Unique ID in Development and Social Programs

World Bank Pensions Core Course
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Overview

- Despite advances, many people in poor countries are not registered at birth and many adults have no robust official identification.
- The number of identification programs is increasing globally and especially in developing countries. Donors fund many programs
  - ID Programs are either "foundational" or general (NID) and "functional" or for particular purposes Some countries have too many.
- Biometric technology is under-pinning this trend
  - Costs are falling rapidly. Hardware costs can now be lower than logistics costs. Towards multiple biometrics for precision, uniqueness and access. **Fingerprints, face, iris, others.**
- Robust ID creates a platform to integrate social protection programs
  - Particular uses for social protection and pensions
  - Towards an integrated registry or linkable registries for better privacy
  - Cases show benefits, and some risks -- exclusion, privacy….
  - More detailed studies would be beneficial

Uses and Limitations

A Robust ID Program using Biometrics CAN...

1. **Ensure that identity is "unique"** (all to all matching)

    And assign a unique ID number
1. **Identify** an individual against record (one to many)
2. **Authenticate** an individual against record (one to one)

    Subject to reasonably small errors

    ...but CANNOT

Establish eligibility for a program or service. May need birth certificate or substitute, and income or asset data for PMT depending on program

Only biometrics can do 1 and 2 for large populations and this capability is fairly recent. PINS and passwords can do 3) but not for all purposes because they can be shared.

Birth Registration "Identity Gap"

Necessary for basic rights ... **but lagging in poor countries**

- name
- nationality
- recognition before the law
- take part in government
- an identity with family ties
- equal access to services

- 48 million (36%) unregistered births/year
- 71% in LDCs
- 12 million stateless

A cycle of exclusion:
children → adults → children

**Despite progress there are still large gaps in coverage
About 750 million people below 16 have not been registered
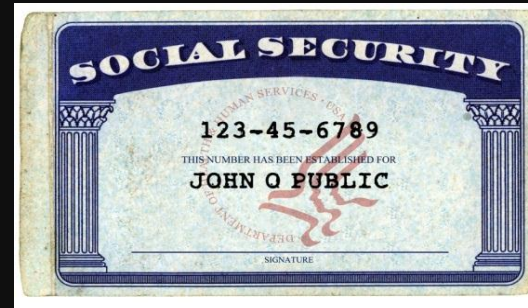at birth. Need a "catch-up" mechanism to register later**

Birth Registration continued

- Some countries have "one stop shop" (Uruguay) for birth registration and issue of NID number
- But there are other problems as well…..
  - A third of those registered receive no certificate
  - Registries destroyed/inoperable in some countries
    - Civil war (Cambodia)
  - Certificates easily forged (France…)
    - Cannot link infants to certificate biometrically
    - Except by using DNA – not practical at large scale
- Shaky foundation needs to be strengthened

