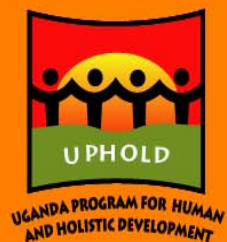


Lot Quality Assurance Sampling (LQAS)

An Overview

LQAS Conference, Sheraton Kampala Hotel 3rd July 2006





Purpose of the Presentation

- Explain:
 - Basic principles of Lot Quality Assurance Sampling (LQAS) for carrying out baseline and monitoring surveys of community programs
 - Some statistics behind the LQAS Methodology
- Present some practical examples of LQAS application in the field



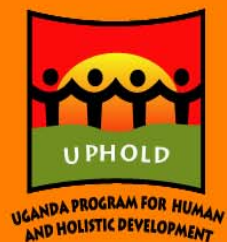


What is LQAS?

A sampling method that:

- Can be used locally, at the level of a “supervision area,” to identify priority areas (e.g., county, sub-county) or indicators that are not reaching average coverage or an established benchmark
- Can provide an accurate measure of coverage or health system quality at a more aggregate level (e.g., program catchment area or district or refugee camp)
- Can be used for quality assurance using a ‘minimal sample’, ‘maximal security’ principle





LQAS is a simple, low cost random sampling methodology

- Originally developed in the 1920s to control the quality of output in industrial production processes
- Involves taking a small random sample of a manufactured batch (lot) and test the sampled items for quality
- If the number of defective items in the sample exceeds a pre-determined criteria (decision rule), then the lot is rejected
- The decision rule is based on the desired production standards and a statistically determined sample size
- 'n' is chosen so that the manager has a high probability of accepting lots that meet the quality standards and rejecting lots that fail to meet those standards





