
12	Gjakovë	115000	0.055	15	15	1.000	0.055
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	15	1.000	0.096
5	Lipjan	74000	0.035	15	14	0.933	0.033
9	Klinë	44000	0.021	15	15	1.000	0.021
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	15	1.000	0.050
15	Vushtrri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	15	1.000	0.027
25	Malishevë	52000	0.025	15	15	1.000	0.025
1	Prishtinë	300000	0.143	15	15	1.000	0.143
3	Obiliq	74000	0.035	15	15	1.000	0.035
4	F.Kosovë	35000	0.017	15	15	1.000	0.017
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	15	1.000	0.022
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	15	1.000	0.013
10	Deçan	45000	0.022	15	14	0.933	0.020
17	Kamenicë	60000	0.029	15	15	1.000	0.029
7	Pejë	115000	0.055	15	15	1.000	0.055
18	Viti	65000	0.031	15	15	1.000	0.031
2	Podujevë	97000	0.046	15	15	1.000	0.046
	Kosovo	2091000	1.000	390	386	0.990	0.993

Coverage rate Hepatitis B3 (card and history)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	15	1.000	0.022
16	Gjilan	115000	0.055	15	15	1.000	0.055
28	Dragash	38000	0.018	15	15	1.000	0.018
14	Skenderaj	56000	0.027	15	15	1.000	0.027
12	Gjakovë	115000	0.055	15	15	1.000	0.055
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	15	1.000	0.096
5	Lipjan	74000	0.035	15	14	0.933	0.033
9	Klinë	44000	0.021	15	15	1.000	0.021
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	15	1.000	0.050
15	Vushtrri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	15	1.000	0.027
25	Malishevë	52000	0.025	15	15	1.000	0.025
1	Prishtinë	300000	0.143	15	15	1.000	0.143
3	Obiliq	74000	0.035	15	14	0.933	0.033
4	F.Kosovë	35000	0.017	15	13	0.867	0.015
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	14	0.933	0.021
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	15	1.000	0.013
10	Deçan	45000	0.022	15	13	0.867	0.019
17	Kamenicë	60000	0.029	15	15	1.000	0.029
7	Pejë	115000	0.055	15	15	1.000	0.055
18	Viti	65000	0.031	15	15	1.000	0.031
2	Podujevë	97000	0.046	15	15	1.000	0.046
	Kosovo	2091000	1.000	390	383	0.982	0.989

Coverage rate MMR (card and history)							
LOT Number	Name of LOT	Population of the LOT	Weight	Sample size	Number of immunized	Proportion of immunized	Coverage
22	Kaçanik	45000	0.022	15	14	0.933	0.020
16	Gjilan	115000	0.055	15	14	0.933	0.051
28	Dragash	38000	0.018	15	13	0.867	0.016
14	Skenderaj	56000	0.027	15	11	0.733	0.020
12	Gjakovë	115000	0.055	15	14	0.933	0.051
20	Ferizaj	113000	0.054	15	15	1.000	0.054
24	Prizren	200000	0.096	15	7	0.467	0.045
5	Lipjan	74000	0.035	15	10	0.667	0.024
9	Klinë	44000	0.021	15	10	0.667	0.014
27	Rahovec	60000	0.029	15	15	1.000	0.029
13	Mitrovicë	105000	0.050	15	14	0.933	0.047
15	Vushtrri	79000	0.038	15	15	1.000	0.038
6	Drenas	56000	0.027	15	14	0.933	0.025
25	Malishevë	52000	0.025	15	12	0.800	0.020
1	Prishtinë	300000	0.143	15	7	0.467	0.067
3	Obiliq	74000	0.035	15	13	0.867	0.031
4	F.Kosovë	35000	0.017	15	11	0.733	0.012
26	Therandë	68000	0.033	15	15	1.000	0.033
8	Burim	47000	0.022	15	11	0.733	0.016
19	Novo Bërd	5000	0.002	15	15	1.000	0.002
21	Shtime	28000	0.013	15	14	0.933	0.012
10	Deçan	45000	0.022	15	8	0.533	0.011
17	Kamenicë	60000	0.029	15	14	0.933	0.027
7	Pejë	115000	0.055	15	13	0.867	0.048
18	Viti	65000	0.031	15	14	0.933	0.029
2	Podujevë	97000	0.046	15	12	0.800	0.037
	Kosovo	2091000	1.000	390	325	0.833	0.779

