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## *Improving Provider Performance*

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- After listening to, viewing, and studying the lecture materials in this course, you will be able to do the following:
  - Understand the problems of inappropriate timing and missed opportunities for vaccination
  - Utilize the CASA Program to analyze immunization provider efficiency



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## *Section A*

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### The Efficiency Problem

- Some children utilize health services but remain unimmunized
- Some possible reasons
  - Low vaccine efficacy
  - Vaccines, supplies out of stock
  - Parental rejection
  - Provider inefficiencies

## *Framing the Efficiency Problem*

- System level
  - Vaccine failures are almost always due to poor cold chain management
  - Stock outages reflect weak logistical systems
  - Vaccination norms and procedures may be out of date
  - Supervision may be inadequate

## *Framing the Efficiency Problem*

- Local level
  - Health workers do not know best immunization practices
  - Health workers do not follow program norms and procedures
  - Health workers do not correctly utilize available information
  - Health workers do not educate parents
  - Health workers are unmotivated

## *Framing the Efficiency Problem*

- System-level program inefficiencies require system-level solutions
- Most local-level problems can be framed in terms of health worker performance
  - Easier to solve
  - Requires supervision and feedback
  - May require retraining, reallocation of program tasks



- *Missed opportunity*: a health care encounter in which a person is eligible to receive a vaccination but is not vaccinated completely
- *Inappropriately timed vaccination*: a child receives one or more vaccinations before or after the recommended age
- Note: provider inefficiencies are distinct from *immunization dropout*, a health behavioral problem we will consider in a later lecture

## *Magnitude of the Problem*

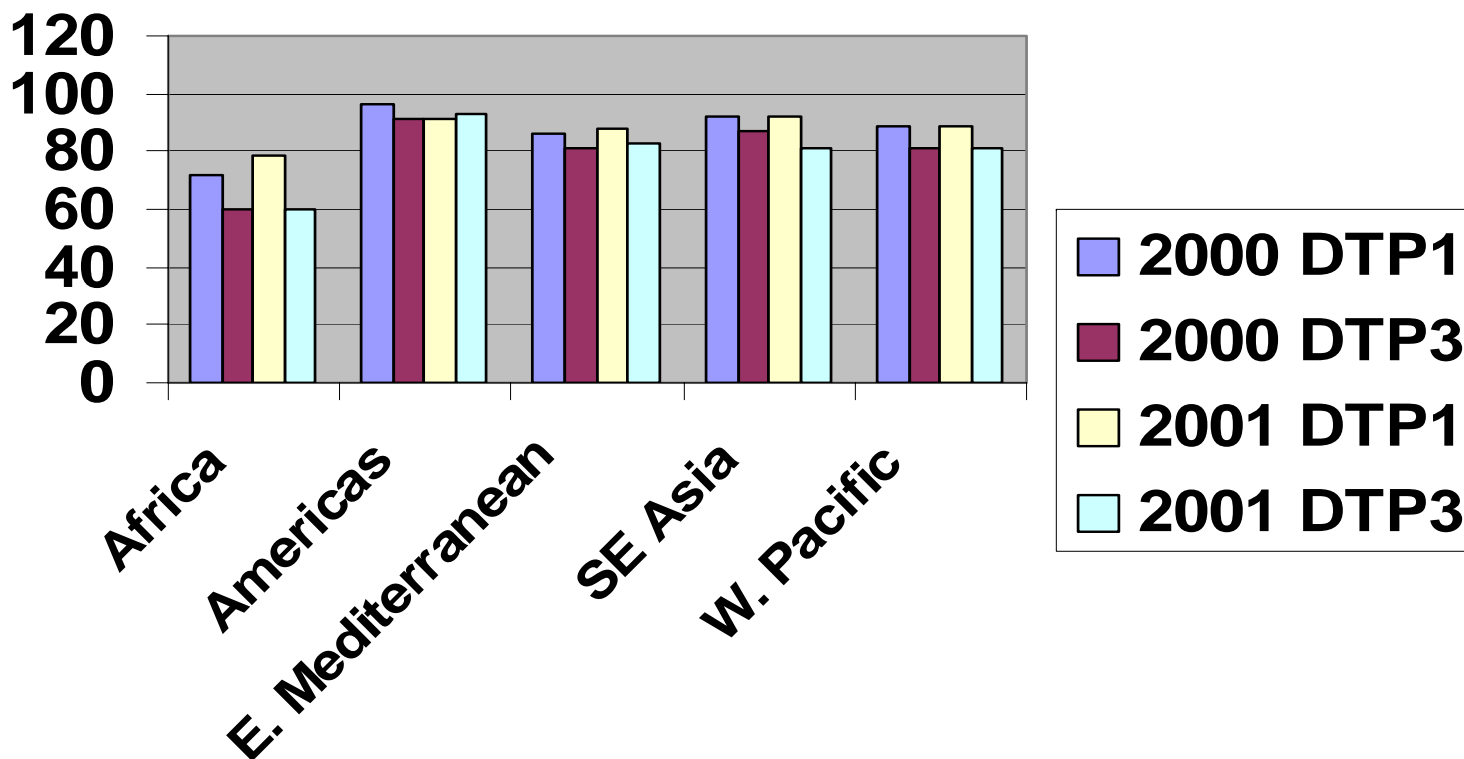
- A review of 70 observational surveys in 44 industrialized and developing countries found a median 32% of eligible women and children had experienced missed immunization opportunities (Hutchins, Jansen and Robertson 1993)
  - Industrialized: 15%
  - Developing: 41%

