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Why is more evidence needed globally on the burden of hearing loss and how can we get it?

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LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE



OUTLINE of presentation

- **Why is more evidence needed?**
- **Lack of available data**
- **Problems with gathering data**
- **Possible solutions**

WHY IS MORE EVIDENCE NEEDED?

To...

- RAISE & INCREASE AWARENESS for resource allocation
- PREDICT NEEDS
- DETERMINE PRIORITIES FOR ACTION
- SELECT STRATEGIES FOR PREVENTION
- USE in
 - burden of disease measurement
 - cost-effectiveness analysis

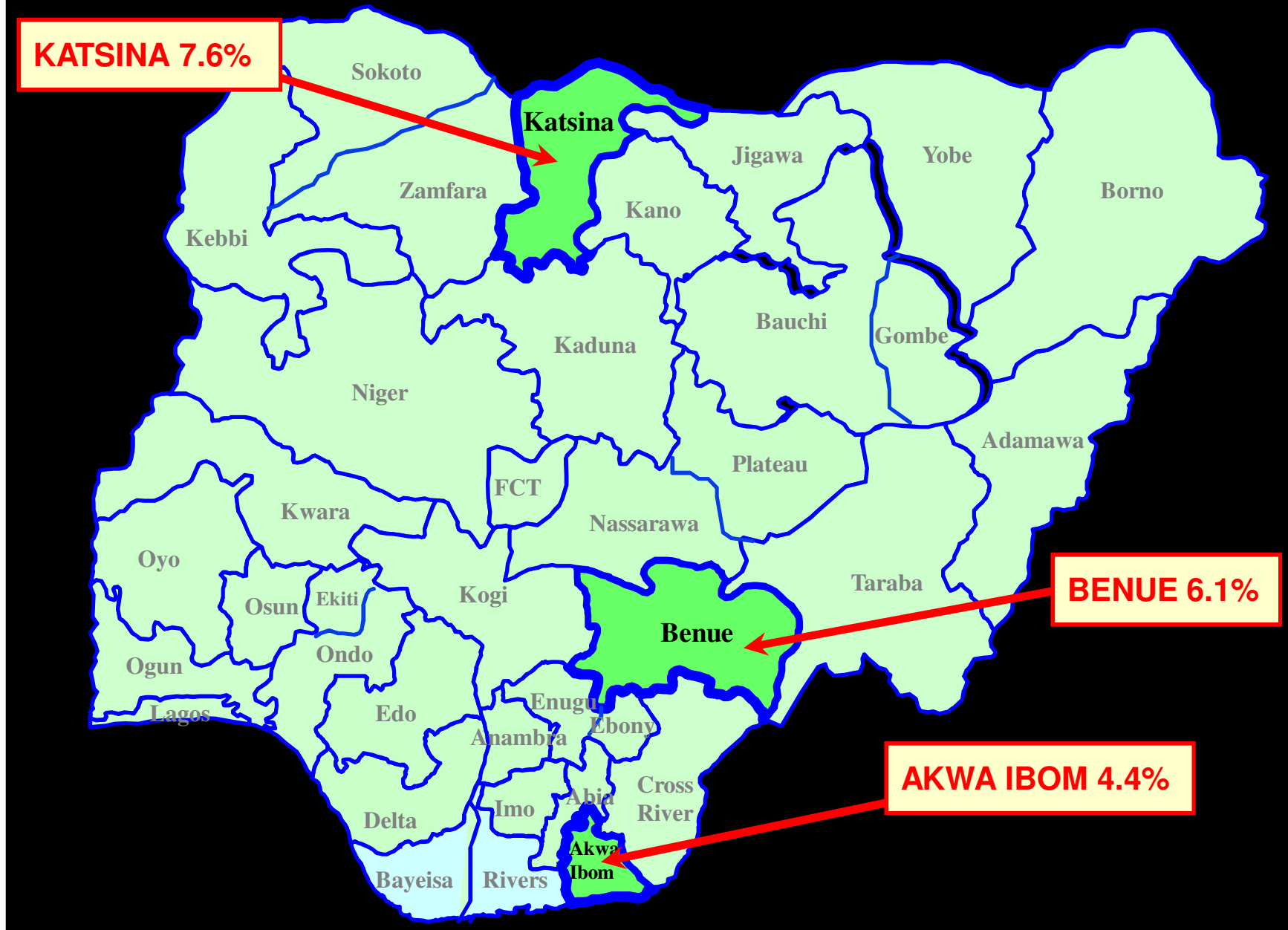
Recent WHO findings:-

- Only 30 / 76 countries had epidemiological data on prevalence of hearing loss
[WHO Country assessment report, 2013]
- Only 32 / 76 had developed a national or subnational plan for hearing loss.
- Planning should start with a thorough situation analysis *[WHO meeting. 2015]*.

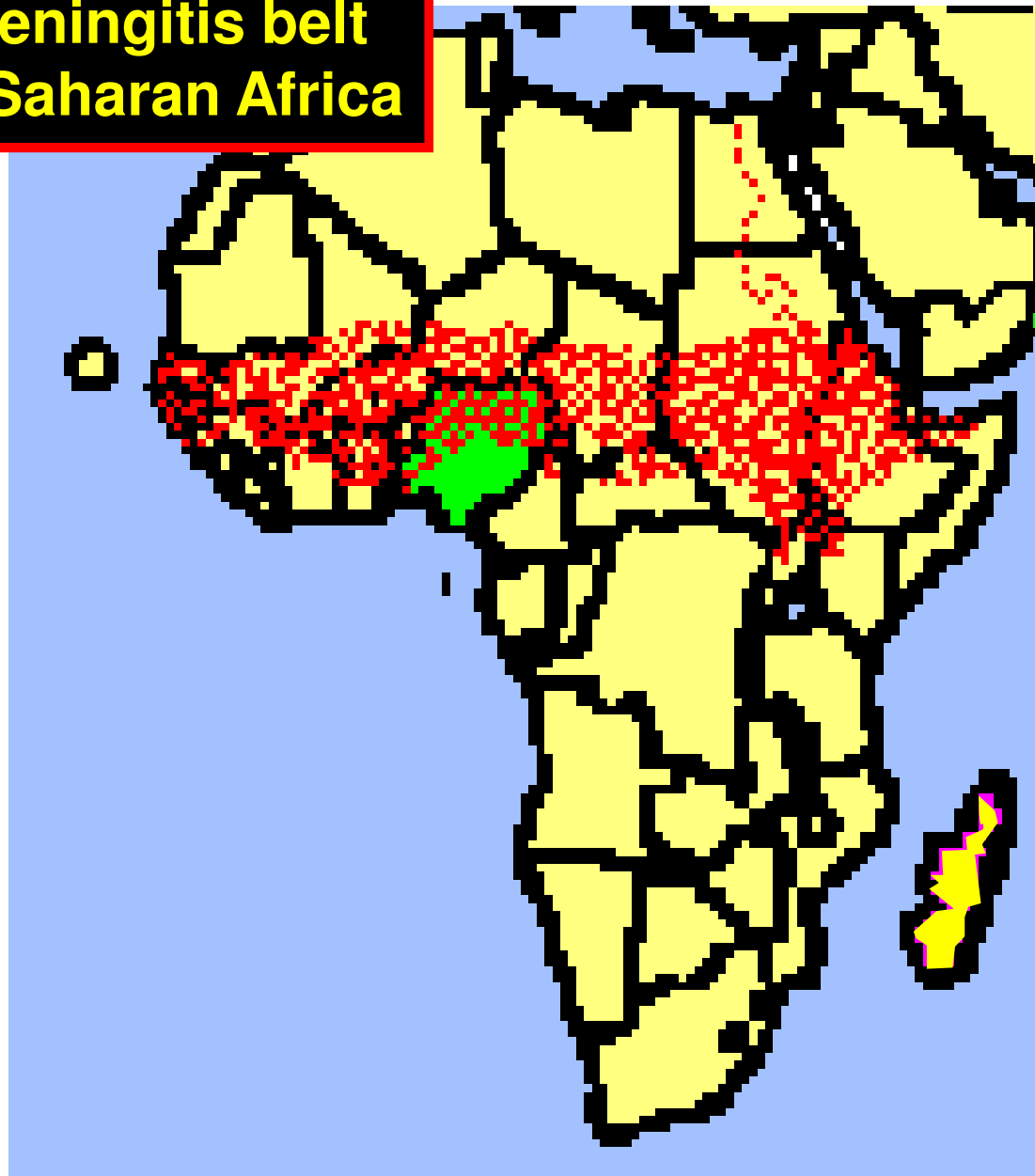
(WHO situation analysis tool is now being developed).