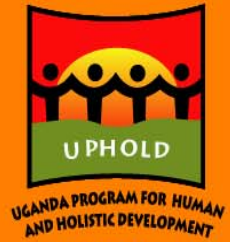
Some Useful LQAS Definitions

Standard LQAS theory

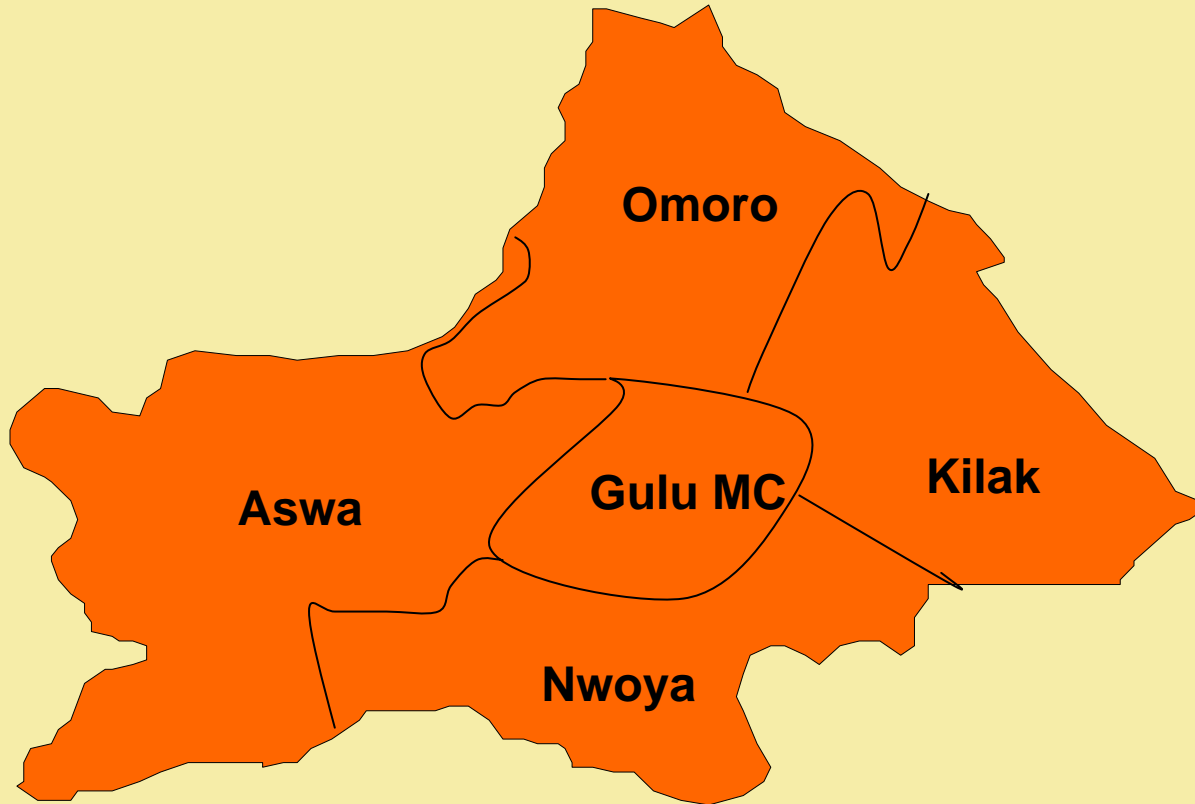
UPHOLD 'LQAS' Adaptation

<p>Production standard: % of items that must “pass” before a lot is accepted</p>	<p>Coverage: % of clients who received a service in a defined period of time</p>
<p>Production unit: The machine or team that produced or assembled the lot</p>	<p>Supervision Unit: The district where these services are delivered</p>
<p>Lot: A batch of items produced in given time by the production unit</p>	<p>Supervision area: A county or sub-counties in a given district where services are being delivered</p>





What are the LQAS Principles?



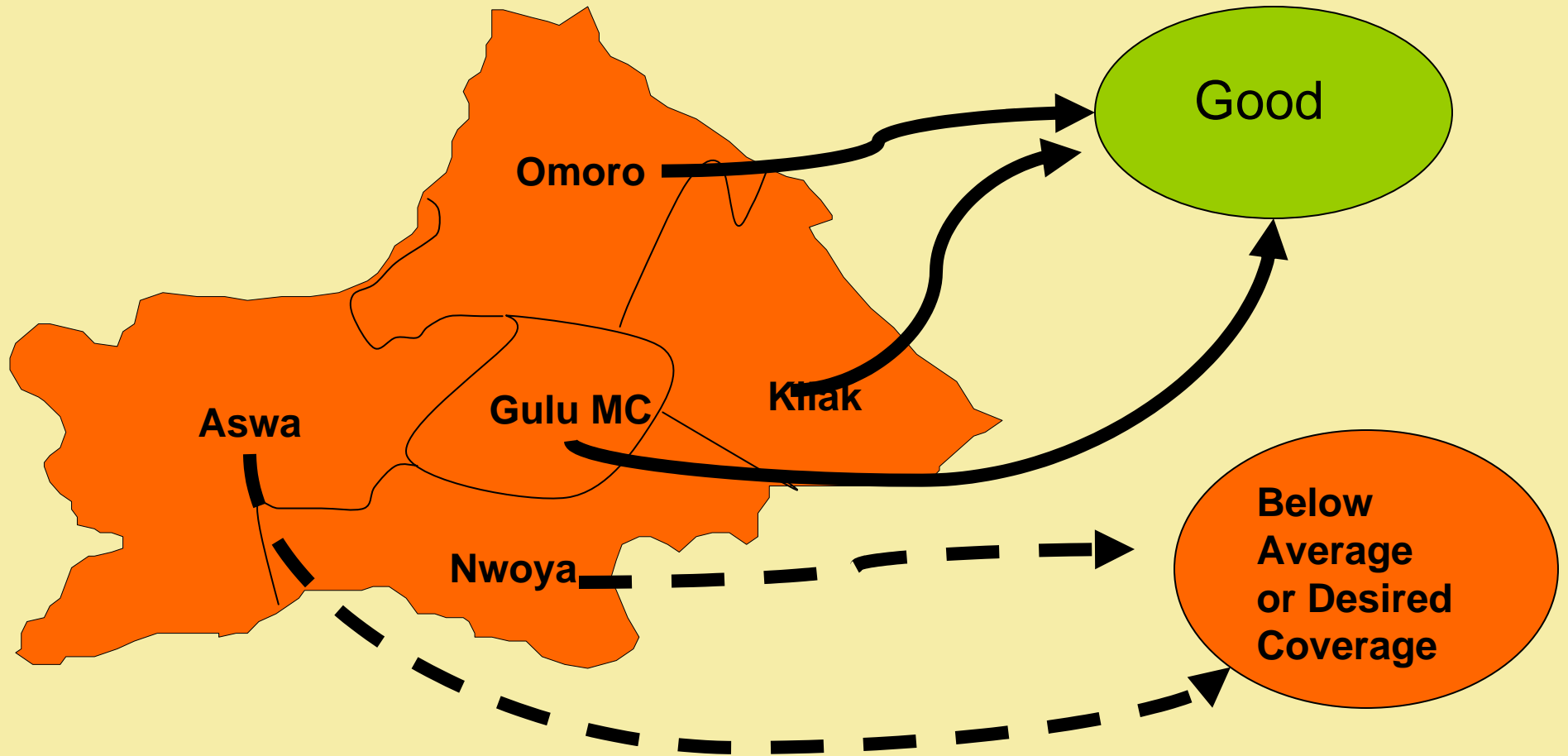
- Assume a program covers a whole district
- Each county is then called a 'supervision area' and district a 'supervision unit'
- LQAS would choose a minimum of 19 items (e.g. households, schools, health units) from each 'supervision area' in order to assess an indicator