- United States
  - Population-based sample of 1,163 children in Oregon and Washington
    - ▶ 60% up to date at age 24 months (Bobo et al 1993)
  - Mail and telephone survey of 1,500 employees of Johnson & Johnson
    - ▶ 65% of children born 1984–1991 up to date at age 24 months (Fielding et al 1994)

## *Measuring the Problem*

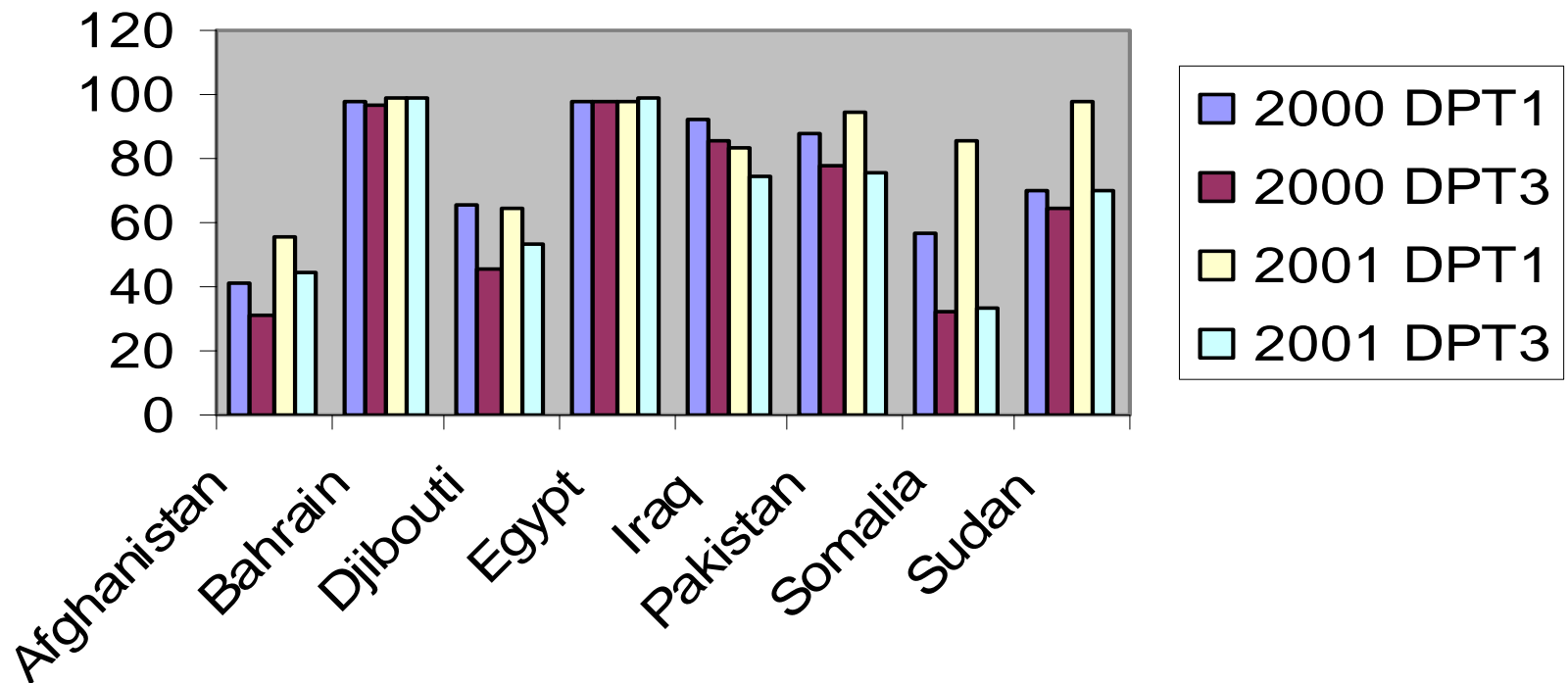
- The most common indicator of missed opportunities is the difference between DTP1 and DTP3, or TT1 and TT2 vaccination rates
- The following slides show why these indicators are most meaningful at the local level

