

# Dedicated Logistics System

## Vaccine and Rapid Diagnostic Tests Logistics and Vaccination Coverage Rate Study

### *Baseline Evaluation*

**Cabo Delgado and Niassa Provinces**

2010

# Introduction

- 2002-2007: VillageReach, FDC, and Cabo Delgado DPS implemented a support program to improve EPI services offered to the population in the province using a new system of vaccine logistics.
- In 2008 VillageReach published the results of a study that demonstrated significant impact of the new logistics system:
  - Increase in DPT3 rates from 68.9% in 2003 to 92.8% in 2008
  - The logistics system in Cabo Delgado was 17% more cost-effective than the system in a the neighboring province of Niassa.
- In 2010, VillageReach began providing technical assistance to DPS in Cabo Delgado and Niassa provinces to implement and operate the Dedicated Logistics System for vaccines.
- In addition to vaccines, Rapid Diagnostics Tests (RDTs) for malaria, syphilis, and HIV are being integrated into the Dedicated Logistics System.

# Dedicated Logistics System Objectives

- To improve child health in Mozambique by sustaining high vaccination coverage rates and low vaccination dropout rates;
- To improve the community's knowledge of, trust in, and use of health services;
- To increase the cost-effectiveness and cost-efficiency of the logistics systems for vaccines, related commodities, and RDTs in Mozambique;
- To reduce stock outs of vaccines and RDTs in all health centers where system is implemented;
- To reduce interruptions in service delivery due to stock shortages, health worker absence, and lack of health worker time; and
- To integrate additional key commodities into the Dedicated Logistics System.

# Research Objectives

- The main objective this research is to establish baseline estimates for the outcome indicators associated with the Dedicated Logistics System objectives.
- A follow up study will be conducted three years following the implementation of the Dedicated Logistics System for comparison.
- Results of the baseline evaluation will also be used to inform programmatic decisions.

# Methodology

- The baseline evaluation studies were conducted by a third party consultancy group based in Mozambique, ANSA.
- The vaccination coverage rate studies used the methodology described by the WHO Reference Manual for Immunization Cluster Surveys (2005). The survey included households with children aged 12-23 months and was administered to the head of household or equivalent decision maker.
- In Cabo Delgado the sample consisted of 30 clusters of 7 households and Niassa the sample consisted of 10 clusters of 10 households in 6 districts.
- In addition to the household survey, a questionnaire was carried out in each health facility nearest to the selected cluster and conducted with the individual responsible for EPI and RDTs at the health facility.