Countries Follow Two Identification Pathways

Functional (voter card, SocSec card..)→ Foundational

DRC
Voter ID

USA
SSN

Foundational (typically NIDs)→ Functional
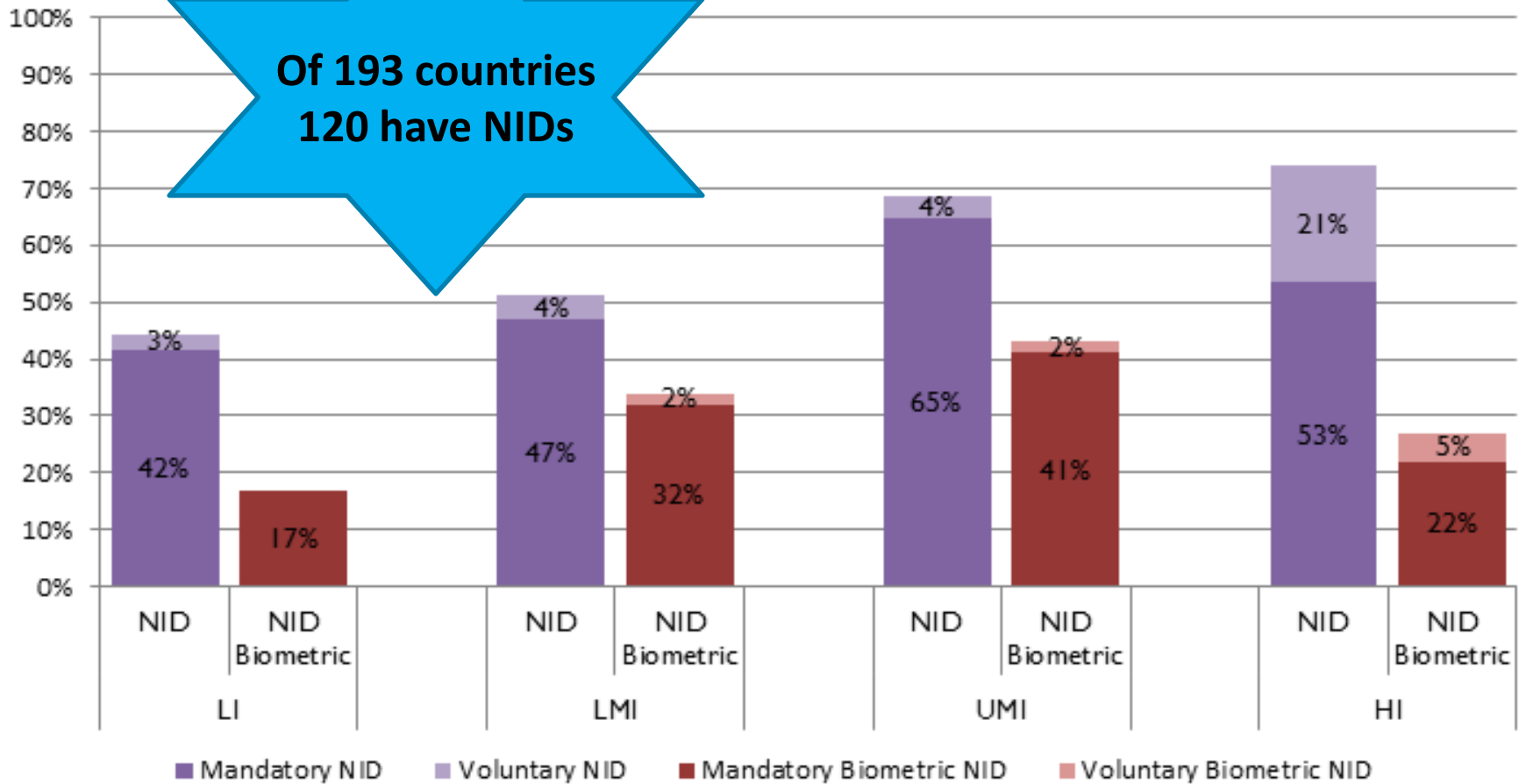
Pakistan
NADRA

India
UID

The Global Picture for NIDs…

- As income levels increase more countries have NID programs
  - Programs mandatory especially in upper middle income countries (UMICs)
  - Some of the programs have modest coverage
- Biometrics most prevalent in UMIC NIDs
  - Developing countries are leapfrogging HICs
    - HICs have more voluntary programs and less biometrics (because of legacy programs)
- Typically, countries with NID programs have more capable governments for their income levels
- Only half of the countries with NIDs have data privacy laws
  - Privacy and data security will become more prominent issues

Global Profile of NID Programs by Income Group

Of 193 countries
120 have NIDs

The Trend towards NID

- Since 2008 about 9 countries have introduced new NID programs
- About 16 have introduced biometrics into their programs
- At least 16 have upgraded the biometrics used in their programs
  - Usually to digital form and from one or two fingers to multiple biometrics: 10 fingers, iris, face.
- Globally, biometrics industry growth over 20%, and higher in developing countries