Example of the use of evidence

SURVEYS OF DISABLING HEARING IMPAIRMENT IN 3 NIGERIAN STATES



**The meningitis belt
in sub-Saharan Africa**



WHO GLOBAL ESTIMATES 2012

360 million persons (5.3%) have disabling (moderate or worse) hearing impairment

328 million of these are adults

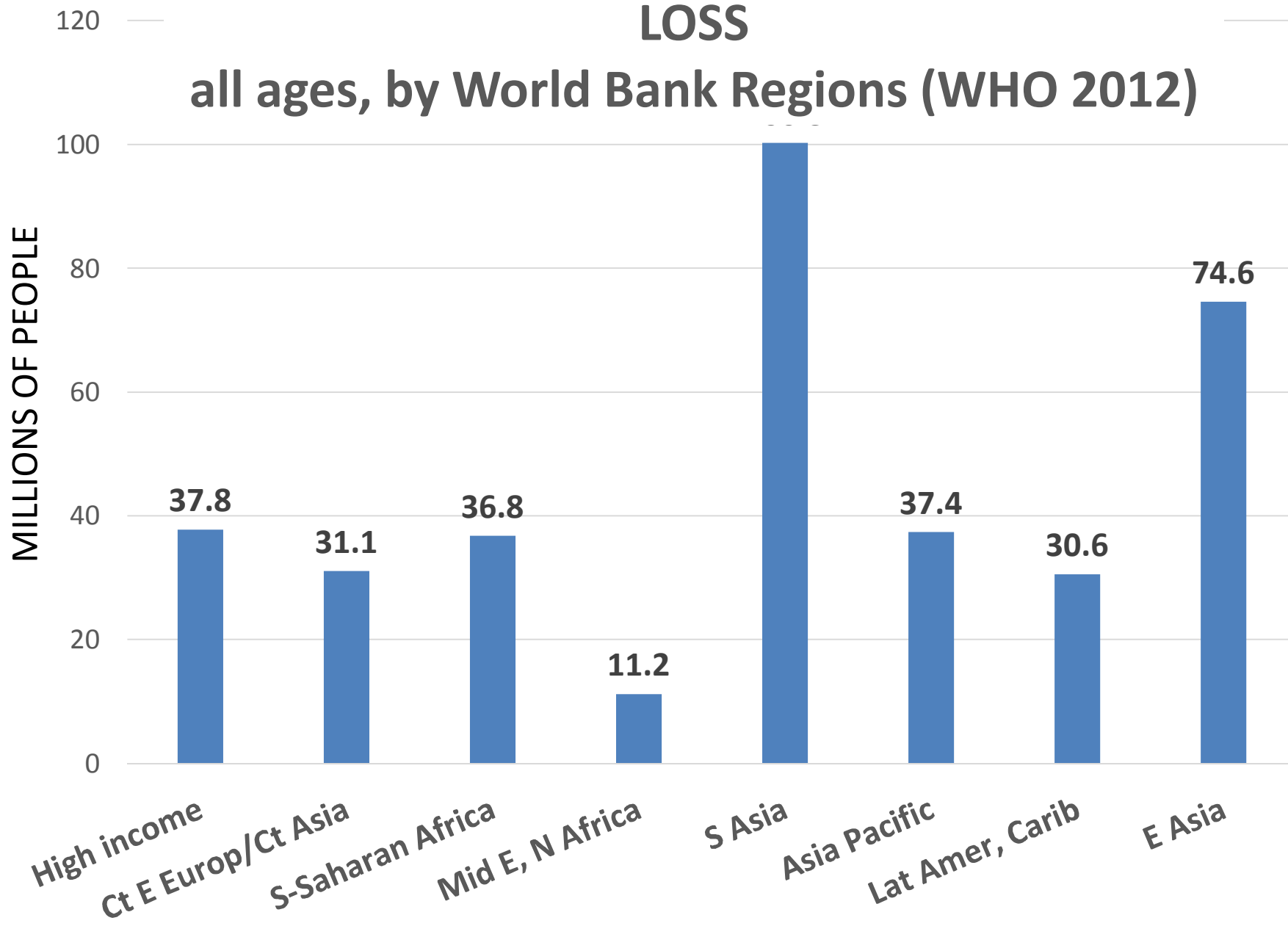
32 million of these are children.