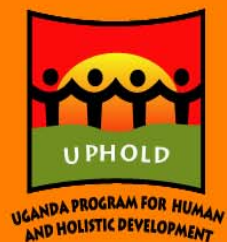




UGANDA PROGRAM FOR HUMAN AND HOLISTIC DEVELOPMENT

What are the LQAS Principles?





What can be done with the findings?

Maintain the program at the current level

Identify 'best practices' that can help others programs improve their performance

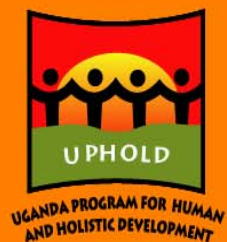
Identify the reasons for program problems

Develop targeted solutions

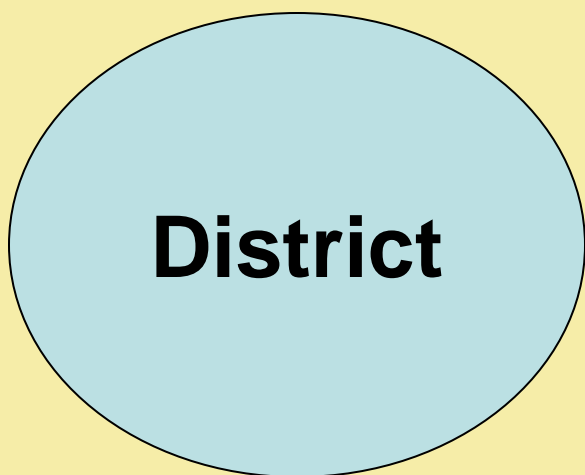
Good

Below Average or desired coverage





A sample of 19 is taken from each supervision area in each district



S.A. = 19

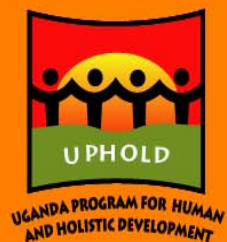
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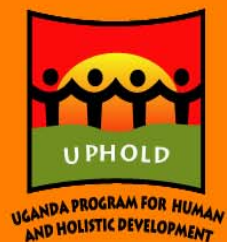




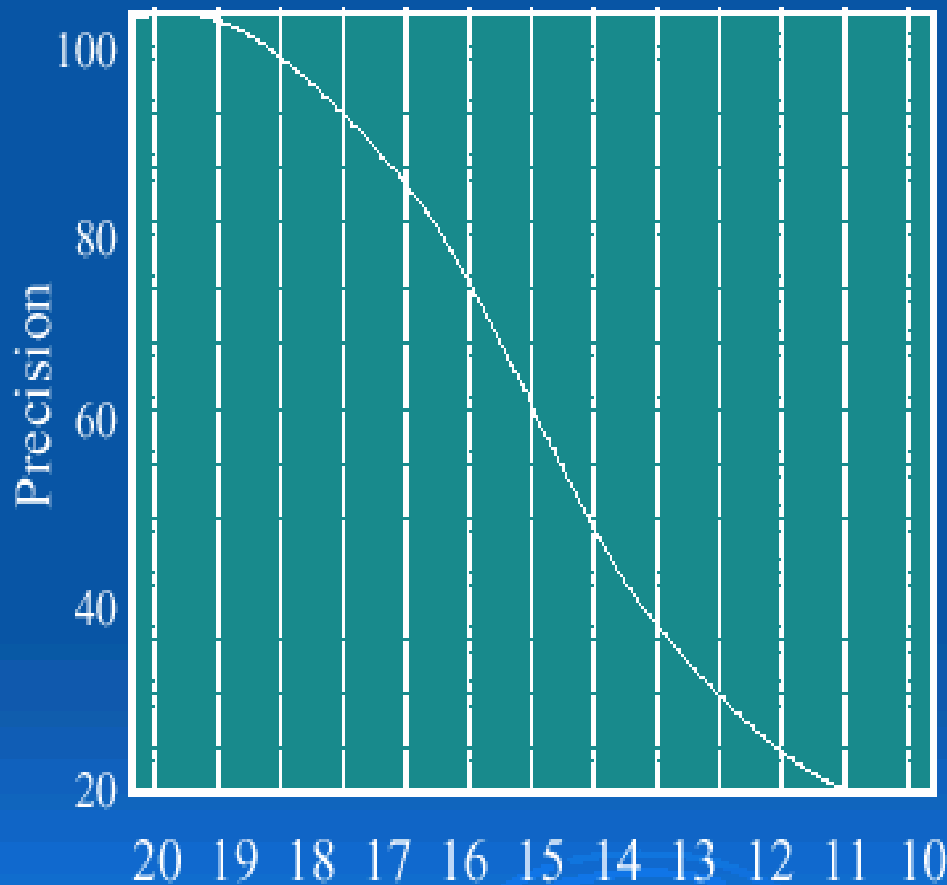
Why use a Sample Size of 19?