# Household Immunization Coverage Rate Study

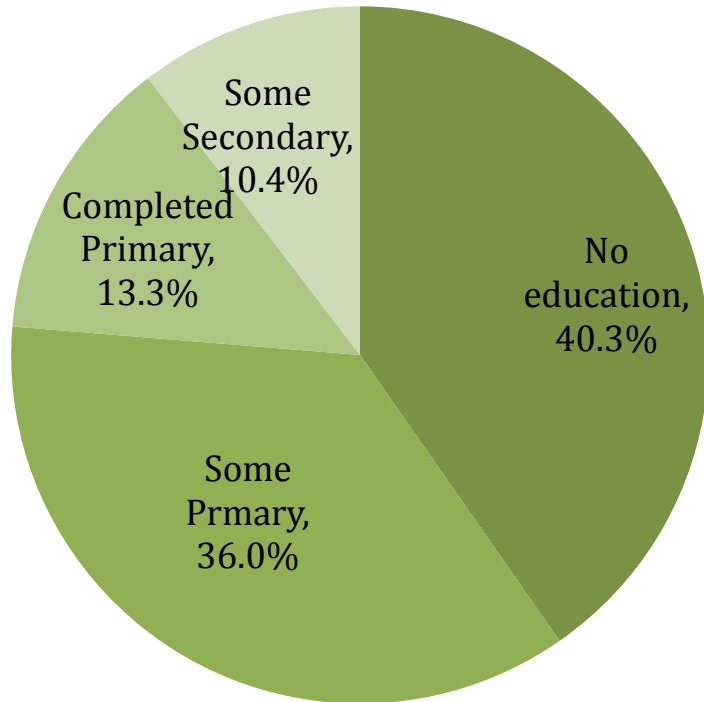
## Results

# General characteristics of the sample

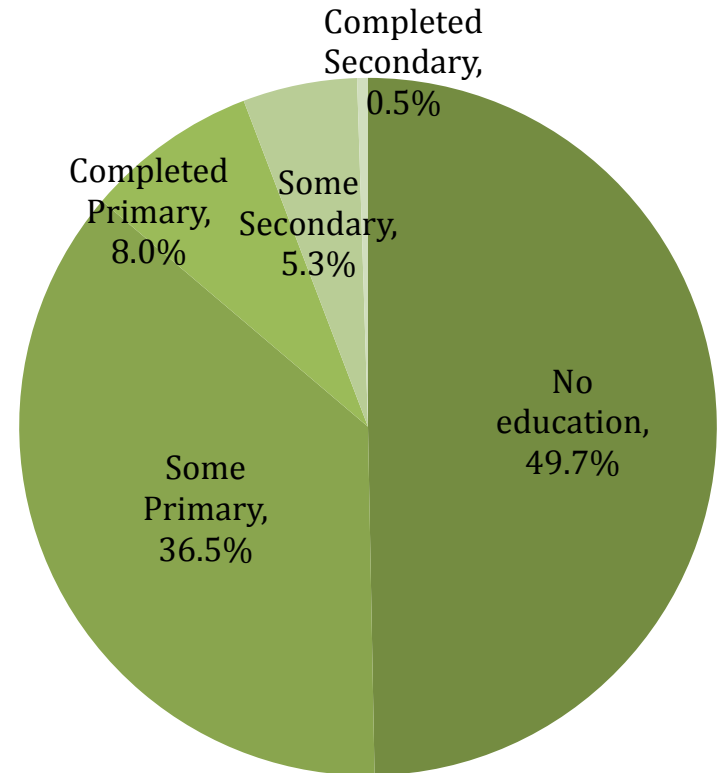
	Cabo Delgado	Niassa
Districts included	15	6
Total number of children aged 12-23 months	211	602
Average age of children included	18 months	19.3 months
Percent female children included	45.9%	46.6%
Percent of children with vaccination cards present	97.6%	92.2%
Average age of respondents	28 years	27 years
Average size of the household	6 persons	5.7 persons
Average number of children under two years in the household	1.6	1.7
Households with a female as head of household	25.1%	14.2%

