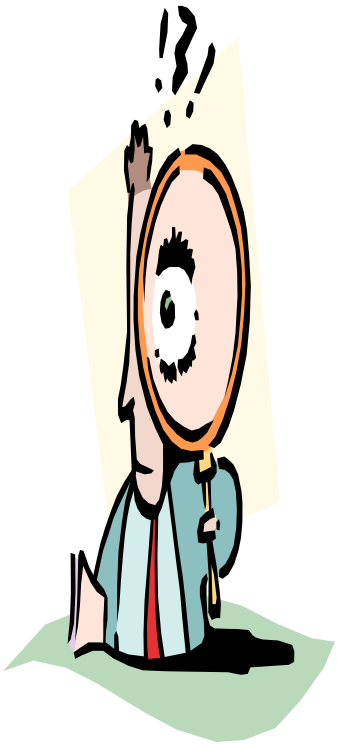


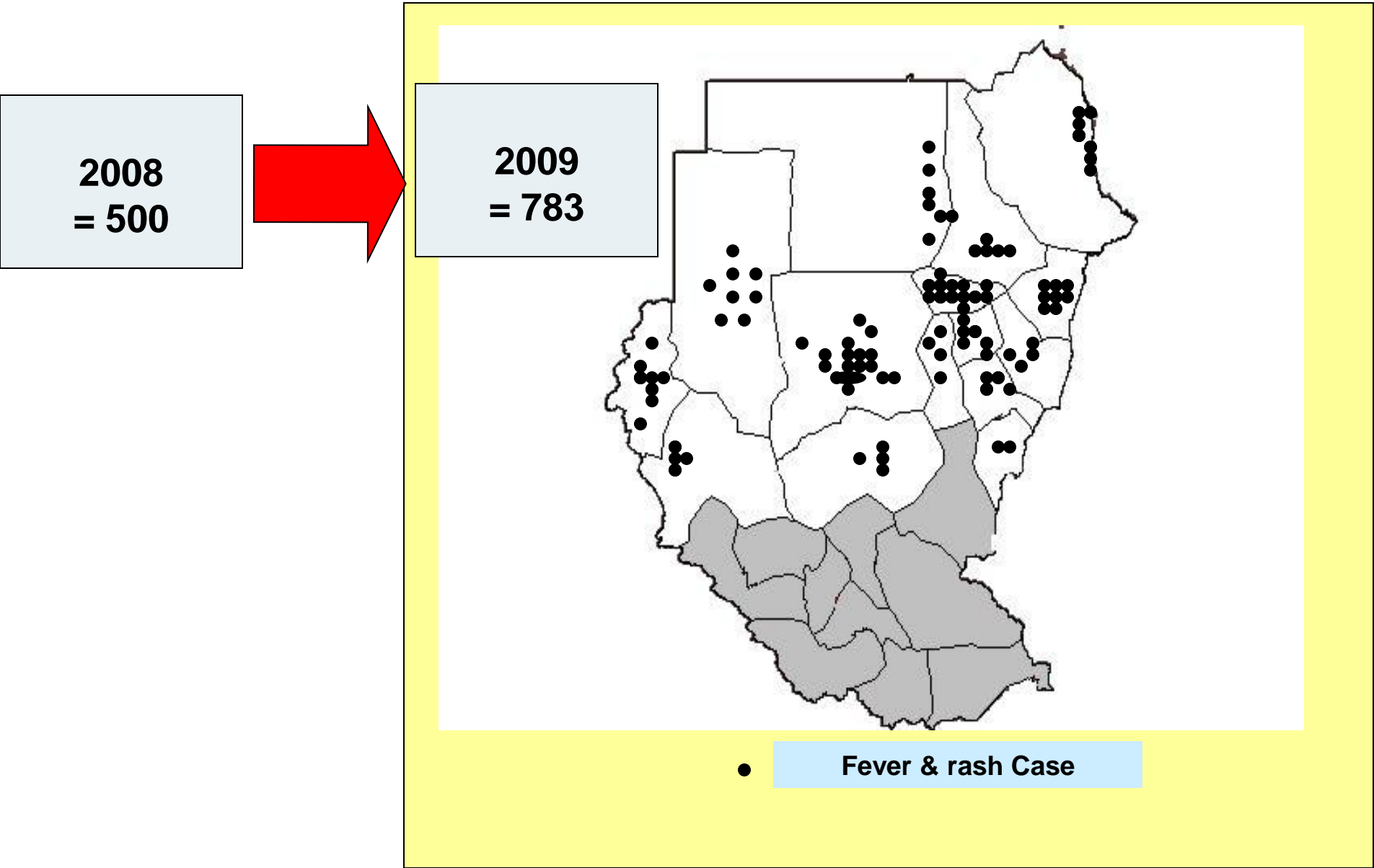
**Update**  
**Weekly Measles**  
**Surveillance Report**  
**Sudan**  
**(( Northern states))**