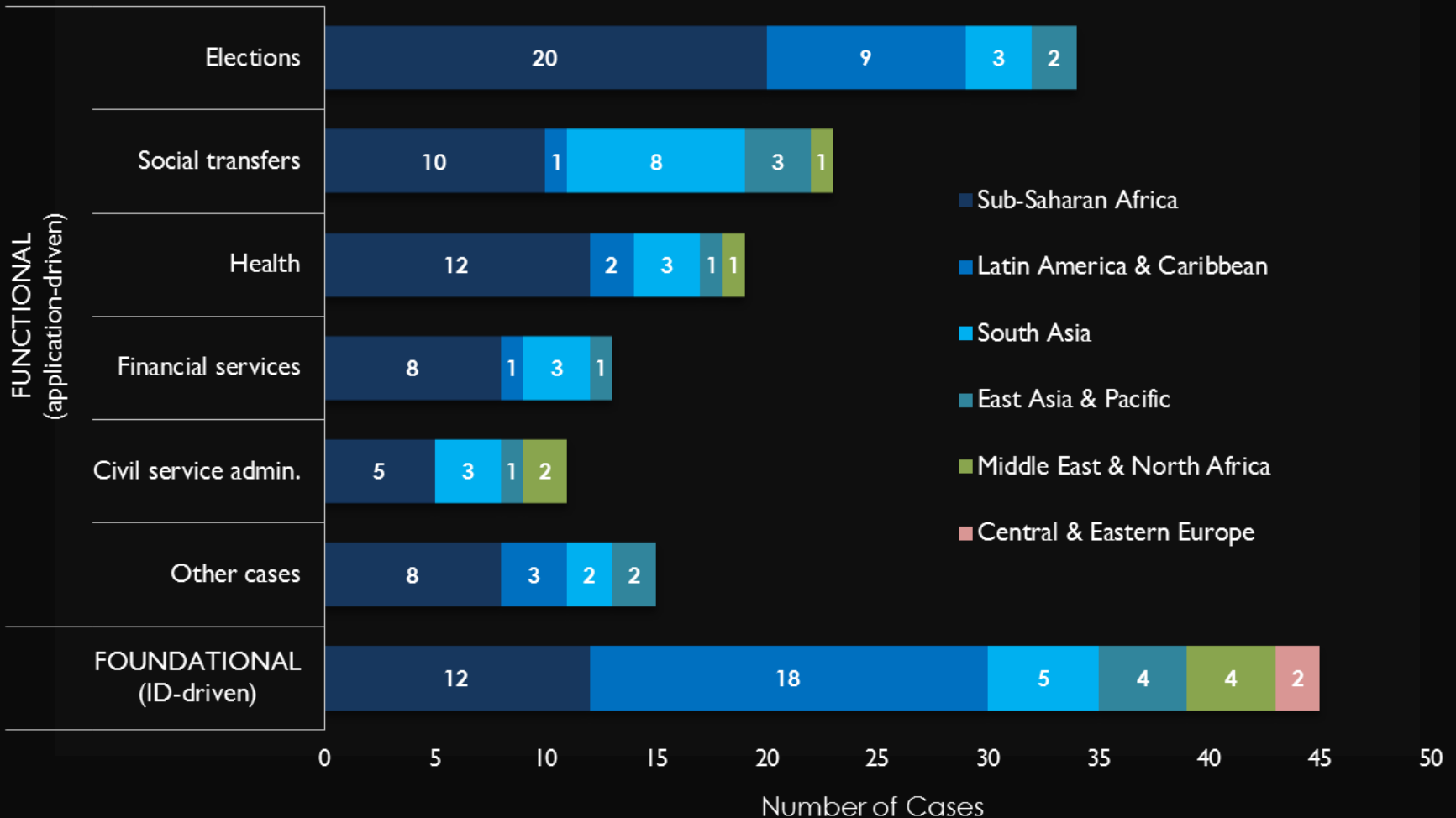# We Surveyed Biometric Programs in Low-Middle Income Countries