# Sample Characteristics

## Mother's Education Level



Cabo Delgado



Niassa



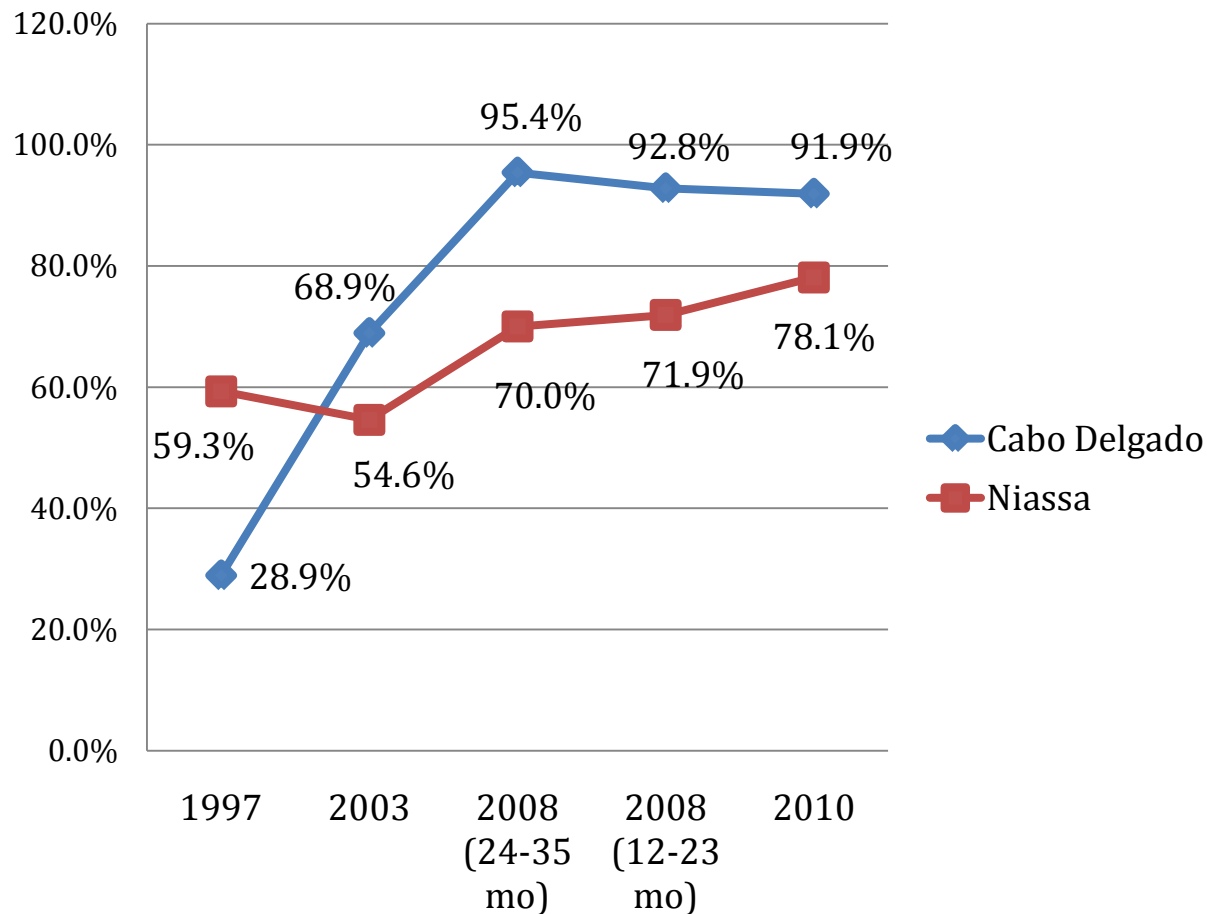
# DPT3 Coverage

(percent of children with third dose of DPT/Heb B by 12 months of age)

## 2010 estimates

- Cabo Delgado = 91.9%
- Niassa = 78.1%

## DTP3 coverage over time



# Vaccination Coverage

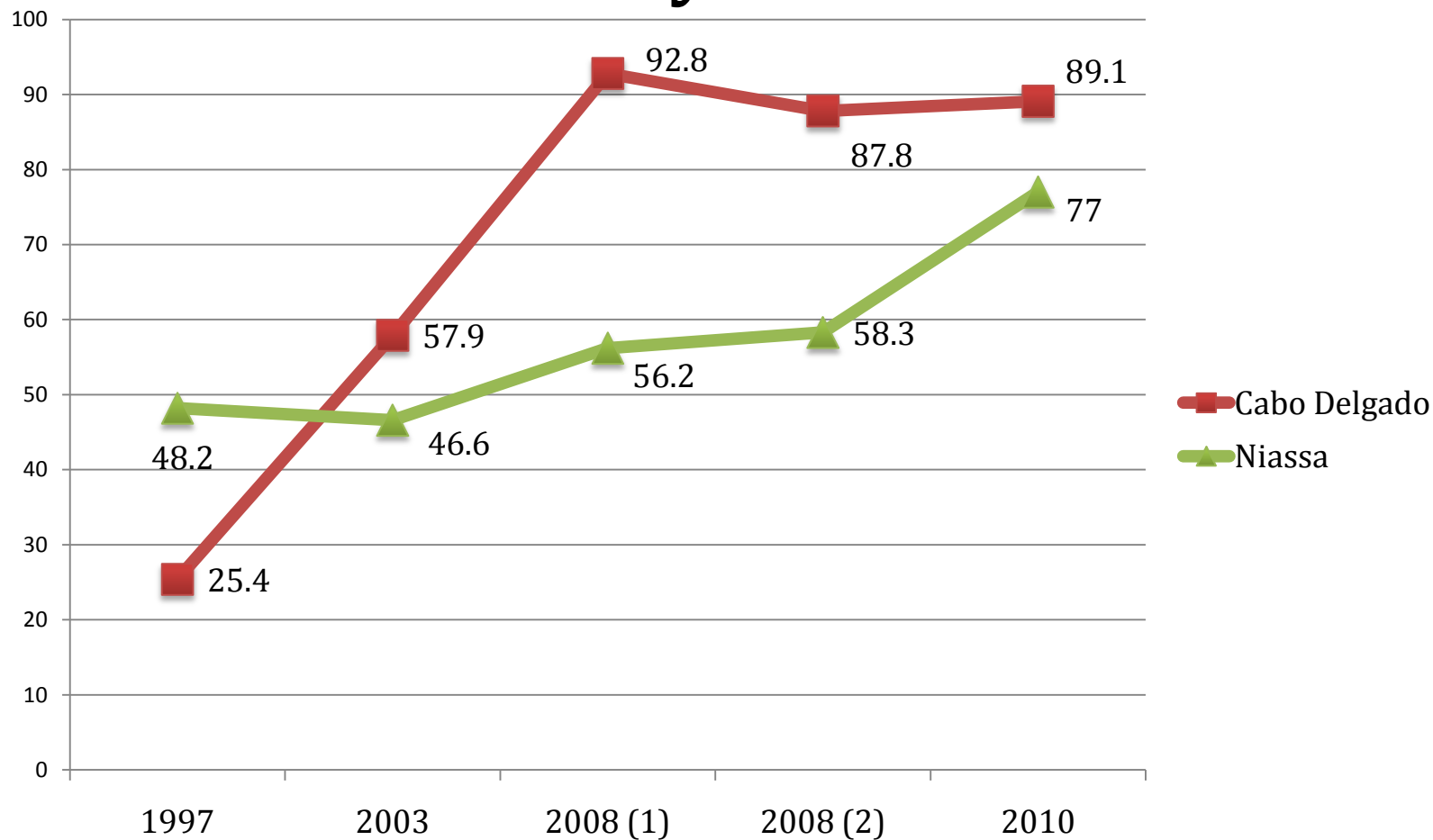
	<b>Fully Immunized before 12 months</b>  Percent of children who received all valid doses of vaccine before the age of 12 months <u>according to vaccine schedule</u>	<b>Fully Immunized before 23 months</b>  Percent of children who received all valid doses of vaccine <u>according to vaccine schedule</u> before the age of 23 months	<b>Fully Vaccinated</b>  Percent of children who received all vaccines regardless of timing verified by card or by mother
<b>Cabo Delgado</b>	<b>48.3%</b>	<b>48.8%</b>	<b>89.1%</b>
<b>Niassa</b>	<b>22.6%</b>	<b>34.5%</b>	<b>77.0%*</b>