**Week 52**

**(Ending On 01/01/2010)**

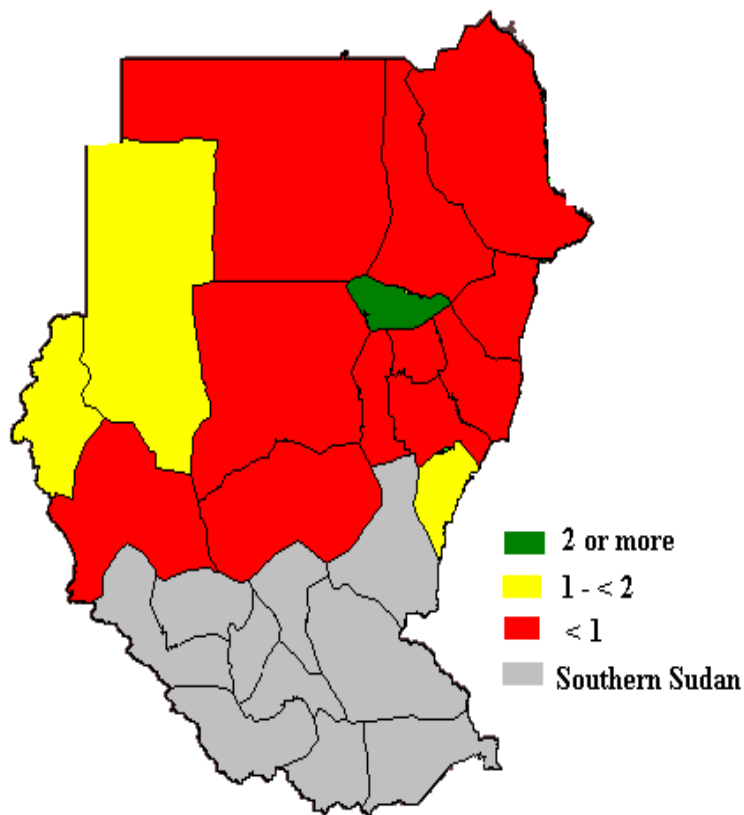


# Figure (1): Distribution of Fever and rash Cases By State Up to W52(2008 -2009)



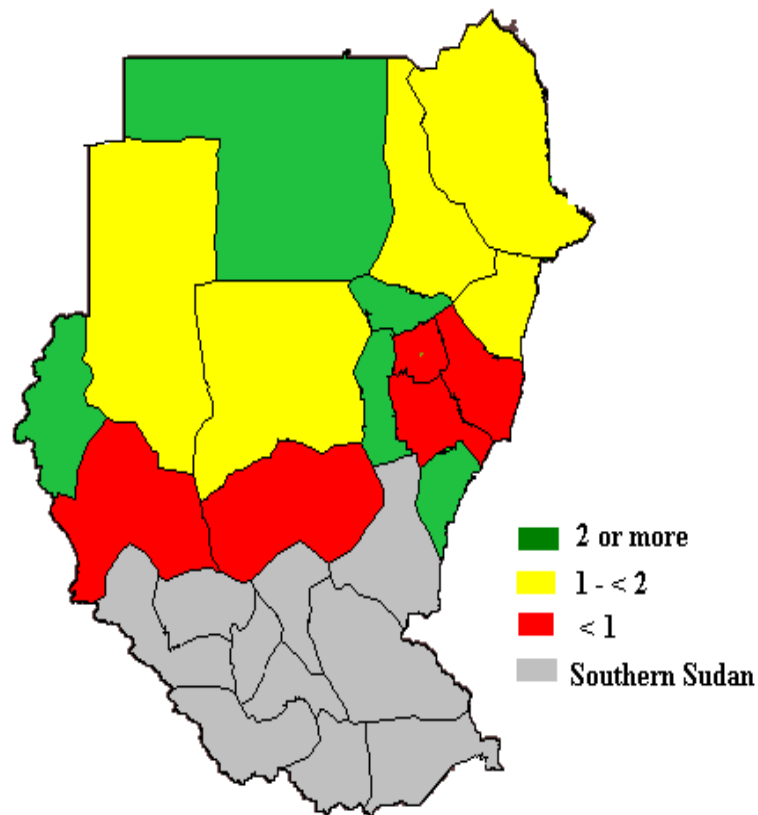
# Figure (2): Rate of Non-Measles Cases /100,000 Population By State Up to W 52 (2008 -2009)

2008



2009

Target = 2/100,000 pop.



Sudan Annualized 2008 Up to Week 52 = 1.2

Sudan Annualized 2009 Up to Week 52 = 2.04

**Table (1):Type of Samples Collected Form Fever and rash Cases  
By State Up to W.52 2009**

<b>State</b>	<b>Fever &amp; rash cases</b>	<b>blood samples</b>	<b>Dry Blood</b>	<b>Urine samples</b>	<b>Throat swap</b>	<b>Oral fluid</b>
<b>Blue Nile</b>	<b>103</b>	<b>24</b>	<b>0</b>	<b>19</b>	<b>19</b>	<b>2</b>
<b>Gadarif</b>	<b>13</b>	<b>12</b>	<b>0</b>	<b>9</b>	<b>7</b>	<b>0</b>
<b>Gazira</b>	<b>44</b>	<b>36</b>	<b>0</b>	<b>5</b>	<b>2</b>	<b>6</b>
<b>Kassala</b>	<b>19</b>	<b>18</b>	<b>0</b>	<b>17</b>	<b>4</b>	<b>3</b>
<b>Khartoum</b>	<b>314</b>	<b>254</b>	<b>9</b>	<b>79</b>	<b>9</b>	<b>31</b>
<b>N. Darfur</b>	<b>37</b>	<b>30</b>	<b>0</b>	<b>35</b>	<b>8</b>	<b>9</b>
<b>N. Kordofan</b>	<b>49</b>	<b>26</b>	<b>0</b>	<b>34</b>	<b>0</b>	<b>11</b>
<b>Northern</b>	<b>15</b>	<b>13</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>1</b>
<b>Red Sea</b>	<b>10</b>	<b>10</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>
<b>River Nile</b>	<b>14</b>	<b>13</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>0</b>
<b>Sennar</b>	<b>9</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>S.Darfur</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>S.Kordofan</b>	<b>11</b>	<b>10</b>	<b>0</b>	<b>11</b>	<b>1</b>	<b>0</b>
<b>W.Darfur</b>	<b>93</b>	<b>63</b>	<b>0</b>	<b>30</b>	<b>2</b>	<b>2</b>
<b>White Nile</b>	<b>47</b>	<b>21</b>	<b>0</b>	<b>18</b>	<b>15</b>	<b>3</b>
<b>Total</b>	<b>783</b>	<b>544</b>	<b>9</b>	<b>273</b>	<b>67</b>	<b>68</b>

