



# IT use in a respondent driven sampling survey, Kampala, Uganda

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*The findings and conclusions of this presentation are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention*

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# Outline

- The Crane Survey – design
  1. Audio information
    - Survey information
    - Consenting language
  2. Fingerprint scans
    - Linking recruits' 1<sup>st</sup> and 2<sup>nd</sup> visit
    - Identifying duplicates
  3. Recruit management software
    - Coupon management
    - Monitoring of survey events
  4. Audio-computer assisted self interviews (ACASI)

# The Crane Survey

- Bio-behavioral survey in Kampala (Uganda), 20 staff
- Objectives:
  - To estimate HIV/STI prevalence
  - To evaluate risk factors for HIV/STI
- Target groups
  - Men having sex with men and female sex partners
  - Female sex workers and sex partners
  - University students, motor cycle taxi drivers
- Sampling - passive:
  - Respondent driven sampling, single survey office
  - Concurrent sampling of all groups, 5-100 recruits per day

# Crane Survey – main procedures

Two visits to survey office:

- Initial visit
  - Eligibility, consent
  - Interview
  - Specimen collection
  - Coupon issuance
- Return visit
  - Return of test results
- No personal identifiers collected

# Waiting room – audio information



Recruits present survey coupon, receive folder and **CD/MP3 player** to inform about survey

- All information both on paper and on CD/MP3
  - Recruits can listen and/or read
- Two languages
- Sex and group-specific text
- Cartoons (specimen collection, paper version)



Move the swab **ONCE** in a large circle, pressing gently against the inside of your anus.

# Contents of information package

- Welcome & survey overview
- Information sheet (consent language)
- Terms and phrases used in ACASI: *anal sex, sex partner types (steady, casual...)*, etc.
- STD testing info\*
- Peer recruitment instructions

Total listening time: 30 – 45 minutes

\*HIV, gonorrhea, chlamydia, syphilis, bacterial vaginosis, trichomoniasis

# Audio information package – pros and cons

- Recorded in studio quality, pleasant to listen
  - Delivery of standardized information
  - Saves survey staff time
  - Utilizes recruits' waiting time
  - Recruits can play and re-play as needed
  - No incident of theft by recruits
- 
- Players may get broken (MP3 better)
  - Batteries need to be re-charged regularly