160 cases in 70 countries Over 1 billion people!
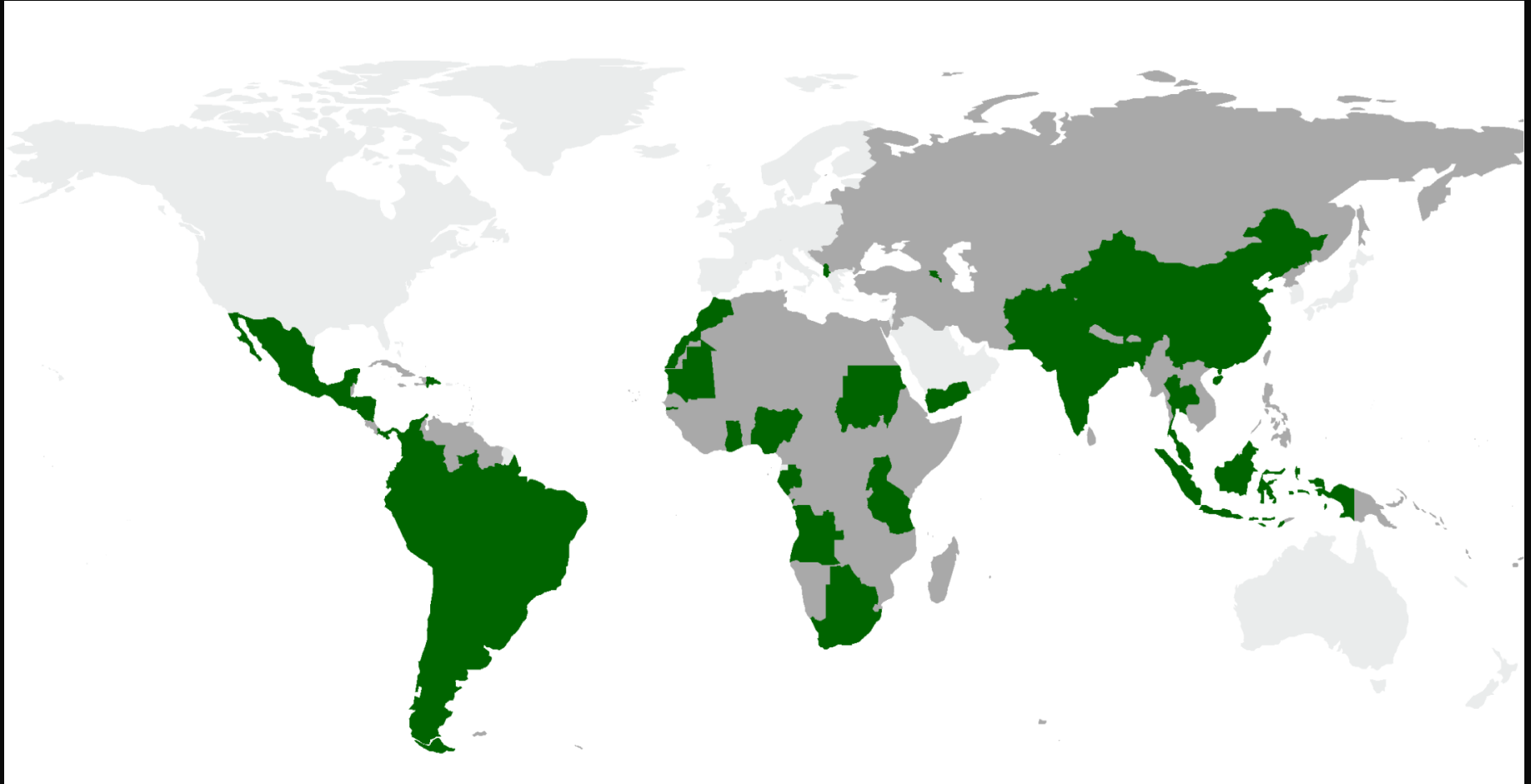
We know there are more...