\*Population adjusted (crude rate for sample is 80.4%)

## Fully Immunized Criteria:

- BCG vaccination history and verified by scar and history, or by card;
- All three doses of polio vaccine received with a minimum of 28 days apart, as verified by card;
- All three doses of DTP/HepB received with a minimum of 28 days apart, as verified by card and;
- Measles vaccine received at or after 9 months of age as verified by card.

# Trends in vaccination status over time: Percent fully vaccinated



(1) in Cabo Delgado children aged 24-36 months in VR study, in Niassa results of 2008 MICS study (data from 2007)

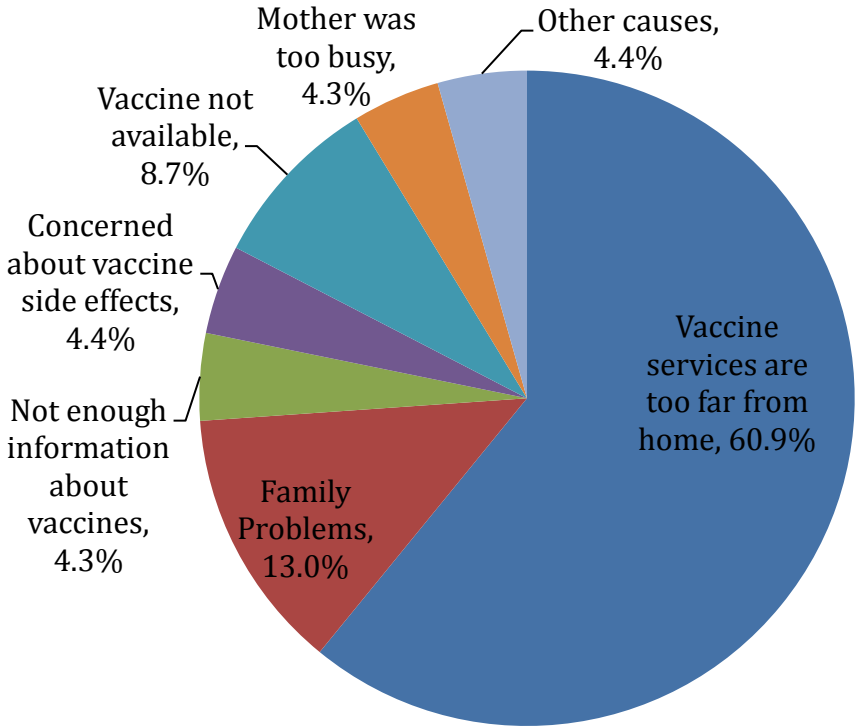
(2) in Cabo Delgado children aged 12-23 months in VR study, in Niassa results of 2008 DPS study