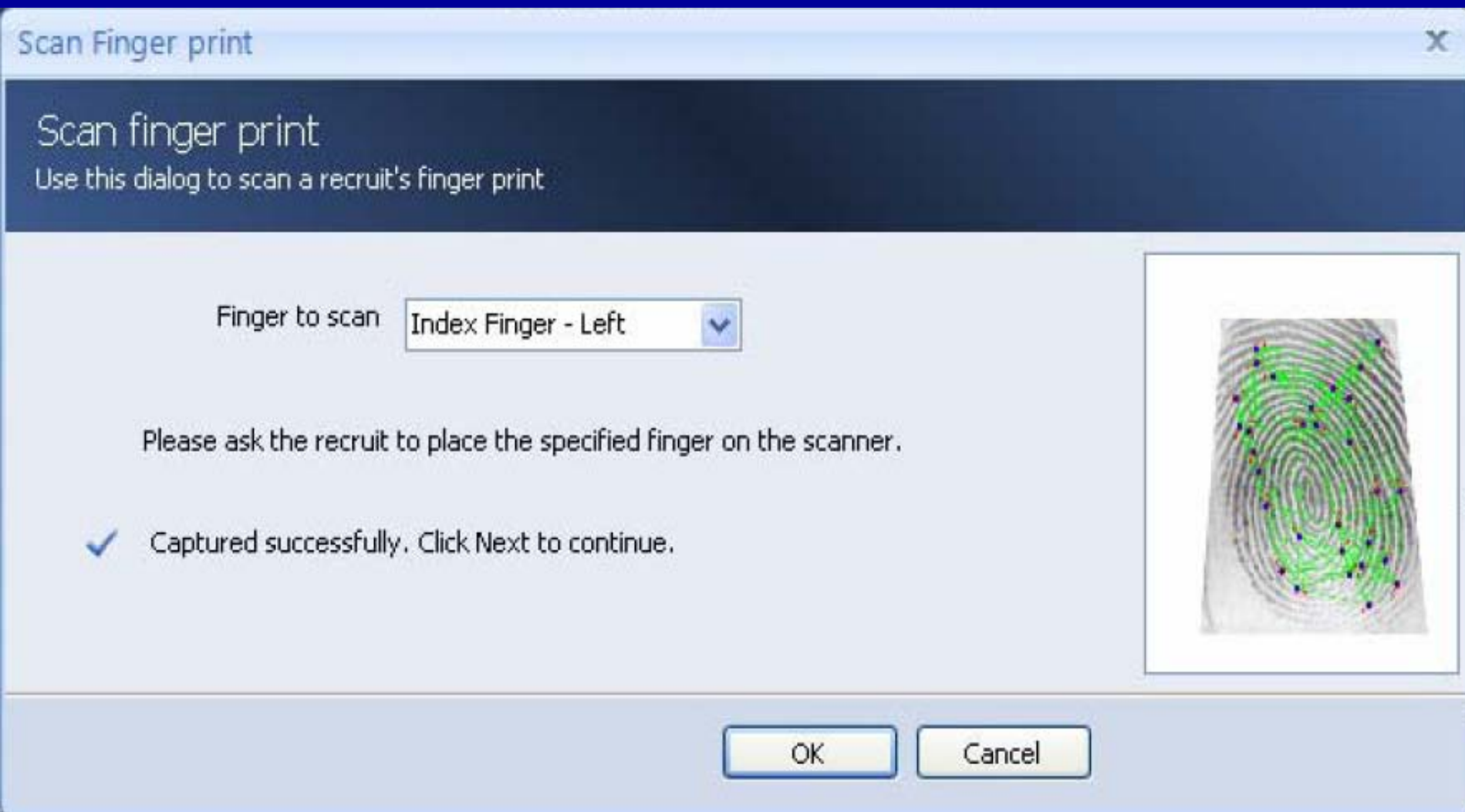


# Registration – Anonymous identification using fingerprints

- All recruits have fingerprints scanned
  - Unique alphanumeric code
  - No image recorded
  - Code cannot reconstruct fingerprint image
  - Upon re-scanning, same code is generated
- Hardware: Microsoft fingerprint readers
- Software: Griaule