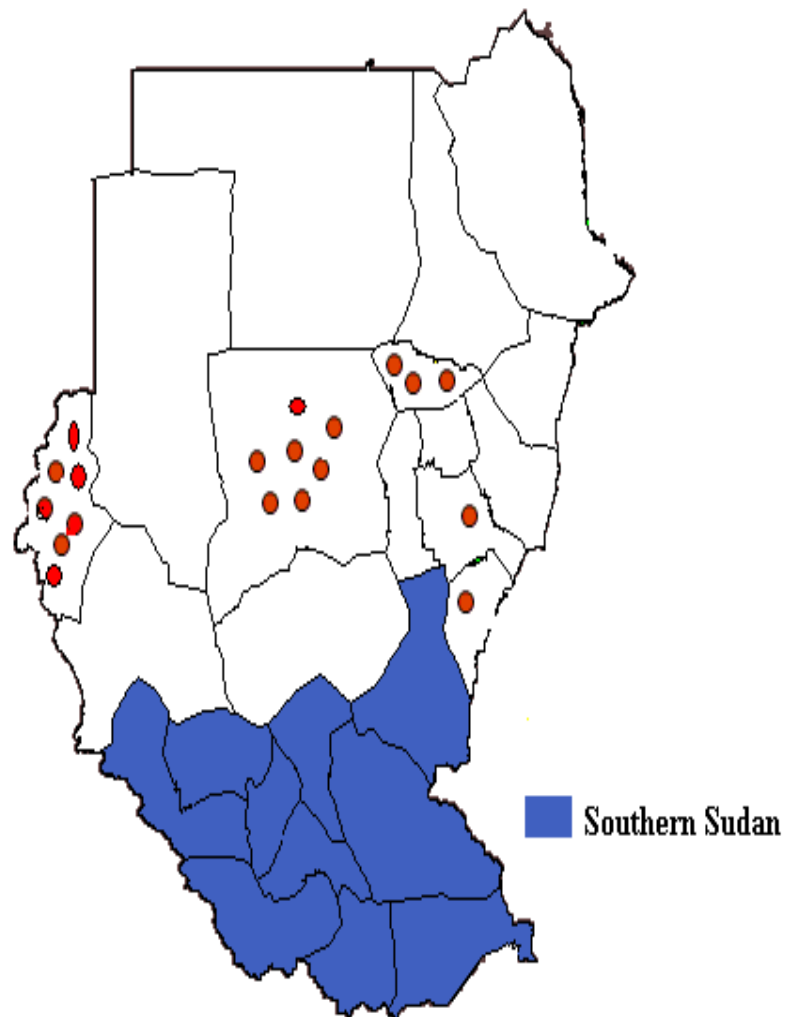
# Table (2): Classification of Fever and rash Up to W.52 2009

State	Reported cases	Samples for serology	M.	R.	EQ UI.M	EQ UI.R	Discarded	Measles Epi-Linked	Rubella Epi-Linked	Clinically Diagnosed Measles	Total Measles Cases
Blue Nile	103	26	1	11	0	0	14	0	77	0	1
GEDARIF	13	12	0	4	0	1	7	0	0	1	1
GEZAIRA	44	40	0	11	0	0	29	0	0	4	4
KASSALA	19	19	0	7	0	0	12	0	0	0	0
KHARTOUM	314	294	3	94	1	2	194	0	18	2	5
N. Darfur	37	36	0	12	0	0	24	0	0	1	1
N. Kordofan	49	35	7	4	0	0	24	13	0	1	21
NORTHERN	15	14	0	0	0	0	14	0	0	1	1
RED SEA	10	10	0	2	0	1	7	0	0	0	0
REVER NILE	14	13	0	11	0	0	2	0	0	1	1
SENNAR	9	9	1	3	0	0	5	0	0	0	1
SOUTH DAR.	5	5	0	0	0	0	5	0	0	0	0
SOUTHKOR.	11	10	0	1	0	0	9	0	0	1	1
WEST DAR.	93	63	15	26	0	0	22	3	15	12	30
White Nile	47	21	0	17	0	0	4	0	25	1	1
<b>Total</b>	<b>783</b>	<b>607</b>	<b>27</b>	<b>203</b>	<b>1</b>	<b>4</b>	<b>372</b>	<b>16</b>	<b>135</b>	<b>25</b>	<b>68</b>

**Figure (3): Distribution of Lab. Confirmed Measles Cases By States and locality up to W52 2009**

**N = 27**

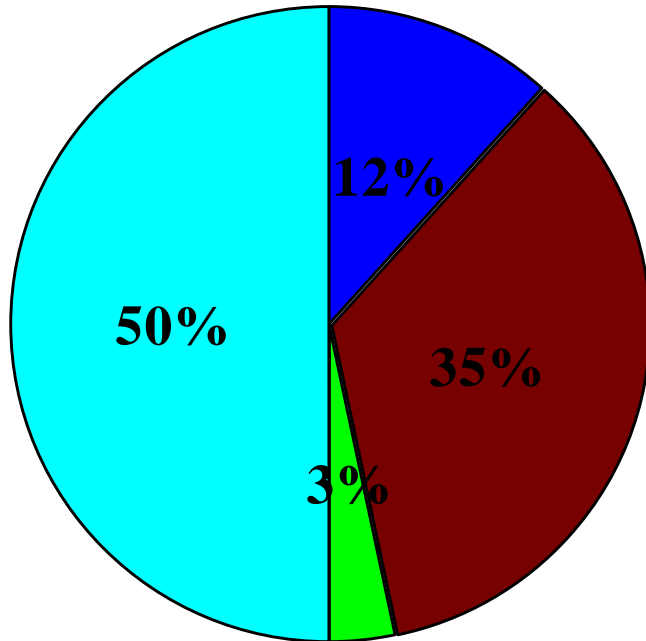
Localities	No. confirmed cases
Sharg Elneel	1
Karary	1
Khartoum	1
Alsooki	1
Elginaina	1
Karainek	2
Forbrainega	12
Eldamazine	1
Bara	6
Shekan	1
<b>Total</b>	<b>27</b>