## Reported DTP1 and DTP3 Coverage by WHO Region



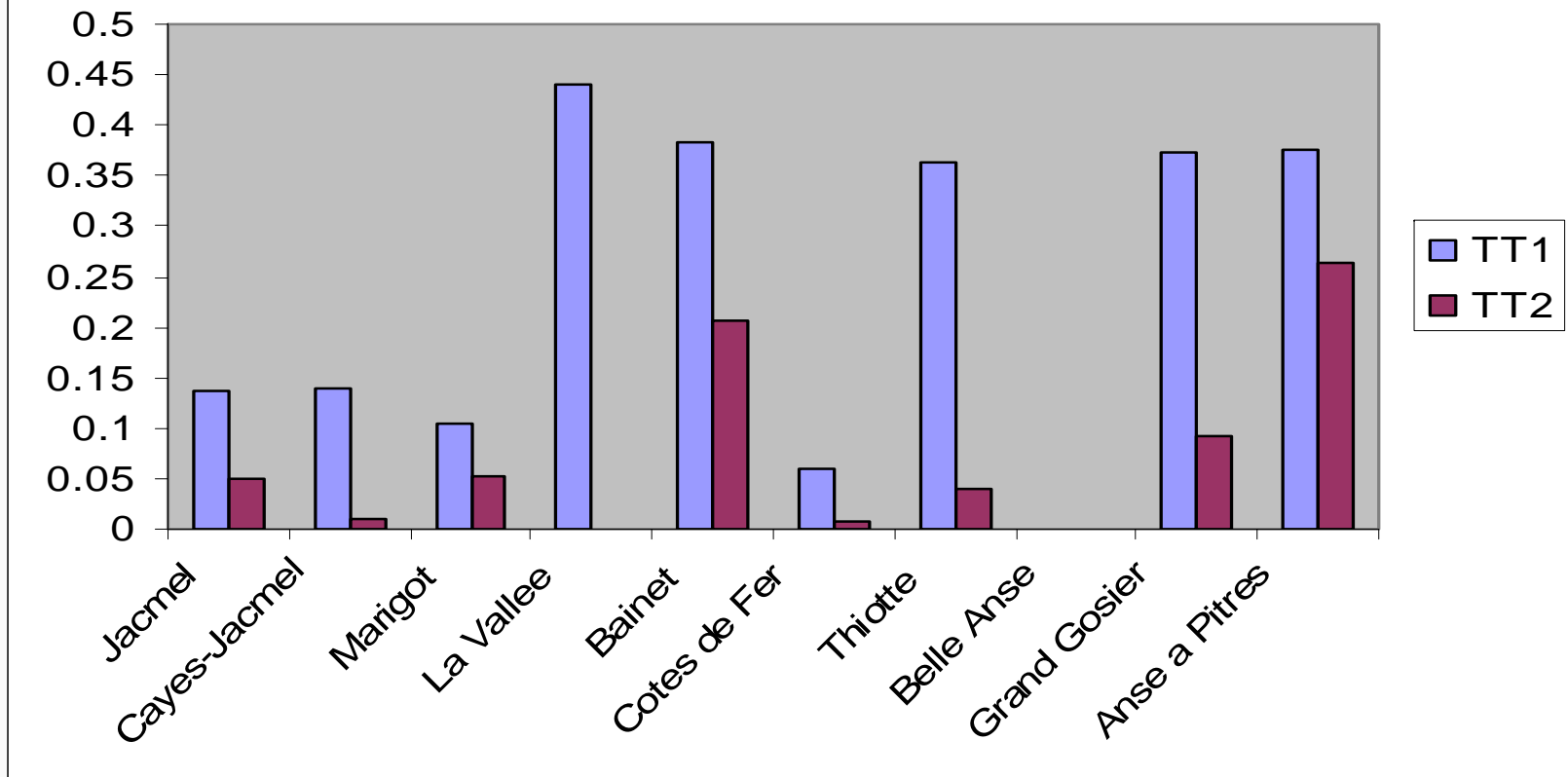
## More Variation at National Level

### Reported DPT1 and DPT3 Coverage, Selected EMRO Countries



## And Even More at the Local Level

**Percent of women ages 15-49 receiving TT1 and TT2 vaccinations in routine EPI, by health area, Region Sud-Est, Haiti, 2000-1**



## *Causes of Missed Opportunities*

<b>Cause</b>	<b>Percent of all Missed Opportunities</b>
Failure to administer vaccines simultaneously	22
False contraindications	19
Negative health worker attitudes	16
Logistical problems	10
Parental refusal	3