Donors fund many programs

national — at least 1 country-wide application (e.g., national ID, elections)
sub-national — at least 1 state or ministry-level application (e.g., civil service payroll, pensions)
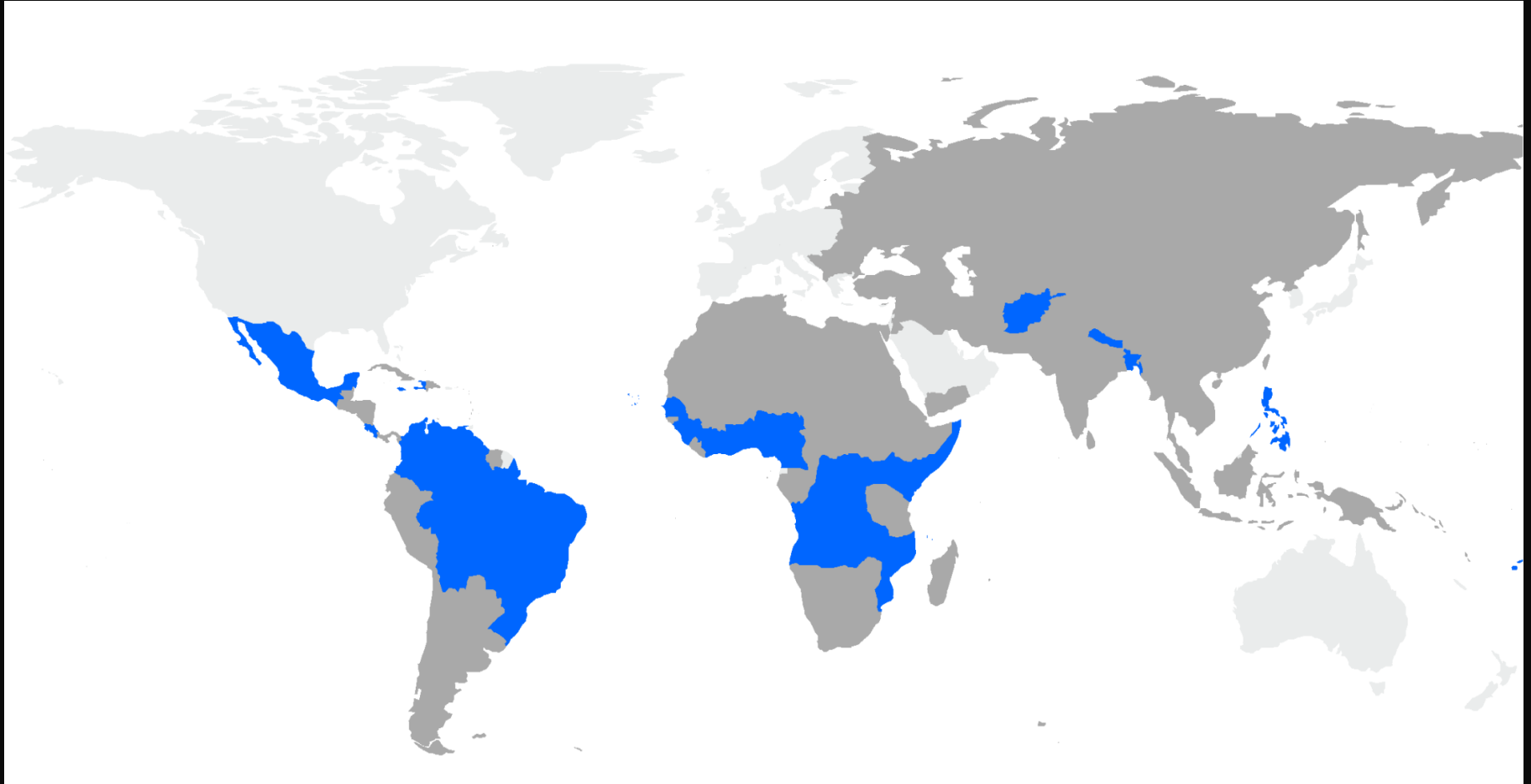project — at least 1 project-level application (e.g., health and demographic survey)
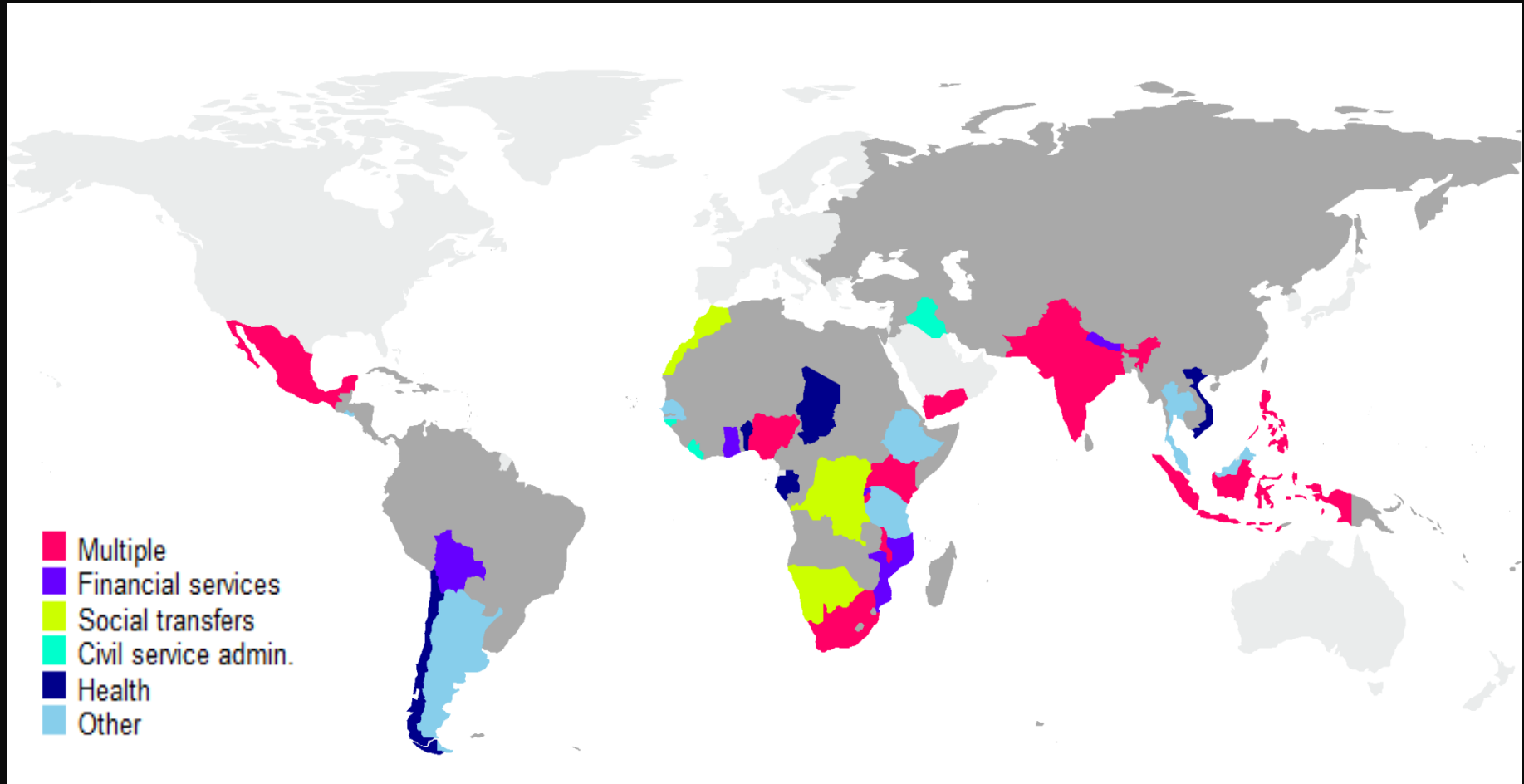
Sample of Cases by Type and Region