• 1 dot = 1 case

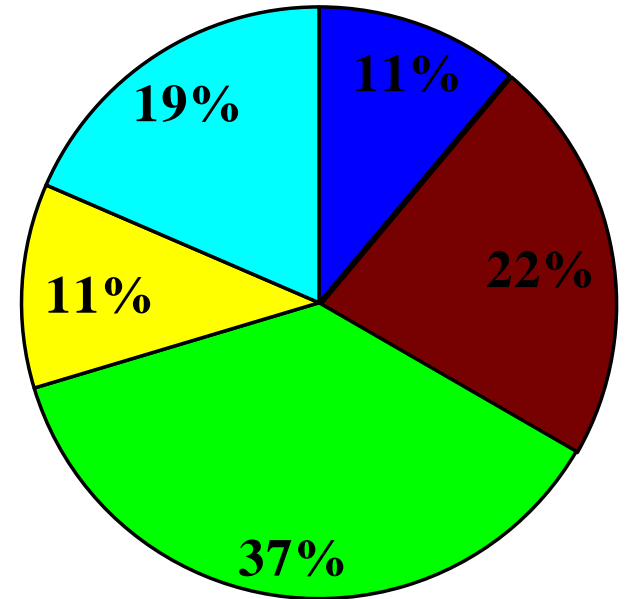
# Figure (4): Distribution Of Lab Confirmed Measles Cases By Age Groups 2008-2009

2008 N = 61



■ 1 < y ■ 1-4 y ■ 5-9 y ■ 10-14y ■ 15+y

2009 N=27

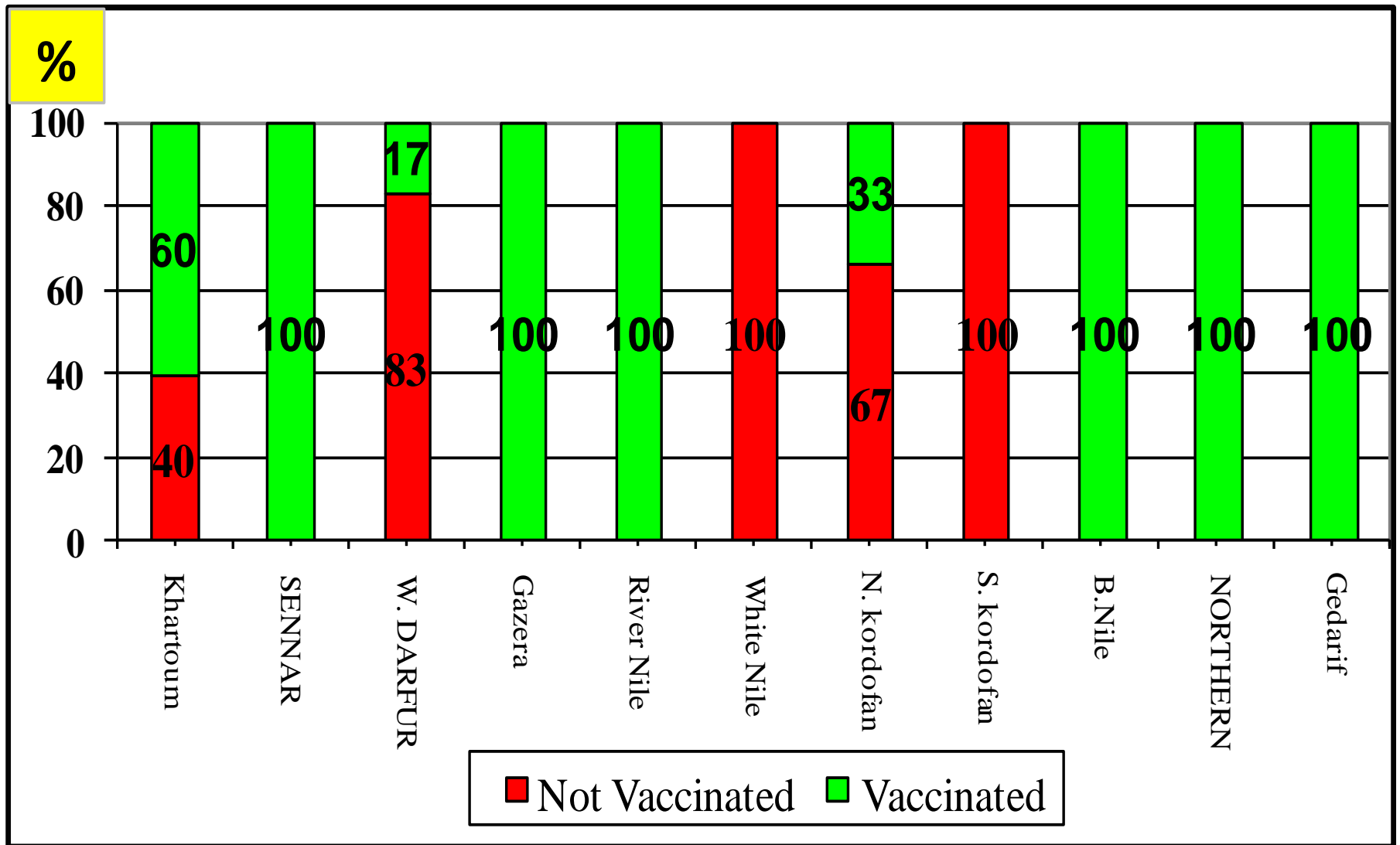


■ 1 < y ■ 1-4 y ■ 5-9 y ■ 10-14y ■ 15+y

Annual 2008

up to W52 2009

**Figure (5): Vaccination Status of Confirmed Measles by State up to W52 2009 (N=68)**





**Table (3): Incidence Rate of Confirmed Cases /1000,000 Population  
By Age Groups 2008- 2009**

**2008 N= 109**

Age group	pop	cases	incidence
<1	1121278	12	10.7
1-5Y	4037564	34	8.4
6-15Y	8495642	11	1.3
>15	19327448	52	2.7
<b>Total</b>	<b>32,981,933</b>	<b>109</b>	<b>3.3</b>