# Compliance with vaccine schedule

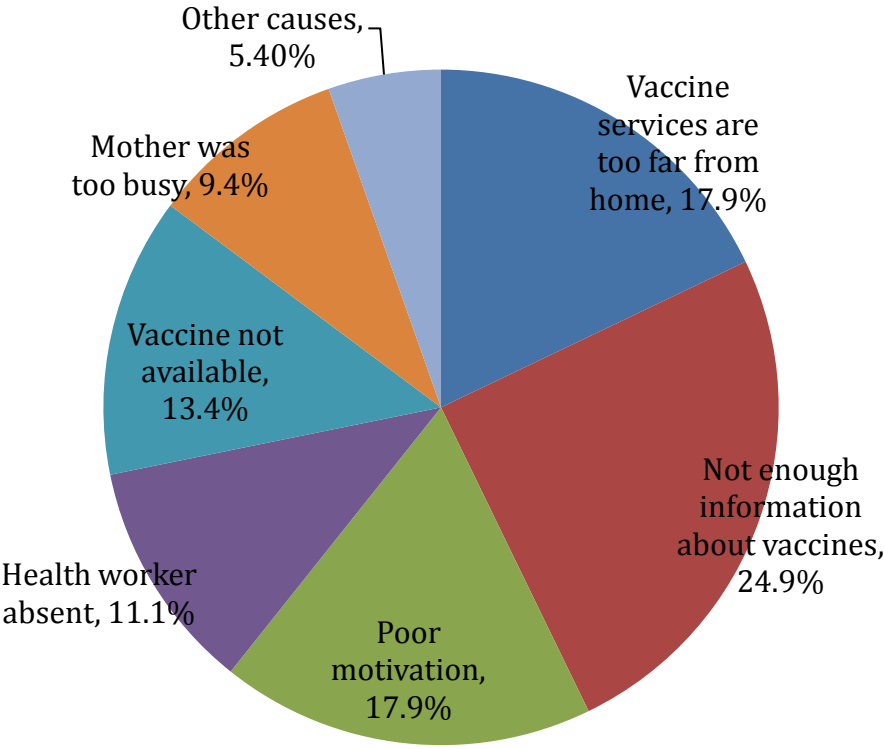
(percent of children receiving vaccine not according to schedule)

	Cabo Delgado	Niassa
Measles vaccine received before 9 months of age	27.5%	15.8%
Measles vaccine after 12 months	9.5%	17.7%
Lack of 28 day interval between polio or DPT-Hep B doses	19%	26%
Missing at least one vaccine	11.4%	25.5%
Receiving at least one vaccine (other than measles) after 12 months	2%	6.4%

# Reasons for immunization failure



Cabo Delgado



Niassa

# Knowledge of vaccines

- Had heard of vaccines
  - Cabo Delgado 94%
  - Niassa 77%
- Aware of the reason for vaccination
  - Cabo Delgado 49.5%
  - Niassa 32.9%
- Source of vaccine information
  - Community leaders: Cabo Delgado ~25%
  - Mobile brigade: Cabo Delgado ~36.5% Niassa ~17%
  - Nurses and hospital staff: Cabo Delgado ~33.5% Niassa ~60%

# Access to vaccine services

- Mode of travel to the health facility
  - Foot
    - Cabo Delgado 91.5%
    - Niassa 92.8%
  - Bicycle
    - Cabo Delgado 7.6%
    - Niassa 6.2%
- Takes more than one hour to travel to the health facility
  - Cabo Delgado 62.1%
  - Niassa 58%

# Reasons for vaccine failure at the health facility

	Health facility closed	Health worker not available	Vaccine services not offered	Stock out of vaccines	Don't know	Other
Cabo Delgado	2.4%	9.6%	22.9%	37.4%	12.1%	15.7%
Niassa	N/A	10.0%	N/A	56.6%	11.0%	12.0%

**\*Overall, approximately 40% of respondents in both provinces claimed that they had visited a health facility for the purpose of vaccination but failed to receive a vaccine.**



# Health Facility Survey

## Results

# General sample characteristics

	Cabo Delgado	Niassa
Number of health facilities included in sample	29	47
• Health Post	3	6
• Health Center	25	41
• Hospital	1	0