15% (1,019 million) of the world population have any level of hearing loss (mild or worse)

>80% live in low & middle income countries

GLOBAL NUMBERS WITH DISABLING HEARING LOSS

all ages, by World Bank Regions (WHO 2012)



Top 14 causes of global YLDs in 1990 and 2013

From: Vos et al. Lancet 8 June 2015

Mean YLDs x1000	1990 leading causes	2013 leading causes	Mean YLDs (x1000)	Median change
46 068	1 Low back pain	1 Low back pain	72 318	57%
40 079	2 Iron-deficiency anaemia	2 Major depression	51 784	53%
33 711	3 Major depression	3 Iron-deficiency anaemia	36 663	-9%
22 294	4 Neck pain	4 Neck pain	34 348	54%
21 633	5 Other hearing loss	5 Other hearing loss	32 580	51%
19 805	6 Migraine	6 Migraine	28 898	46%
17 180	7 Anxiety disorders	7 Diabetes	29 518	136%
15 151	8 COPD	8 COPD	26 131	72%
12 672	9 Other musculoskeletal	9 Anxiety disorders	24 356	42%
12 533	10 Diabetes	10 Other musculoskeletal	22 644	79%
10 337	11 Falls	11 Schizophrenia	15 204	52%
9 995	12 Schizophrenia	12 Falls	12 818	23%
8 048	13 Asthma	13 Osteoarthritis	12 811	75%
7 831	14 Refraction and accommodation	14 Refraction and accommodation	11 257	44%

OUTLINE of presentation

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- **Lack of available data**

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Global and regional hearing impairment prevalence: an analysis of 42 studies in 29 countries



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Colin D. Mathers^{1,*} and Mariel Finucane⁴ on behalf of the Global Burden of Disease
Hearing Loss Expert Group** (Co-ordinator: Andrew Smith)