**2009 N= 68**

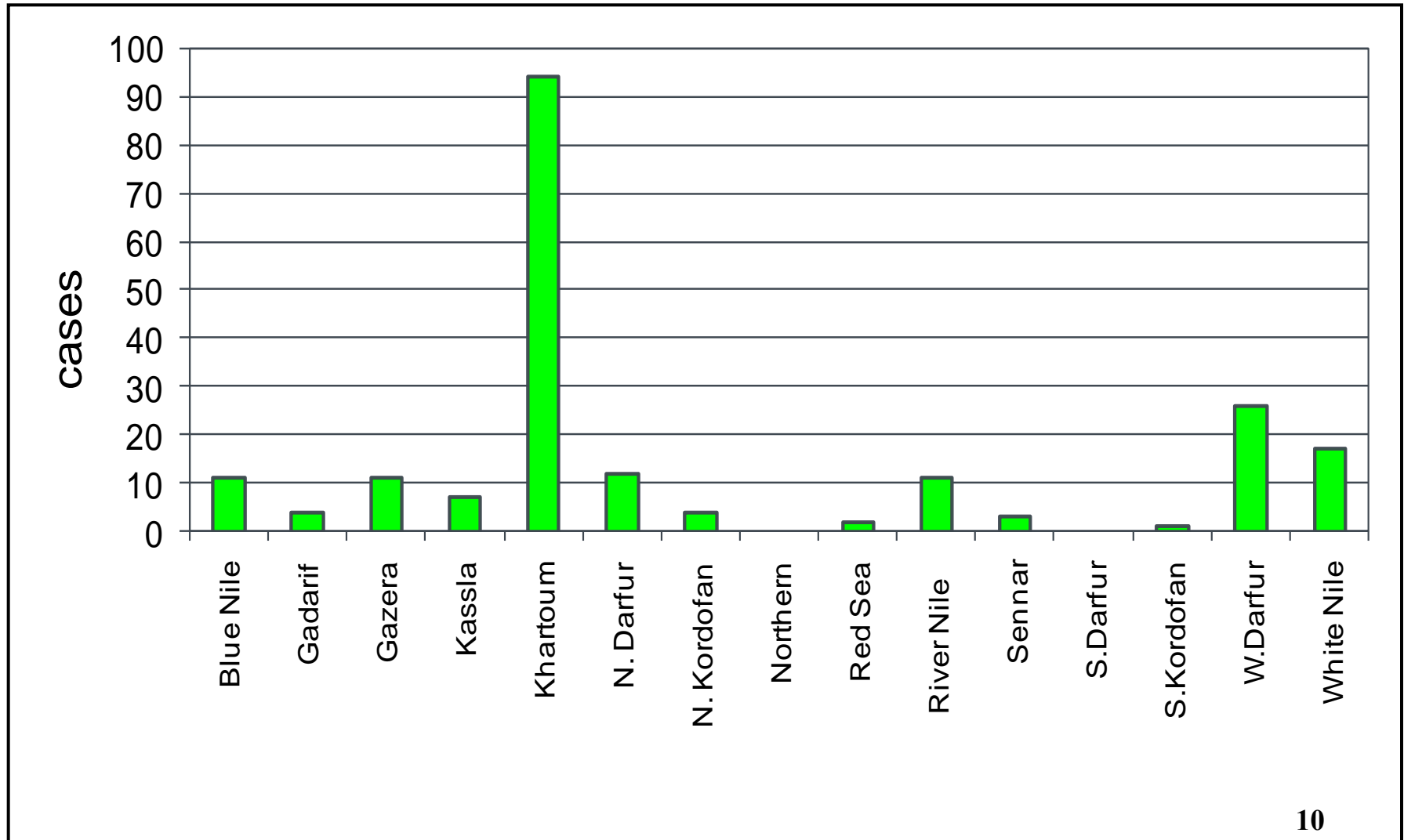
Age group	pop	cases	incidence
<1	1180075	8	6.78
1-5Y	4282406	30	7.01
6-15Y	9017887	18	2.00
>15	20267222	12	0.59
<b>Total</b>	<b>34,747,589</b>	<b>68</b>	<b>1.96</b>

**Annual 2008**

**Up to Week 52**

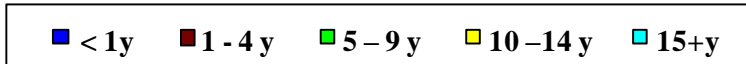
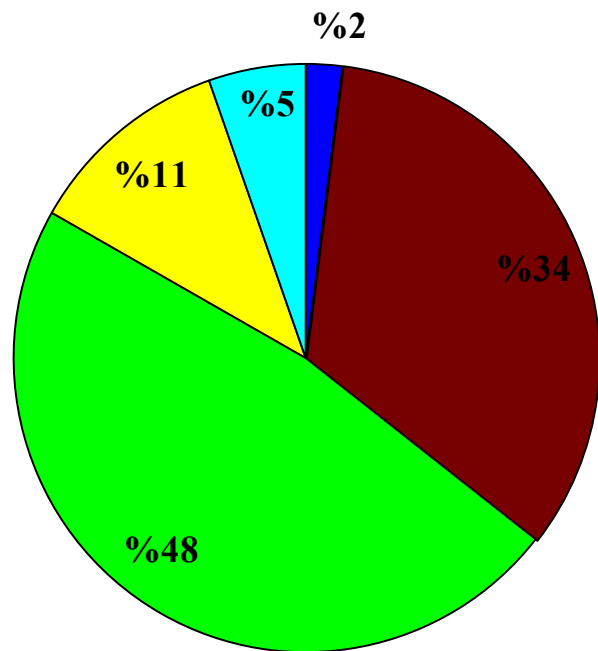
**Figure (6) :Distribution Of lab confirmed Rubella Cases by State up to W52 2009**