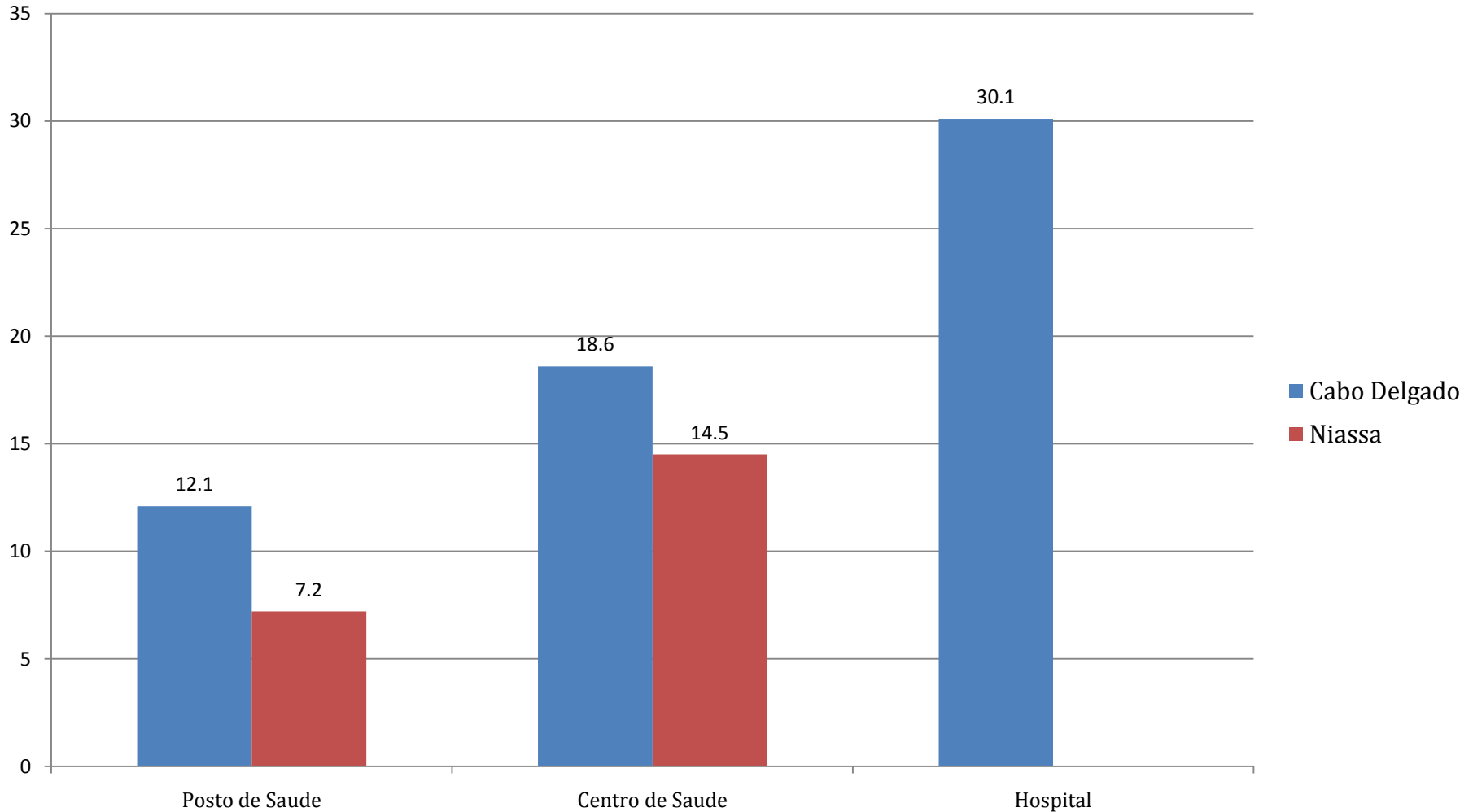
# Health facilities experiencing a stock out

## Percentage of facilities with a vaccine stock out by type of vaccine

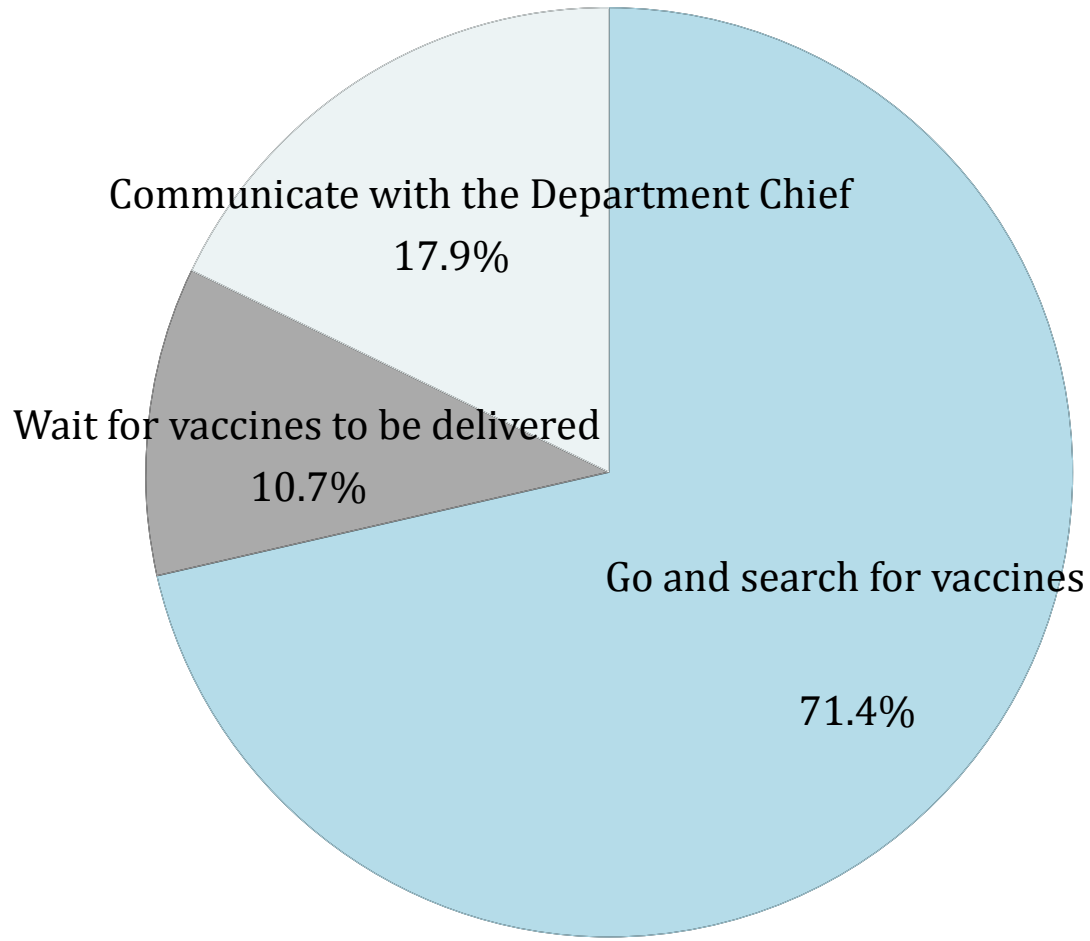
	<b>CDG</b>	<b>Niassa</b>
BCG	9%	40%
Pentavalent (Hib-DTP-HepB)	100%	60%
Polio	14%	60%
Measles	13%	33.3%
Tetanus	14%	40%
Any type of vaccine (other than pentavalent)	22%	67%