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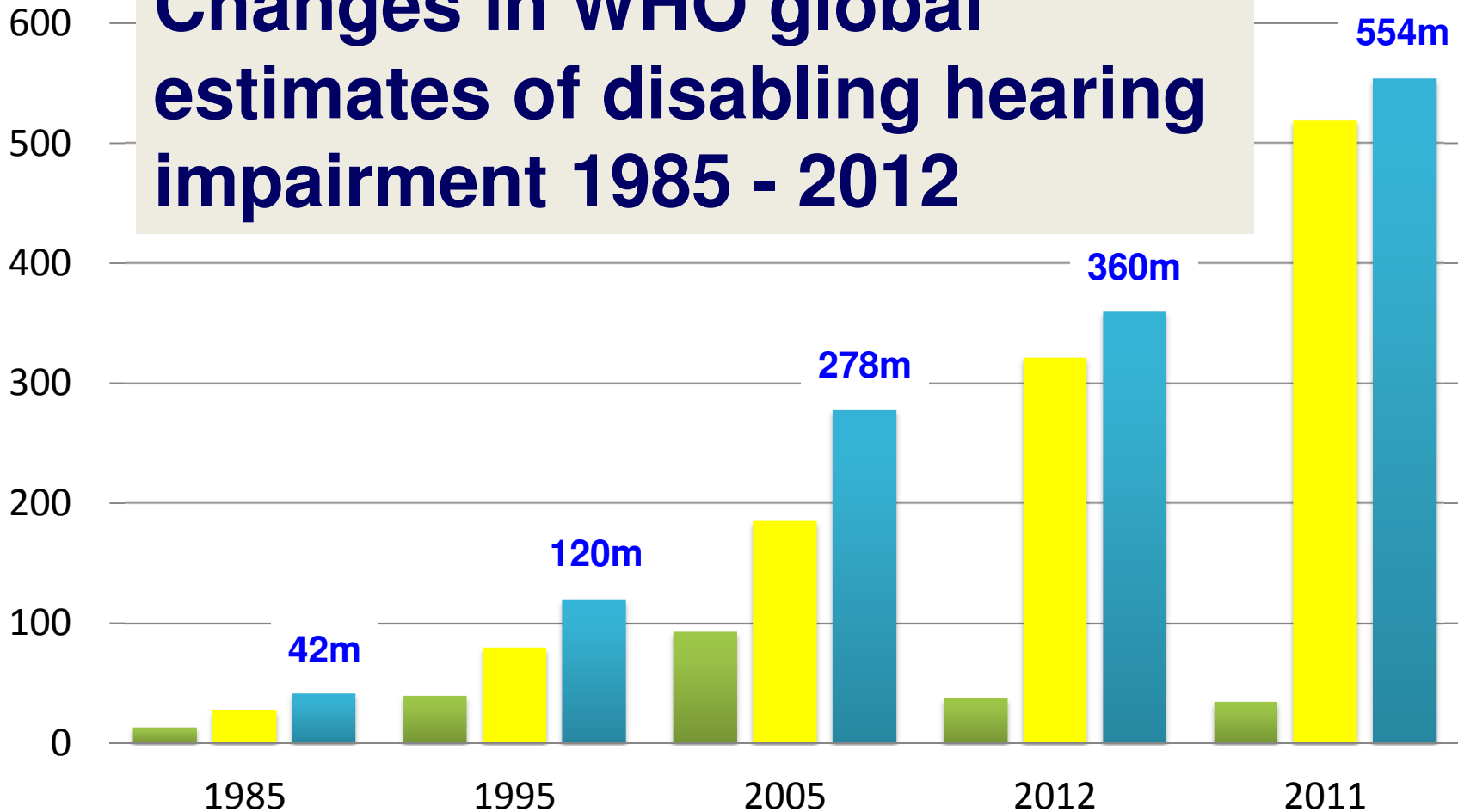
Key conclusions from Stevens et al, 2011

□ Estimates of hearing impairment uncertain because so few population-based surveys measure hearing impairment adequately (42 eligible out of 3000 assessed)

□ Repeated cross-sectional, population-based surveys are urgently needed to determine trends, particularly in regions with highest prevalences.

Changes in WHO global estimates of disabling hearing impairment 1985 - 2012

Number with disabling hearing impairment



- More developed/High income countries
- Less developed/LMI countries
- TOTAL

WHO HEARING LEVELS

**PROPOSED
GBD
HEARING
LEVELS**
(Stevens et al, 2011)

Cause-specific data lacking for LMI countries

High

- Inherited causes
- Chronic otitis media
- Ageing (presbycusis)

Moderate

- Excessive noise
- Ototoxic drugs
- Ante- & perinatal problems
- Meningitis measles, mumps
- Foreign bodies,
- Wax

Low

- Nutritional
- Trauma
- Toxic chemicals
- Menière's disease
- Tumours
- Cerebrovascular disease
- disease