**N= 203**

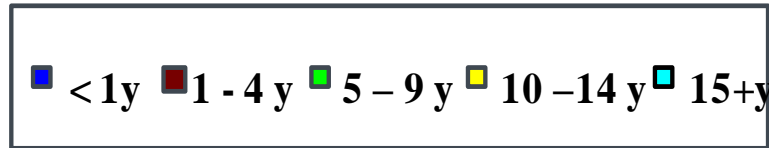
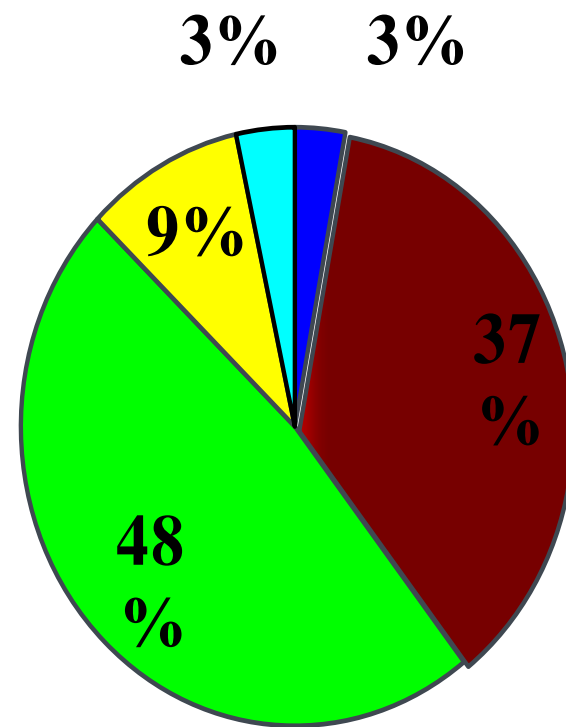


# Figure (7): Distribution Of Lab Confirmed Rubella Cases By Age Groups 2008-2009

2008 N=153



2009 n=203



**Table (4) : Field Surveillance Indicators By State Up to W. 52 2009 (Target = >80%)**

<b>State</b>	<b>Fever &amp; Rash cases</b>	<b>%investigated within &lt;48 h</b>	<b>% Notification&lt;7 days of rash onset</b>
Blue Nile	103	100	85
Gadarif	13	100	100
Gazira	44	100	93
Kassala	19	100	100
Khartoum	314	97	90
N. Darfur	37	97	97
N. Kordofan	49	100	71
Northern	15	93	87
Red Sea	10	90	100
River Nile	14	100	79
Sennar	9	67	100
S.Darfur	5	100	100
S.Kordofan	11	100	82
W.Darfur	93	96	89
White Nile	47	96	79
<b>Total</b>	<b>783</b>	<b>97</b>	<b>88</b>

**Table (5) : Field Surveillance Indicators By State Up to W. 52 2009 (Target = >80%)**

<b>State</b>	<b>Fever &amp; Rash cases</b>	<b>%of blood samples collected</b>	<b>% adequacy</b>
Blue Nile	103	100	100
Gadarif	13	92	100
Gazira	44	90	99
Kassala	19	100	97
Khartoum	314	99	98
N. Darfur	37	97	93
N. Kordofan	49	96	100
Northern	15	93	100
Red Sea	10	100	100
River Nile	14	93	100
Sennar	9	100	100
S.Darfur	5	100	90
S.Kordofan	11	91	100
W.Darfur	93	84	88
White Nile	47	95	100
<b>Total</b>	<b>783</b>	<b>96</b>	<b>97</b>