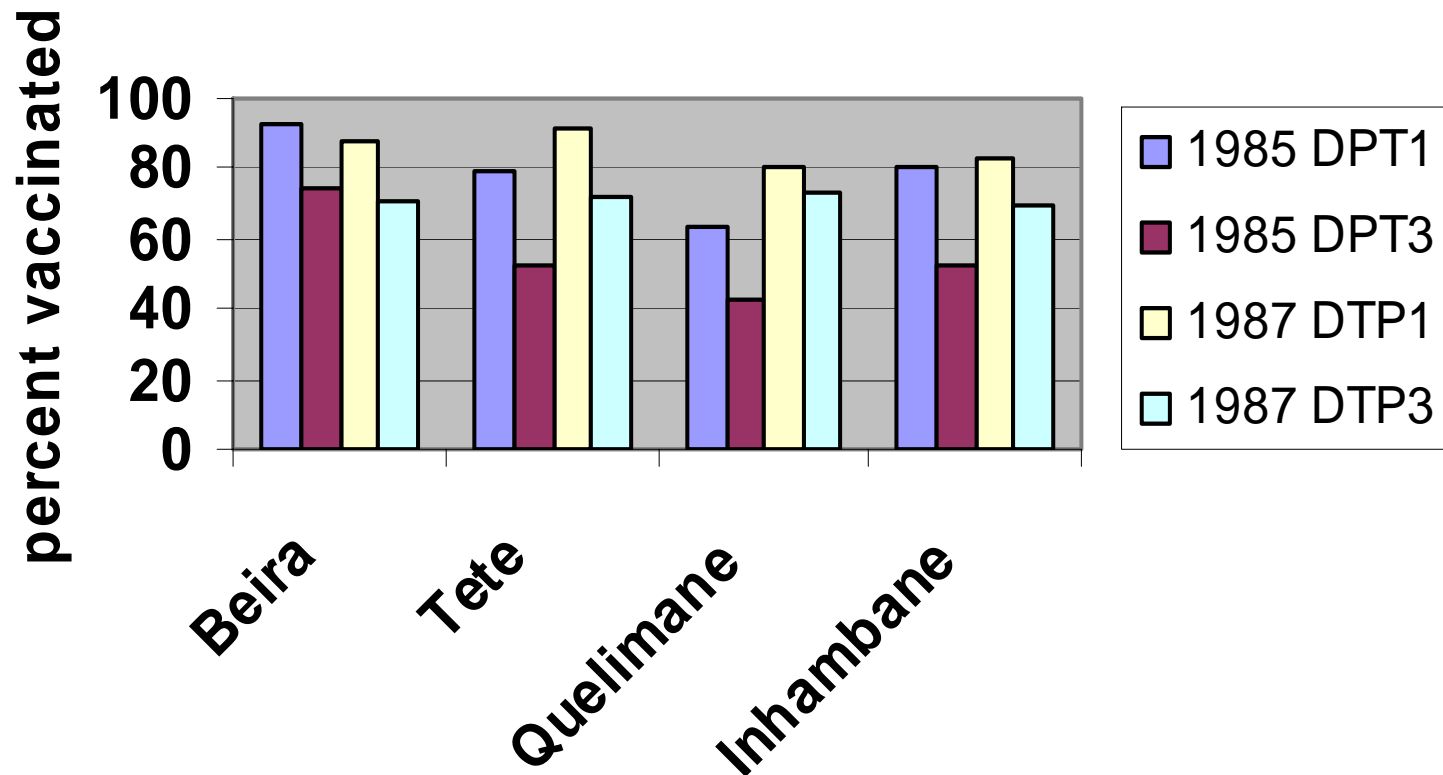


## *Missed Opportunities in the U.S.*

<b>Reason</b>	<b>Impact</b>	<b>Fixability</b>
Provider unaware patient is eligible	+++	+++
Provider policy not to vaccinate	+++	+++
Failure to provide simultaneous vaccinations	+	++
Inappropriate contraindications	++	+
Administrative barriers, cost	+	+++

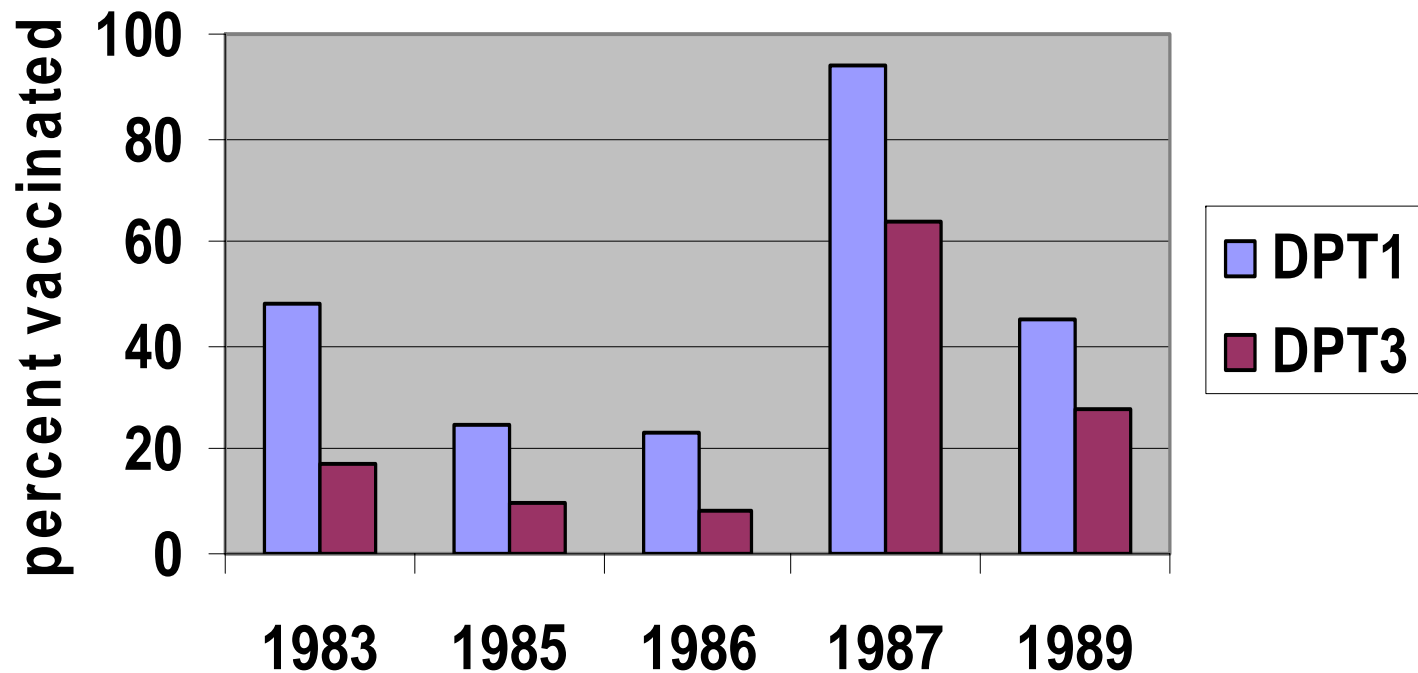
- Cutts et al (1991) studied immunization program efficiency in Guinea Conakry and four cities in Mozambique
- Methods: WHO EPI 30-cluster household surveys, clinic visits
- Results: among children with cards, inefficiencies reduced coverage by 29% in Conakry and 19% in Mozambique