Selected NATIONAL IDs

Sample of ELECTIONS

Sample of "FUNCTIONAL" CASES
(non-elections, detailed)

Legend:
- Multiple
- Financial services
- Social transfers
- Civil service admin.
- Health
- Other

Focus on SP and Pensions

Roles of a robust ID System

- Unique enrolment of beneficiaries permits client-based services
  - Portability, accountability for payments
- But integration across programs requires single Unique Number
  - India Employees Provident Fund: no unique ID so a person may have 4, 5 or more accounts over lifetime…..
- Trend towards unified social registries (Brazil, Pakistan)
  - Unique ID can enable separate yet linkable databases for more privacy
  - Data sharing protocol (Pakistan)
- Authentication for transactions
  - Mexico AFORES – how to authenticate switches between pension funds
- Authentication at point of service delivery and payments

Issues:

Accuracy? Exclusion? Cost? Privacy?

Some Lessons from India's UID Program

- Largest identification program in the world: over 500 million and counting
  - One million enrolments per day
- Based on biometric data
  - Fingerprints, iris, photo
- Has released performance data
- Lowest cost program known
  - Average $3 per head
- Open architecture and competitive procurement keeps costs low
  - Enrolment Kit costs about $2,500
  - A major influence on the industry
- Authentication by biometric against database by cellular system
  - No card
- Technology used in Indonesia program

Accuracy: UID Applied to Mexico

- Suppose a Mexican program covering 70 million people, and performance as reported by UID
- About 98,000 people would need non-biometric enrolment because cannot provide high-quality biometrics (FTC 0.14%)
    - Because of using iris as well as fingerprints
- About 17,000 cases would need to be checked where system wrongly reported already enrolled
- If some people tried to enroll twice, there might be some 200 duplicate IDs (FAR 0.035%)