**Table(6) : Measles Field Surveillance Indicators Up to 52  
2008 - 2009**

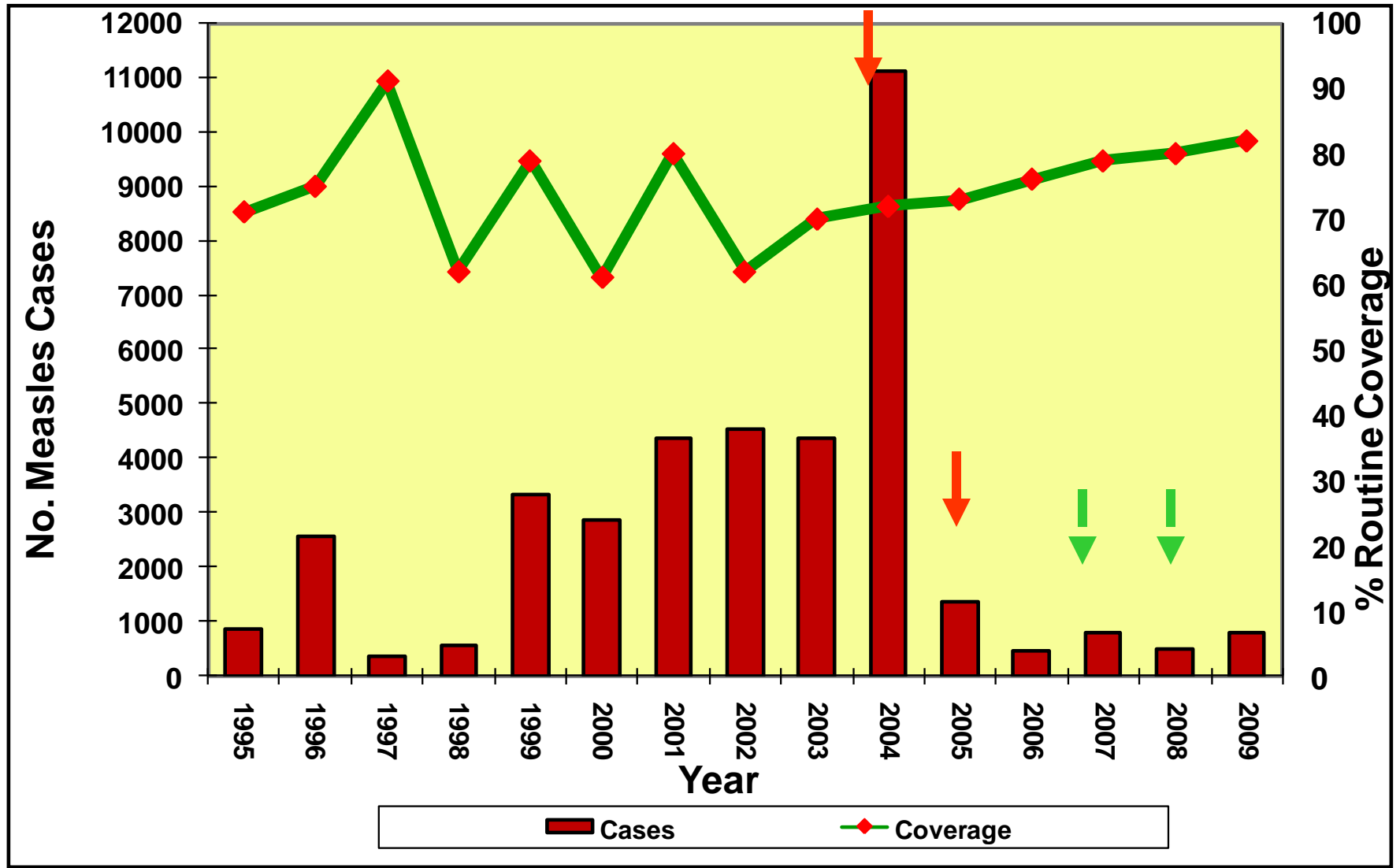
<b>Indicators</b>	<b>2008</b>	<b>2009</b>
Rate of Non- Measles Cases/100,000pop	<b>1.2</b>	<b>2.0</b>
Confirmed	<b>109</b>	<b>70</b>
Clinically Diagnosed	<b>26</b>	<b>27</b>
Lab confirmed	<b>60</b>	<b>27</b>
Measles EPI-link	<b>23</b>	<b>16</b>
% Blood samples	<b>93</b>	<b>96</b>
% Adequacy of samples	<b>93</b>	<b>97</b>
% Notification<7 days of rash onset	<b>94</b>	<b>88</b>
%Investigated within 48 hrs	<b>98</b>	<b>97</b>
% results reported to EPI =< 7 days from received	<b>98</b>	<b>93</b>
(%) Proportion of localities that reported at least one suspected case with blood sample	<b>32%</b>	<b>70%</b>
Out breaks detected and investigated	<b>100</b>	<b>100<sup>4</sup></b>

**Table (7) : Incidence Rate of Confirmed Measles Cases Up to W.52 2008-2009 (per /1,000,000)**

**Target =< 1/1000,000 pop.**

<b>State</b>	<b>Annual Measles Incidence/1,000,000 2008</b>	<b>Annualized Measles incidence /1,000,000 2009</b>
Blue Nile	0.0	1.1
Gadarif	0.0	0.5
Gazira	4.3	0.9
Kassala	0.0	0.0
Khartoum	3.6	0.8
N. Darfur	27.7	0.5
<b>N. Kordofan</b>	<b>0.0</b>	<b>7.7</b>
Northern	4.9	1.6
Red Sea	0.0	0.0
River Nile	0.9	0.9
Sennar	0.0	0.6
S.Darfur	0.0	0.0
S.Kordofan	0.0	0.5
<b>W.Darfur</b>	<b>3.6</b>	<b>15.4</b>
White Nile	1.1	0.5
<b>Total</b>	<b>3.3</b>	<b>1.96</b>