### DPT Coverage Rates from Eight EPI Cluster Surveys in Four Mozambican Cities (Cutts et al 1991)



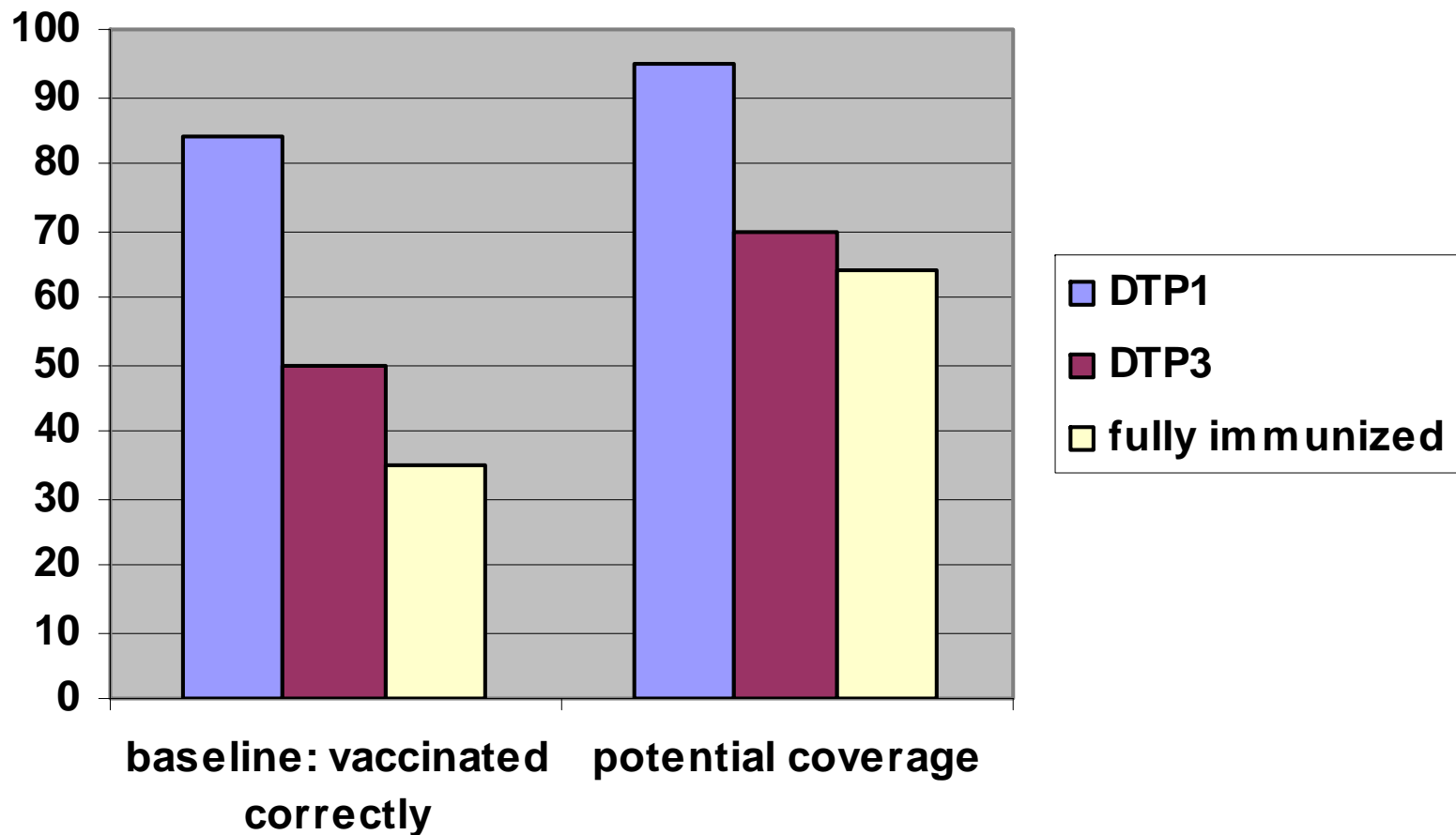
<b>Cumulative inefficiency effects, children 12-23m with cards, Mozambique 1987</b>		
	<b>average 7 surveys</b>	<b>range</b>
fully, correctly vaccinated	62	51-74
<i>added coverage with:</i>		
correct timing	11	6-15
simultaneous vaccination	2	1-4
vaccinate at growth monitoring	6	3-8
full efficiency	81	70-96