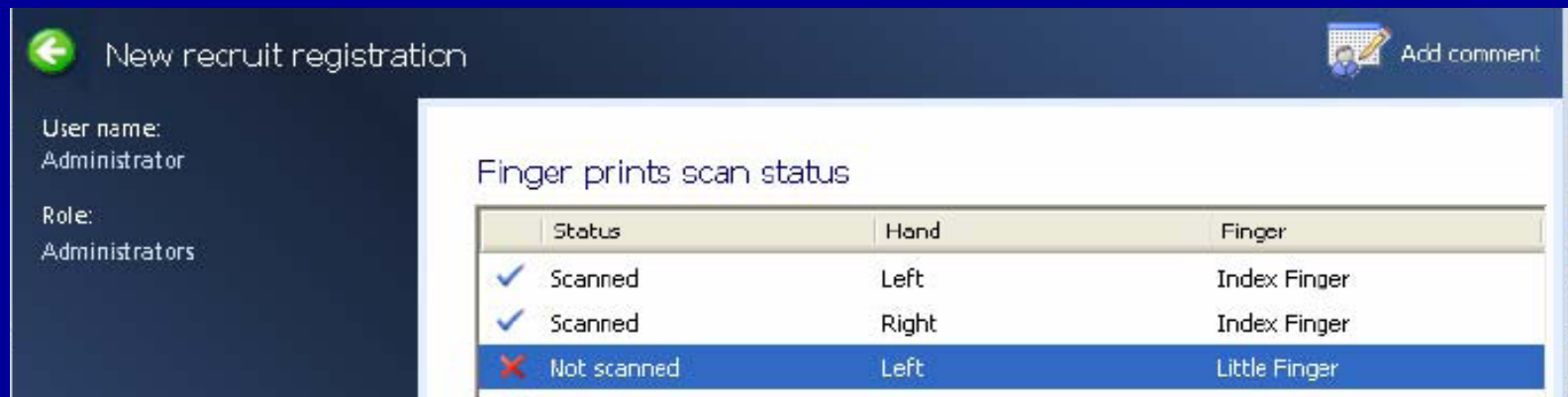


# Screenshot - fingerprint scan software



# Uses of fingerprint scanning

- To detect duplicates (recruits presenting again with another coupon)
- To link return visit with initial visit
- To link various survey procedures within same visit



The screenshot shows a web interface for 'New recruit registration'. On the left, there is a sidebar with a green back arrow icon, the text 'New recruit registration', and fields for 'User name: Administrator' and 'Role: Administrators'. On the right, there is a main content area with a title 'Finger prints scan status' and a table. The table has three columns: 'Status', 'Hand', and 'Finger'. It contains three rows of data. The first two rows are highlighted in light blue and show 'Scanned' status for the 'Index Finger' on both 'Left' and 'Right' hands. The third row is highlighted in dark blue and shows 'Not scanned' status for the 'Little Finger' on the 'Left' hand. There is also an 'Add comment' button with a pencil icon in the top right corner of the main content area.

Status	Hand	Finger
✓ Scanned	Left	Index Finger
✓ Scanned	Right	Index Finger
✗ Not scanned	Left	Little Finger

# Fingerprint scanning – pros and cons

- Very accurate
- Highly acceptable
  - Few questioned compatibility of “anonymity” and fingerprinting
  - No recruit refused
- Different “posture” of finger on scanner generates different codes. Solution:
  - Scan several or all fingers to increase matches
  - Verbal password procedure as back up

# Recruit management software: WinMARP

- In-house software
- Microsoft Visual C# 2008
- SQL Server 2008 for data storage
- Manages coupons & recruits

Visit 2 Checked Out  
Registered - Not eligible  
Visit 2 Checked Out  
Visit 1 Checked Out  
Visit 1 Checked Out  
Visit 1 Checked Out  
Visit 2 Checked Out  
Visit 1 Checked Out

# WinMARP: coupon management

- Records all issued coupons
  - Issuance, appointment, expiration date
- Records redeemed coupons
  - Detects illegitimate coupon numbers
    - Duplicates
    - Non-issued coupon numbers
    - Expired coupons
- Links recruiters' and recruitees' coupons
- Documents entire trail of coupons (seed to last wave)

# WinMARP – coupon screen shot

WinMARP 1.0.4

File Home Tools

New coupon Edit coupon View properties

Tasks

Delete Refresh Clear search Search

Coupons

Quick search: Page 1 of 11 (10133 items in total)

View

Home Recruits Coupons Coupon Tree Coupon statistics Appointments

Recruits and Coupons Setup

Server: cdc202374\sqlexpress Database: MARP

start I. S. W. C. 3 P. S. M. CDC P. M. CDC W. CDC W.

4:25 PM

Coupon no Issued to Issue date Start date End date Appointment date Claimed by Wave