# Figure (8): Fever & Rash Cases Vs Measles vaccine Coverage 1995 – 2009\*



Source: EPI National data



Catch up campaign

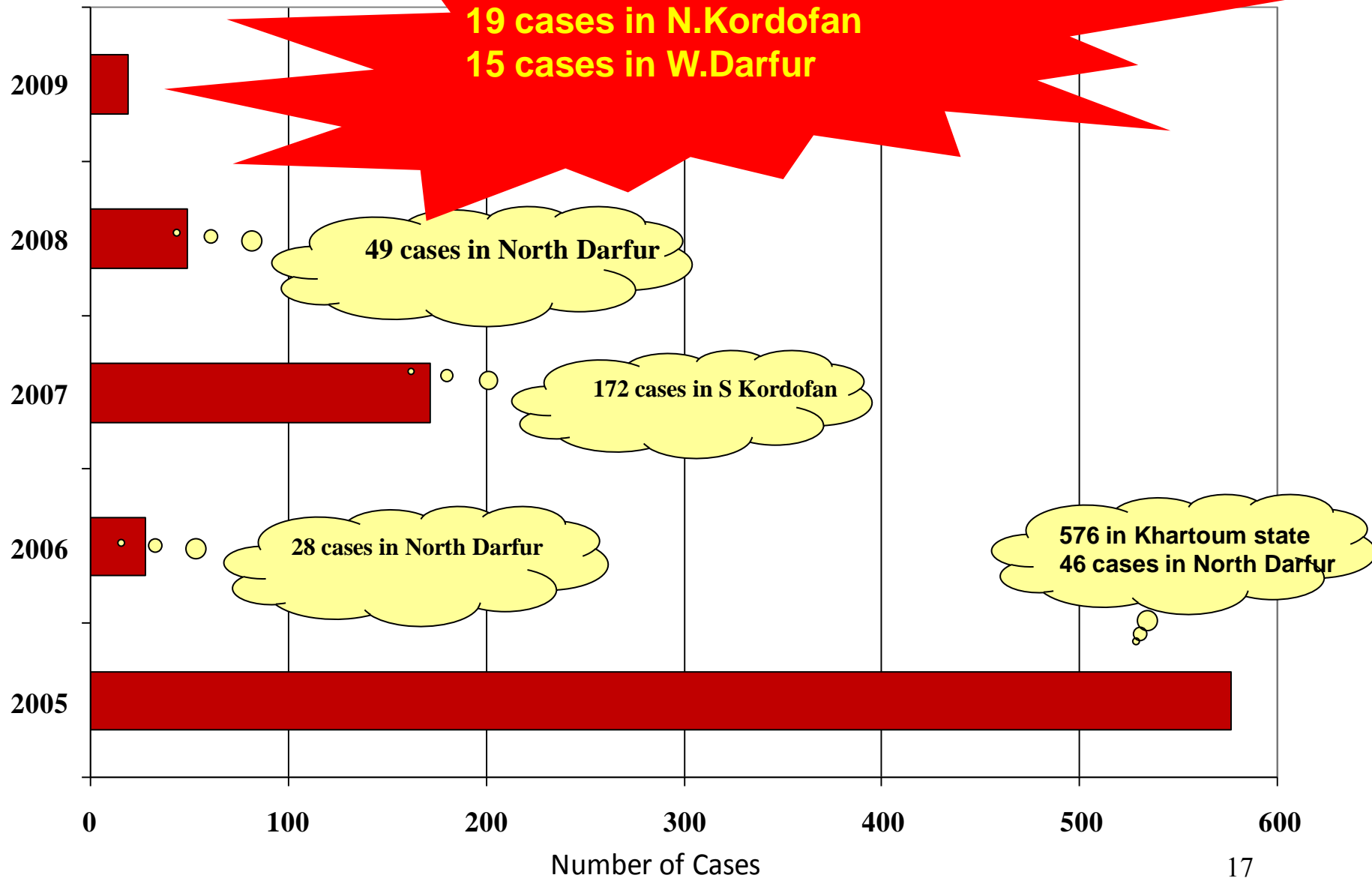


Follow up campaign

\* Ann Up to Dec 2009



**Figure (9): Measles Out breaks 2005- 2009\***



**Table (9) : Measles and Rubella Outbreaks 2010**

Measles Outbreaks		
Area	Size of the outbreak	Date of Last case Reported
N. Kordofan, Bara locality	19	2/4/2009
W. Darfur, Forebrennga locality	18	2/12/2009
Rubella outbreaks		
Khartoum , Gabel Awleya, Khartoum and Bahry Localities	93	14/5/2009
B. Nile ,Eldamazin locality	89	12/5/2009
W. Darfur, Genina locality	47	10/6/2009
White Nile State , Kosti and Eldoim localities	42	11/8/2009
River Nile State , Eldamer locality	8	18/11/2009

**Table (10) : Completeness of Case Investigation Form  
Up to Week 52 2009**

**No of Forms =783**

locality	%100
Age	%100
Gender	%100
Date of onset	%100
Known vaccination status	%100
Date of last Vaccination	Recorded : 98% Recorded as unknown :1% Not Recorded :1%
Lab result of specimen collected	100%
<b>% completeness of investigation form</b>	99.7%

# Conclusion

## System Performance :

- The Sensitivity of the system regarding rate of Non-Measles reach the target nationally (2:100000 POP ) ,**although ( 5 states only reach the target )**
- All Measles Field Surveillance Indicators were above the target Nationally (>80%),**except the indicator of (%) Proportion of localities that reported at least one suspected case with blood sample**

# Conclusion

## 4 Criteria to Monitor Elimination :

1. Measles incidence of  $< 1$  confirmed case per million per year: **Still incidence rate above target although there is reduction in incidence from 3.3 (2008) to 1.96 (2009 )**
2. All districts with  $> 90\%$  vaccination coverage for the first dose of measles vaccine and  $95\%$  coverage national coverage for the second dose :

**Nationally :82%**

	<b>states#</b>	<b>%</b>	<b>localities #</b>	<b>%</b>
<b>80% or more</b>	<b>5</b>	<b>33.3</b>	<b>35</b>	<b>24</b>
<b>50-80%</b>	<b>10</b>	<b>66.7</b>	<b>88</b>	<b>62</b>
<b>&lt;50%</b>	<b>0</b>	<b>0.0</b>	<b>17</b>	<b>12</b>
<b>No activity</b>	<b>0</b>	<b>0.0</b>	<b>3</b>	<b>2</b>
<b>Total</b>	<b>15</b>	<b>100.0</b>	<b>143</b>	<b>100.0</b>

# Conclusion

## Criteria to Monitor Elimination :

- 3.90% of outbreaks are < 10 cases in size: **Two Confirmed Measles outbreaks 2009** and the size of each exceed 10 cases
4. Epidemiologic and laboratory data indicate that measles viruses are imported : **Up to 2008 the virus genotypes B3 and D4 is the endemic virus ( 2009 waiting for virus isolate )**

# Way Forwards 2010.....

## Surveillance Performance :

- Excessive orientation Sessions for Health Cadre and generalize the message of (Fever and Rash Surveillance ) to improve the sensitivity of the system(state and localities )
- Monitor the Susceptibility profile To predict outbreaks
- Community participation in surveillance
- Private Involvement

# Way Forwards 2010.....

## Immunity Component:

- Follow up Campaigns
- Improve Routine 1st dose



THANK YOU