## DPT Coverage Rates from Five EPI Cluster Surveys, Guinea Conakry (Cutts et al 1991)

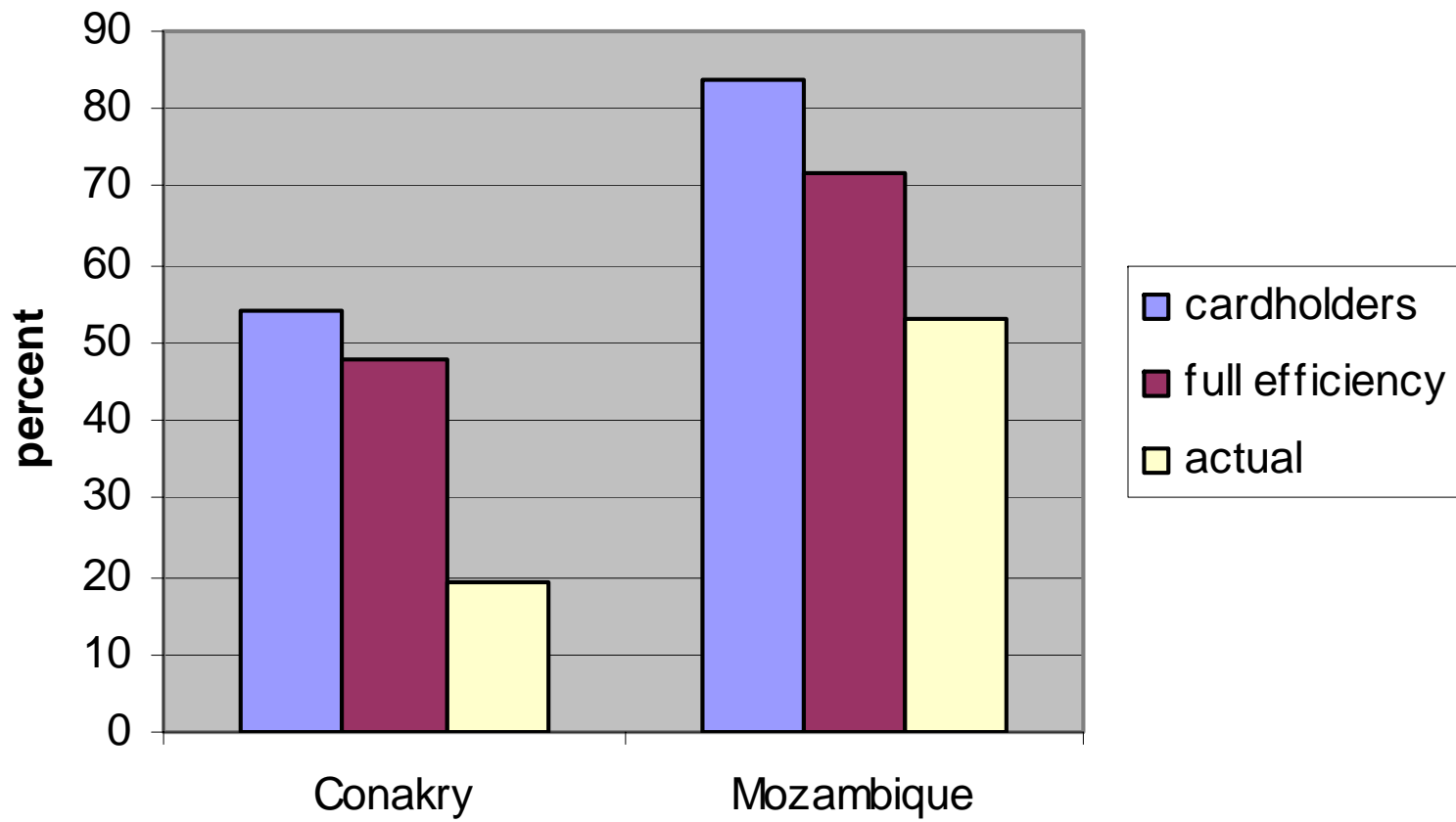


# What Could Have Happened

**Program Inefficiency Effects on Potential Vaccine Coverage, Conakry 1989 (Cutts et al 1991)**



### Percent of Children with Cards and Fully Immunized, Conakry and Mozambique (Cutts et al 1991)



- Eliminating timing errors and missed opportunities would significantly impact immunization coverage rates
- However, as Cutts et al (1991) demonstrated, high dropout rates may still depress coverage





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## *Section B*

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Improving Provider Efficiency

## *Improving Provider Efficiency*



## *Strategies for Reducing Missed Opportunities*

- Establish clear guidelines, standards for immunization
- Educate providers
- Provide feedback about missed opportunities and immunization rates
- Modify office practices to change standards of care
- Provide incentives

- A good supervisor
  - Focuses on *performance* problems
  - Does not threaten or confront but constructively criticizes
  - Uses established assessment criteria
  - Provides positive feedback, incentives public recognition for a job well done
  - Maintains confidentiality
- In recent years, new approaches to supervising health workers have emerged
- Here are two:
  - Peer training/supervision
  - CDC's AFIX system