31284	3699	12/2/2008	12/3/2008	12/16/2008	12/9/2008		2
62751	6690	11/26/2008	11/27/2008	12/10/2008	12/3/2008	6915	13
51528	5648	12/1/2008	12/2/2008	12/15/2008	12/10/2008		6
20405	1332	9/10/2008	9/11/2008	9/24/2008	9/17/2008		9
50327	5134	10/23/2008	10/24/2008	11/5/2008	10/29/2008		8
51041	5562	11/20/2008	11/21/2008	12/4/2008	11/27/2008		13
10504	1167	8/4/2008	8/5/2008	8/18/2008	8/5/2008		3
62983	6647	11/27/2008	11/28/2008	12/11/2008	12/4/2008		18
50848	5371	11/6/2008	11/7/2008	11/20/2008	11/10/2008		12
62811	6630	11/25/2008	11/26/2008	12/8/2008	11/28/2008		8
50361	5130	10/24/2008	10/25/2008	11/6/2008	10/27/2008	5121	9
60397	6116	10/2/2008	10/3/2008	10/13/2008	10/3/2008		7
41333	3706	10/10/2008	10/11/2008	10/24/2008	10/13/2008		11
20019	1048	6/6/2008	6/7/2008	6/21/2008	6/7/2008	2020	3
30958	3525	9/5/2008	9/6/2008	9/20/2008	9/12/2008		16
51395	5844	2/6/2009	2/9/2009	2/23/2009	2/16/2009	5855	16
51184	5300	11/11/2008	11/13/2008	11/26/2008	11/17/2008		12
30542	3301	7/17/2008	7/18/2008	8/1/2008	7/22/2008	3331	12
41721	3796	2/11/2009	2/12/2009	2/26/2009	2/16/2009		9
10954	1271	9/1/2008	9/2/2008	9/15/2008	9/2/2008	1300	11
60347	6114	9/29/2008	9/30/2008	10/10/2008	9/30/2008		4
20089	1103	7/29/2008	7/31/2008	8/14/2008	8/7/2008		3
11585	1440	10/30/2008	10/31/2008	11/12/2008	11/3/2008		2

# WinMARP: recruit management

- Tracks recruit while in survey office
  - Registration
  - ACASI interview
  - Specimen collection
  - Coupon issuance for sampling
- Project manager monitors survey office events in real time



# WinMARP features

- Easy-to-use interface for end user
- Advanced interface for project manager
- Generates detailed SQL reports
  - Number of recruits recruited
  - Coupon uptake
  - Proportion of recruits eligible
  - Consent to specimen collection, etc...

# ACASI



- Main interview ACASI-based
- Software: **QDS** (Questionnaire Design Studio)
- Approximately 100 questions
  - Duration 30-60 minutes
  - Depending on recruit, skip pattern
- Response options:
  - Touch screen, “mouse”, or keyboard (numbers)
  - Responses: categorical or numerical

# ACASI room

- Data manager in ACASI room
  - Opens new ACASI file for recruit
  - Keys in Recruit ID (double)
  - Conducts short ACASI tutorial
  - Available to help during interview
- Recruits listen and / or read questions
- 6-8 ACASIs concurrently



# ACASI – pros

- Literature indicates ACASI may more accurately measure stigmatized behaviors
- Most prefer ACASI over face-to-face (>90%)
  - More comfortable answering sensitive questions
  - Less tiring
  - Feasible with illiterate, computer-naïve recruits
- Standardized delivery of questions
- Saves staff time
  - Interview
  - Data entry, cleaning

# ACASI - screenshot

What kind of sex did you have with that person?

Vaginal

Anal

Both

Prefer not to answer

Don't  
Know

Refuse to  
Answer

Not  
Applicable

Previous  
Question

Next  
Question

Repeat the  
Question

# ACASI – cons

- Power dependability
- No hard copy data to fall back to >> frequent data back up essential
- Theft: Crane Survey office burglarized, all PCs stolen

# Conclusion

- Standard survey information efficiently delivered electronically
- Fingerprint scans collect exact biomarkers without violating anonymity
- Digital tracking of survey procedures in real time (WinMARP)
- ACASI feasible for high risk groups, illiterate & computer-naïve persons

# Conclusion (2)

- Uninterrupted power supply critical
- More complexity
- Good data back-up very important
- IT facilitates
  - standardization of procedures
  - efficiency (staff time)
  - data accuracy



# Thank you

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