These are probably upper bounds: Mexico should have fewer exclusions and errors than India

Cost

- Difficult to specify standard cost for ID programs because depends on many factors
    - Procurement, logistics, scale, sophistication of cards...
- Estimates for larger programs run from $3 to $15 per head and more
    - Highest costs seem to be voter rolls....
- UID points towards cost containment
    - Standards-based rollout and competition among vendors
- Can be financed by modest reduction in leakages for many programs

Authentication for Transactions

Increasing use of robust ID for banking authentication

- **Japan:** vein recognition, banking, smartcards
  - Over 80,000 ATMs, 15 million customers,
- **Banco Azteca**: fingerprint authentication
  - 900 branches, 8+ million customers
- **Opportunity International** – unique ID all clients and staff
  - Malawi 500,000 clients, many female. Dual authentication to limit fraud and protect clients – especially women. Field agents combine dual authentication, recordation, geo-coding

Can be applied to Social Protection

- **Transfer payments**: AP, Pakistan Watan Card smartcards
- **Pensions:** South Africa mobile ATMs, smartcards and bank accounts
- Where assessments have been done, generally favorable
  - Contains leakage
  - Improves convenience for users
  - Protects individuals (women)

Some eID systems use PINs but they can be shared. For security may want multi-factor ID (what you have, know or are)

Payments….

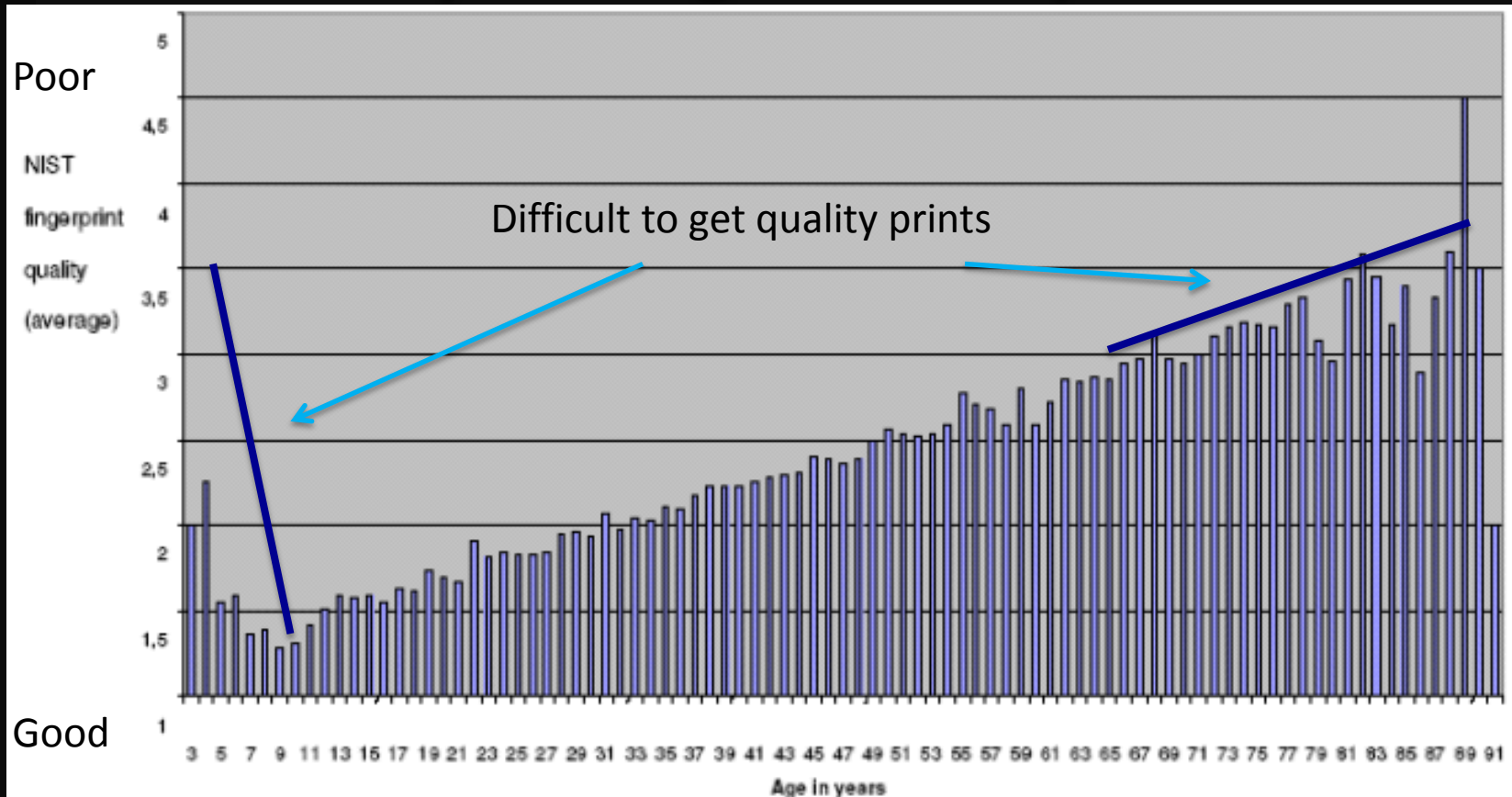- **Pakistan flood reconstruction**
  - Reconstruction grants to over 1.5 million families: Visa card
  - Survey (OPM) funds reached recipients with little leakage
  - Easy to withdraw benefits. Generalizing to other programs.
  - Lengthy grievance processes but not because of technology