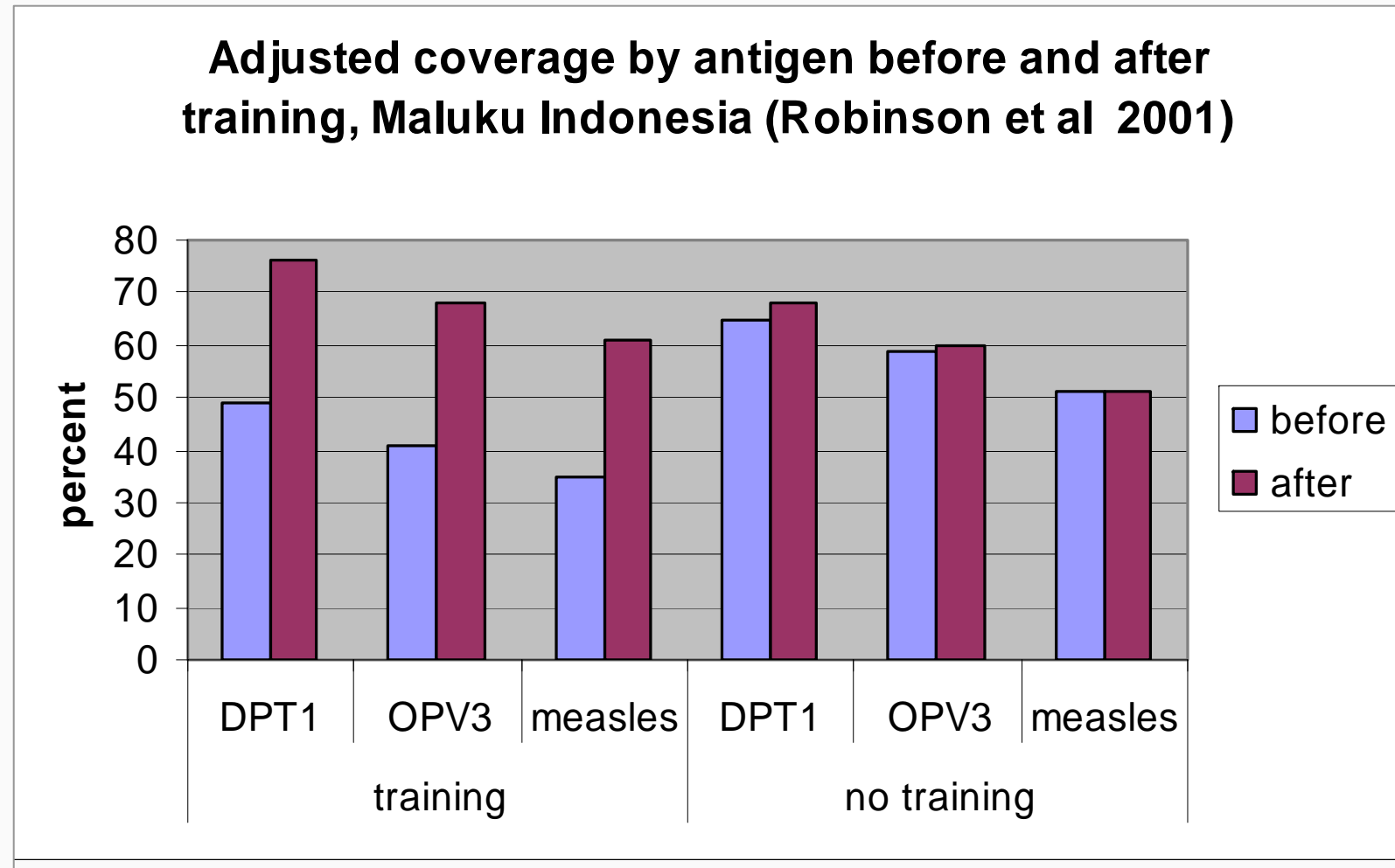
## *An Example of Peer Supervision*

- Robinson et al (2001) studied a peer training intervention in Maluku Province, Indonesia, in 1993–1994
- Theory: peer trainers are a non-threatening supplement to hierarchical classroom training
- Intervention: immunization nurses spent 1–2 weeks with peers at 15 low-performing health centers

# *An Example of Peer Supervision*

- Methods
  - Non-randomized case control study
  - Retrospective and prospective administrative data for each health center
  - WHO cluster sample surveys
  - Supervisory visits before and after
  - Trainers' assessments