- A sample size of 19 provides an acceptable level of error for making management decisions; at least 92% of the time, it identifies whether a coverage benchmark has been reached or whether an SA is substantially below the average coverage of a program area
- Samples larger than 19 have practically the same statistical precision as 19. They do not result in better information, and they cost more





Why use a Sample Size of 19?



- Little is added to the precision of the measure by using a sample larger than 19, notwithstanding the level of coverage to be assessed
- Sample sizes less than 19 however, see a rapid deterioration in the precision of the measure. This is particularly problematic when coverage benchmarks vary

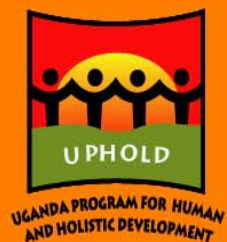




What can a sample of 19 tell us?

- Good for setting priorities within a Supervision Area
- Good for setting priorities among supervision areas with large differences in coverage
- Good for deciding what are the higher performing supervision areas to learn from
- Good for deciding what are the lower performing supervision areas in which to invest resources
- Good for identifying knowledge/practices that have high coverage from those of low coverage

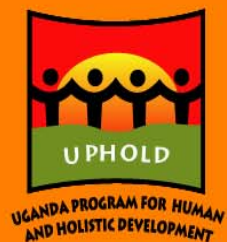




What a Sample of 19 Cannot tell us

- Not good for calculating exact coverage in a supervision area (but can be used to calculate coverage for an entire program)
- Not good for setting priorities among supervision areas with little difference in coverage

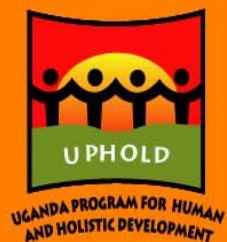




Identifying Households for Interview

- Step 1. List Communities and Total Population
- Step 2. Calculate the Cumulative Population
- Step 3. Calculate the Sampling Interval
- Step 4. Choose a Random Number
- Step 5. Beginning with the random number, use the sampling interval to identify communities for the 19 sets of interviews

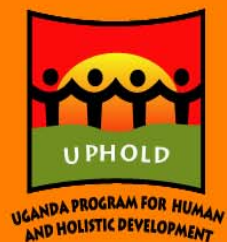




Benefits of LQAS as a Sampling Method

- Low sample size needs (n=19 in most cases)
- Simple to apply yet has very specific conclusions
- District level people can be trained to entirely 'own' this methodology
- Provides high quality information at low & affordable cost
- Fast – 'supervision areas' are able to conduct self-evaluation and obtain results immediately after the survey
- Results are locally relevant and can be utilized in district level annual planning and decision-making





Benefits of LQAS to Districts

- Change of mindsets towards reliance on data for Evidence-Based planning
- Districts have relied on LQAS data to identify priority target areas for implementation and to focus work plans
- Districts can use LQAS to do own evaluations in different technical areas e.g., education, agriculture
- Strengthened partnership between districts and NGOs in provision of related services

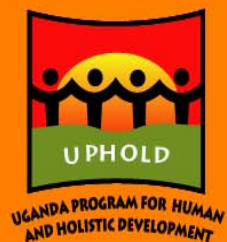




Illustrative Costs – Luwero District 2004 Survey

Description	Quantity	Participants	Cost	Total cost
LQAS Training	10 Days	6	48,000/-	2,880,000/-
Data collection Allowance	5 days	6	48,000/-	1,440,000/-
Transport - Car hire	5 days	1 car	180,000/-	900,000/-
Transport - Boda boda	5 days	6 Bodas	15,000/-	450,000/-
Total Implementation costs				5,670,000/-
Annual Costs (sustainable)				1,890,000/- + ~ 500,000/-