WHO priority for action

OUTLINE of presentation

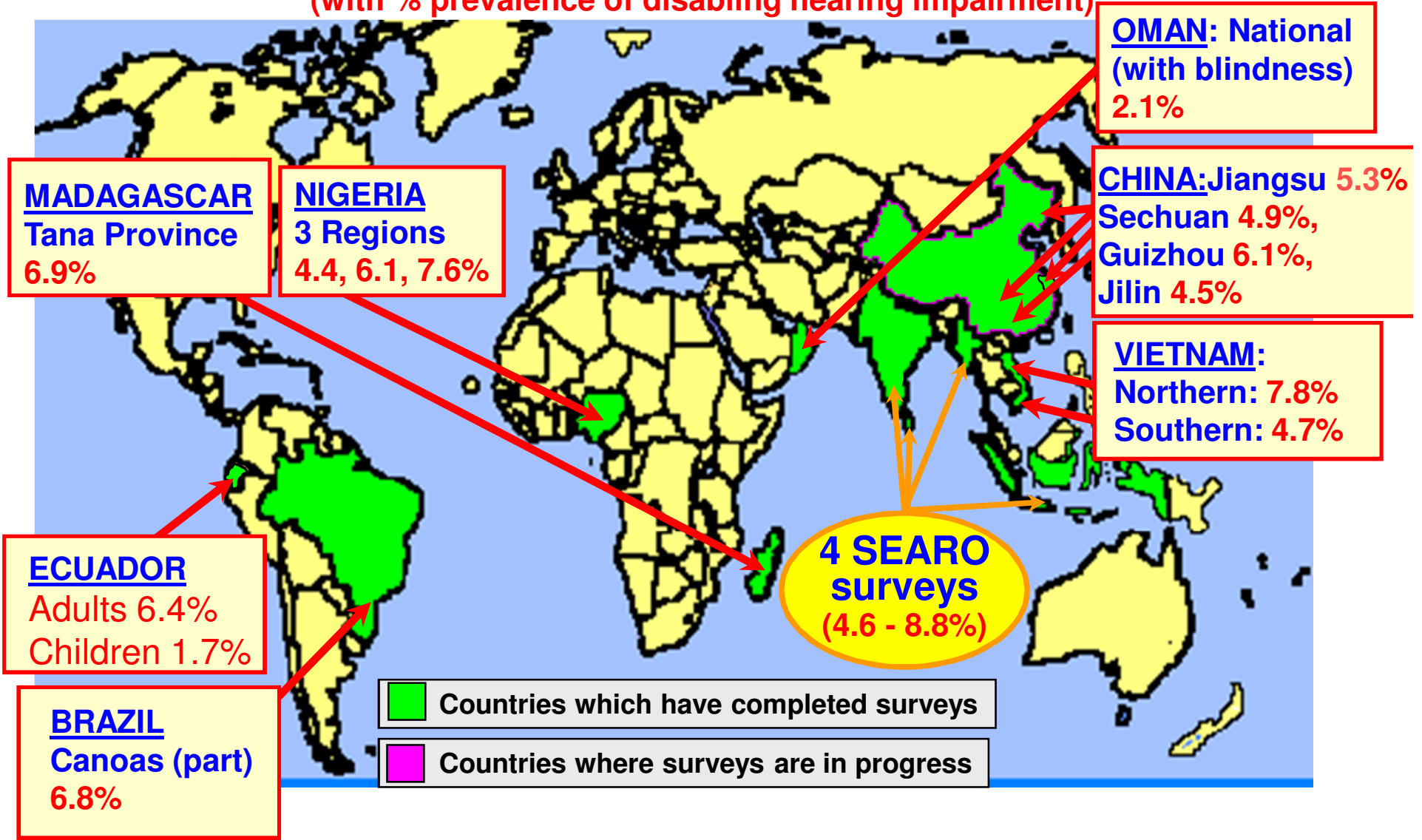
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Problems in studies collecting hearing data in LMI countries

- Lack of sound-proof test sites – increases false-positives
- Ambient noise not measured
- Standard test methods or standard levels of severity often not used or methods not reported
- Poor epidemiological quality -
 - not population-based
 - sample size too small
 - sample not randomly selected
 - response rate <80%
- Cause-specific data not collected
- Lack of funds to do hearing surveys

Progress of Population-based Surveys using The WHO Ear And Hearing Disorders Survey Software

(with % prevalence of disabling hearing impairment)



**Measuring the size of the
problem
in Madagascar –**

No survey without service



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WHAT KIND OF EVIDENCE DO WE NEED?

Study Design

- Population-based random sample – not clinic-based
- All ages
- Sample to estimate prevalence with appropriate precision
- Response rate > 80%
- Standardised protocol for time/place comparisons
- Accurate data on size, causes, needs, impact

Study methodology

- High coverage, High response
- Rapid assessment methods
- Quick assessment technology (e.g. smartphones)
- Simple data entry & analysis tool
- Automated and distance analysis

Forthcoming WHO Expert Group

- Review protocol - design, planning and sampling.
- Look at smart- phone based testing possibilities
- Develop rapid assessment survey method
- Update complete survey protocol.
- Update analysis software.

1st meeting in November in London



Thanks for listening!