**Project  
Coordinator**

Prof.ass.dr Isme  
Humolli

**Report  
prepared by**

Prof.dr Isuf  
Dedushaj  
Prof.ass.dr Isme  
Humolli

**Supervisors**

Dr. Sinan  
Rizvanolli  
Dr. Lebibe  
Hashani  
Dr. Fatmire  
Mulhaxha  
Dr. Burbuqe  
Shkodra  
Dr. Teuta Fejza  
Dr. Pranvera  
Kaçaniku  
Dr. Edita Haxhiu

**Interviewers**

Dr. Naim Sveçla  
Florie Rashani  
Dr. Fadil  
Dabonovci  
Ibadete Gashi  
Dr. Rejhane  
Zhushi  
Shahbaz Kovaçi  
Arbëresha  
Krasniqi  
Vjollca  
Bëbratovci  
Dr. Naim Avdiu  
Elife Merovci  
Dr. Hatip Hulaj  
Besim S.  
Berisha  
Dr. Vjosa  
Muhaxheri  
Luljeta Berisha  
Dr. Lumnije  
Sadikaj  
Gjylshahe  
Avdijaj  
Shehide Rraci  
Tema Gashi  
Ajshe Thaçi  
Filloreta  
Selmanaj  
Teuta Leti  
Leonora Bakija  
Dr. Shefkate  
Sylejmani  
Igballe Dubovci  
Shukrane  
Jukoviq  
Fatmir Osmani  
Avdullah Ademi  
Fikrete Pllana  
Xhevrije Kuçi  
Dr. Isme Uruqi  
Minush Dauti  
Dr. Nijazi Hoda  
Sanije Morina  
Dr. Ismajl  
Bekteshi  
Feime Qerimi  
Kumrije Krasniqi

Dr. Shqipe  
Krasniqi  
Avdyl Lokaj  
Dr. Rrahim Veliu  
Dr. Shpresa  
Mustafa  
Imrije Ramadani  
Lumnije  
Krasniqi  
Dr. Ismet Jetishi  
Zyla Hasani  
Lida  
Jakup Koxha  
Hamdi Dullovi  
Masar Shala  
Nehale  
Shëndeti  
Ragip Morina  
Hasan Hoti  
Ismet Hoxha  
Xhylnaze Aliu  
Nazlije  
Limanhaxhiu  
Arbenita Sahiti  
Hivzi Halimi  
Agim Dauti  
Halil Selmani

**Drivers**

Muhamet  
Krasniqi  
Ali Kadrijaj  
Selatin Kazaz  
Ahmet Dërnari  
Fehmi Haziri  
Ideal Gashi  
Zeqir Osmani  
Përparim Musa  
Adlije Shaqiri-  
Kurti  
Minush Dauti  
Ragip Morina  
Nevzat Pllana  
Hamdi Dullovi  
Ferat Bekaj  
Teuta Bacaj  
Adem Dalipi  
Iilir Nushi  
Ridvan Hashani  
Mevlyde Zymeri  
Naim Bala  
Xhavit Durmishi  
Haxhi  
Rexhëahmetaj  
Edmond Lajçi  
Mustafë Nura  
Nasuf Krasniqi  
Enver Sabedini  
Shaqir Ibrahim  
Sead Halili  
Dalip Aliu  
Nevzat Pllana  
Sahit Tahiri  
Daut Abdullahu  
Milazim Zogaj