- **New study of payments in India**
  - Payment faster, easier, less in bribes
  - Lower leakage, improved performance of public workfare program, increased wages and household income

  More rigorous studies are needed

Fingerprint Quality More Difficult for Very Young and Very Old

Institute for the Protection and Security of the Citizen, Digital Citizen Security Unit.
Report EUR 26193 EN. 2013. Figure 6. TNO Study.

Need to be ready to process exceptions, FTC or FRR

Effect of ageing on iris not clear yet

General Lessons: Successes

- **Inclusion and empowerment** of disadvantaged groups (identification, authentication)
- **Better financial access** via ATMs etc. and easier KYC requirements (identification, authentication)
- **Reduced leakage** in payments via cards, rationalizing public payrolls and social programs
- **Helping to limit fraud**

Some Successes (contd.)

- **Increasing tax collection** by reducing evasion, fraud (identification)

- **Enabling markets** in health insurance (RSBY: identification, authentication)

- **Tracking health treatments** such as post-natal care, TB, HIV/AIDS (authentication)

Some Challenges

- **Planning:** trying to do too much too quickly, leading to failure
- **Fragmentation:** loses economies of scale and scope, and inconveniences citizens by multiple registrations
  - Nigeria, Mexico – many large programs most with biometrics
  - Usually happens because NID program is too slow or not good quality or sufficiently inclusive, or because of bureaucratic competition. Users develop own programs.
- **Exclusion:** for example restrictive criteria for citizenship
- **Procurement:** corruption, high-cost lock-in to vendors
- **Waste:** technology not used to full potential (partial or no de-duplication and/or authentication)

Most problematic area: voter registration and elections

Risks – Robust Identification

- **Exclusion:** definitions of nationality and citizenship, limits discretion
  - Can increase risks of statelessness
- **Cost:** enrollment and updating logistics are expensive
  - cost to poor beneficiaries can be prohibitive
- **Privacy:** integrating databases or linking with common identifier → data security and confidentiality?
  - Yet many drawbacks from a fragmented system
  - May argue for a "federated ID model"
  - Privacy Assessment and Privacy Officer desirable
  - Some special risks, for example refugees

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Risks – Biometrics

- **Exclusion:** failure-to-capture or authenticate because cannot provide high-quality data
- **Cost:** technology is expensive (but costs are falling rapidly, now less than logistics)
- **Security:** of data, including against commercial exploitation
  - Worse with multiple data bases
- **Privacy:** surveillance (esp. facial recognition); also because of better ability to link records across databases because of uniqueness of ID number

Conclusion

- Strengthened identification and authentication can establish a basis for a more effective, inclusive and accountable social protection system.

- Countries are beginning to move this way but there is a long way to go.

- The picture is changing rapidly, including lower costs and more agile hardware and software
  - Some biometrics like voice are being used more widely
  - Every country is different but countries can learn a lot from others

- Donors can help but can also fragment ID space

THANK YOU

Estimated population covered in sample cases by region