**Adjusted coverage by antigen before and after training, Maluku Indonesia (Robinson et al 2001)**

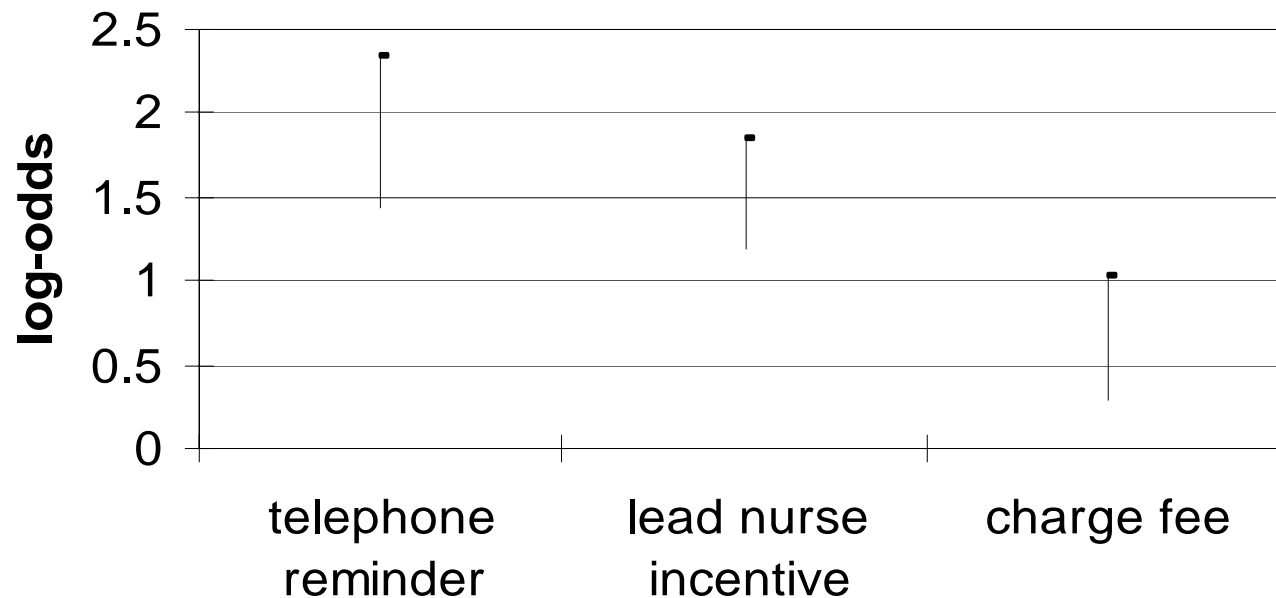


- 30% improvement in key immunization practice scores, especially:
  - Daily refrigerator temperature control
  - Record-keeping, on-time reporting
  - Vaccinating mildly ill children
- High acceptability among hosts, trainers
- Cost: U.S.\$53 per trainee, U.S.\$0.05 per dose



- Over the period 1988--94 the state of Georgia developed the AFIX system:
  - **A**ssessment of center performance
  - **F**eedback of assessment results
  - **I**ncentives to improve performance
  - **eX**change of performance data among centers

## Adjusted effects of three clinical practices on the log-odds (95% C.I.) of a child's vaccinations being up-to-date, 227 GA public health clinics



## ■ Theory

- Assessment with feedback creates awareness necessary for behavioral change
- Incentives and public recognition are powerful motivators of behavioral change
- Awareness of how others are doing (reflexivity) motivates improvement

- Standardized routine collection, analysis and summary of immunization records
- Purpose
  - Diagnose delivery problems
  - Identify useful changes in policy and practice
  - Monitor, refine interventions

- Return of diagnostic information to front-line staff and decision makers
- Purpose
  - Monitor progress toward goals
  - Motivate to improve
  - Develop local solutions

- Provide extrinsic motivation to improve performance
- Purpose
  - Recognize accomplishments
  - Enhance pride in workmanship
  - Reinforce sense of organizational mission

- Comparison to peers
- Purpose
  - Compare process and outcome indicators
  - Exchange ideas among peers
  - Provide mutual support
  - Stimulate friendly competition

- Types of problems identified
  - Late starts
  - Non-adherence to recommended schedule
  - Children falling behind schedule
  - Children dropping out of system
  - Ineffective reminder/recall strategies
  - Failure to give vaccines simultaneously
  - Inadequate record-keeping



- To identify clinic-specific problems
  - Compare each variable across sites
  - Compare each variable temporally
  - Compare variables within each site
- Results are presented
  - At exit interviews with local staff
  - In conferences with decision-makers
  - At workshops with providers
  - As a challenge
  - To encourage creativity

- LeBaron et al (1999) documented the introduction of AFIX in four states and two cities
- In 1994, clinic-based coverage (4:3:1, ages 19–35m) was lower than population-based coverage (determined by National Immunization Survey)
- During 1994–96 clinic-based coverage rose an average of 11% per year
  - A rate faster than population-based coverage increases in 5/6 sites

- Most of the initial increases were due to improved clinic record-keeping
- Net of this documentation artifact, average annual improvement rate was 5%
- Average cost per site: U.S.\$49, 533/yr (U.S.\$2/child)
- Recommendation: generalize AFIX nationwide



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## *Section C*

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CASA

- Main assessment tool: CASA
- Methods
  - Enter a random sample of individual vaccination records from clinic or an immunization register
  - Analyze age-appropriateness, missed opportunities for different antigen combinations, demographic sub-groups
  - Prepare specific reports
- Examples
  - Up-to-date status by age group, antigen
  - Lists of incompletely immunized children
  - Frequency, types of missed opportunities
  - Quality of documentation

- Provide feedback on
  - Key findings: coverage, practices
  - Strengths of the site
  - Areas for improvement
    - ▶ Documentation
    - ▶ Missed opportunities
    - ▶ Reminders, recalls
    - ▶ Parent, provider education
    - ▶ Vaccine handling, techniques
- Brainstorm local solutions



# Update

A Publication of the Maryland Vaccines For Children Program

**April 8, 2002    Volume 3, Issue 2**

## Selected Results of VFC Site Reviews, June 2001—January 2002

<u>Number Of Reviews</u>	<u>Number of Records</u>	<u>Percent of Children Complete</u>	<u>Percent Incomplete Due to "Missed Opportunities"</u>	<u>Percent Inadequate Vaccine Storage</u>
380	5,789	80%	10%	7%

- Create incentives for improvement
  - Examples
    - ▶ Identify local resources to tap
    - ▶ Leave free materials, upgrades
    - ▶ Offer training
    - ▶ Invite to present at conferences
    - ▶ Certificates, letters of commendation
    - ▶ Document, disseminate case studies



- Exchange experiences, best practices via
  - Lists of centers ranked by specific performance indicators
  - Documented evidence-based strategies
  - Conference presentations
  - Peer exchanges, mentoring

- Vaccine provider inefficiencies, like other performance problems, are usually remedied by good supervision and feedback