# Vaccine Inventory Management

Average number of months until the expiration date of the vaccine (from the date of the interview)



# Response to vaccine stock out

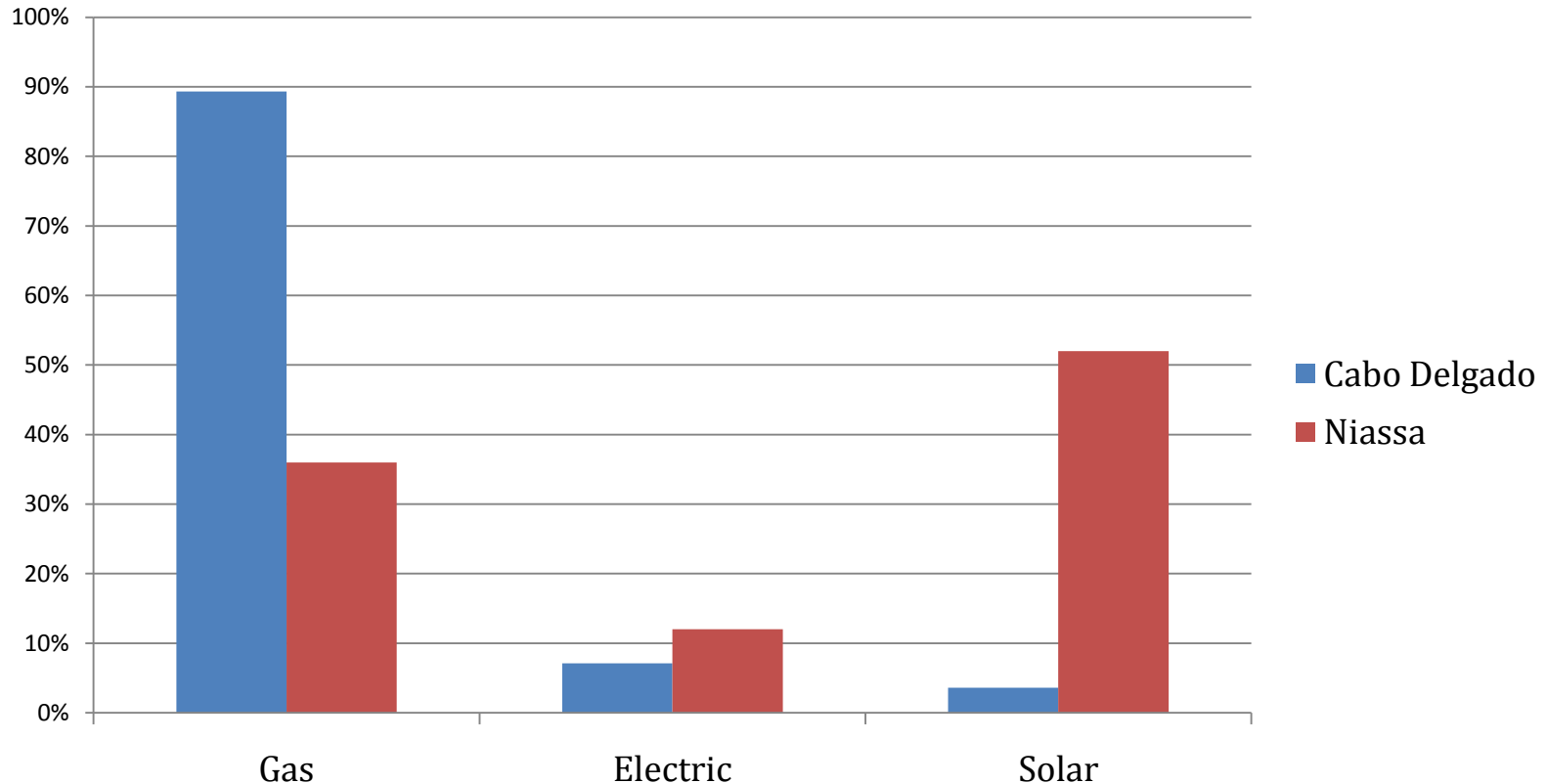


Note number of observations = 28

# Cold Chain

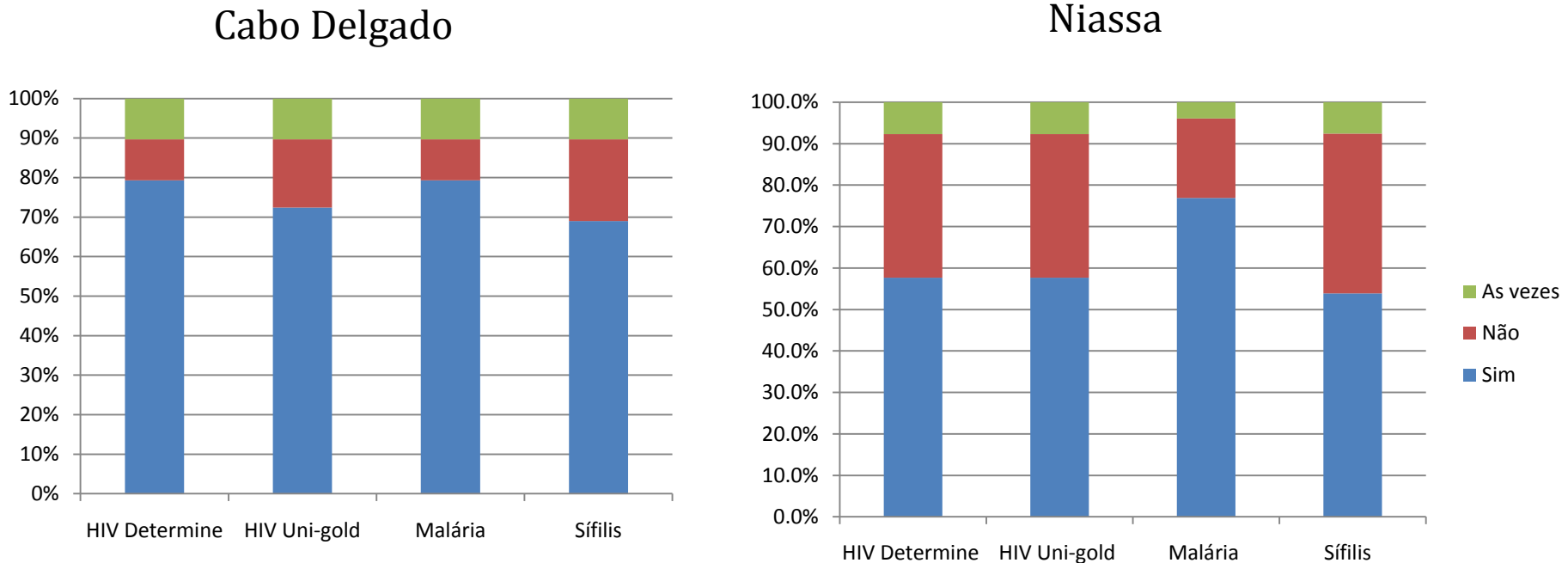
- The majority of health facilities visited had a functioning refrigerator
  - Cabo Delgado 96.6%
  - Niassa 76%

**Percent of health facilities by type of refrigerator**



# Cabo Delgado Testes de Diagnóstico Rápidos

Percent of health facilities that replenish RDT stock on a monthly basis



At the time of the survey 40% of health facilities in Niassa and 93% of health facilities in Cabo Delgado were out of stock of at least one type of RDT.

# Conclusions

- The vaccination coverage rates in both provinces have increased in the last 10 years with Cabo Delgado maintaining high coverage rates compared to Niassa.
- However there remain opportunities for improvement;
  - There is poor adherence to the vaccine schedule resulting in children who are not fully immunized. This is the main barrier to increasing immunization coverage rates in the two provinces.
  - There are a number of lost opportunities and the most common cause is the lack of vaccines available.
  - There is a strong need for social mobilization and health promotion in the communities of Niassa
- Stock outs of vaccines are more common in Niassa than in Cabo Delgado
- In general, the distribution of RDTs is not regular in either province and needs significant improvement.
- Ensuring a regular distribution of RDTs will significantly reduce the occurrence of stock outs in health facilities.