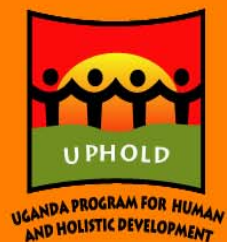


NEPAL EXAMPLE

Comparative Cost Analyses for Using LQAS and Cluster Sampling (USD)

Item	Total Essential Costs	Minus Opport. Cost = Marginal Cost	Recurrent Marginal Cost for next use	Cluster Sample Cost
Salary	1,328	-	-	2,498
Transport	420	420	420	673
Materials	403	403	179	816
Food & Accom.	796	762	146	2,561
Total cost	2,947	1,585	745	6,548
Cost per Observation	\$7.39	\$4.06	\$1.87	\$21.83

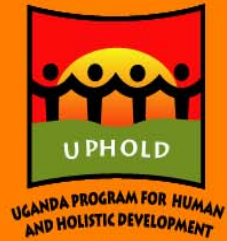




Summary of how UPHOLD has applied the LQAS methodology

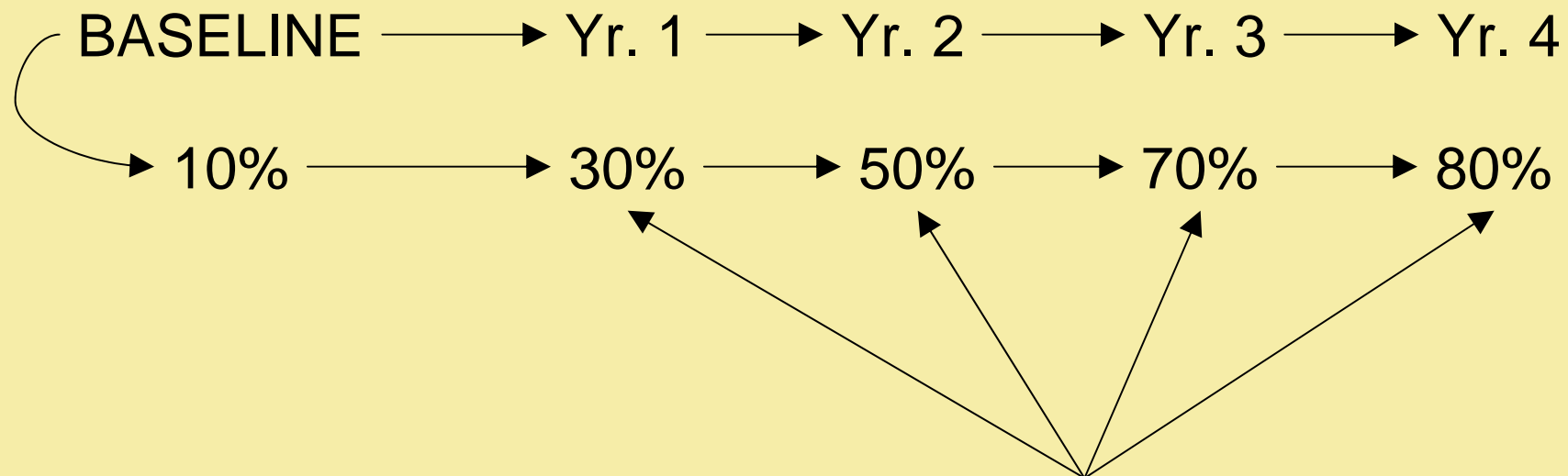
- ~ 200 District level Officials (including CDWs, DDHS, DEO and District Planning personnel) were trained for 2 weeks in the LQAS methodology in 2004
- 19 villages are sampled from each of the five 'Supervision Areas' in each district
- 5 households are sampled from each village and a different questionnaire administered to each of the sampled households (~12,300 households covered in last survey)
- Schools and Health Facilities also surveyed in Baseline (423 Health Units and 1,449 Schools)





EXAMPLE

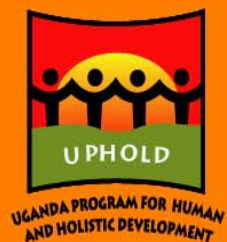
After the Baseline achievements are compared with Annual Targets



Program Costs from Baseline until Year 4 of the Project

Improvement





Application of the LQAS methodology in other countries

- Bangladesh – Immunization Coverage
- Malawi – Malaria Prophylactic Regime
- Kenya, Senegal – Contraception
- Costa Rica – Quality of Healthcare
- Spain – Quality of Health Centres
- Bangladesh, Indonesia, Zimbabwe, Namibia, Morocco – Neonatal Tetanus Elimination

