Population hearing health: Getting it right from the start

Adrian Davis

The Millennium Development Goals Report 2013

UNITED NATIONS

10 April 2014 19:53

Goal 4

Reduce child mortality

Quick facts

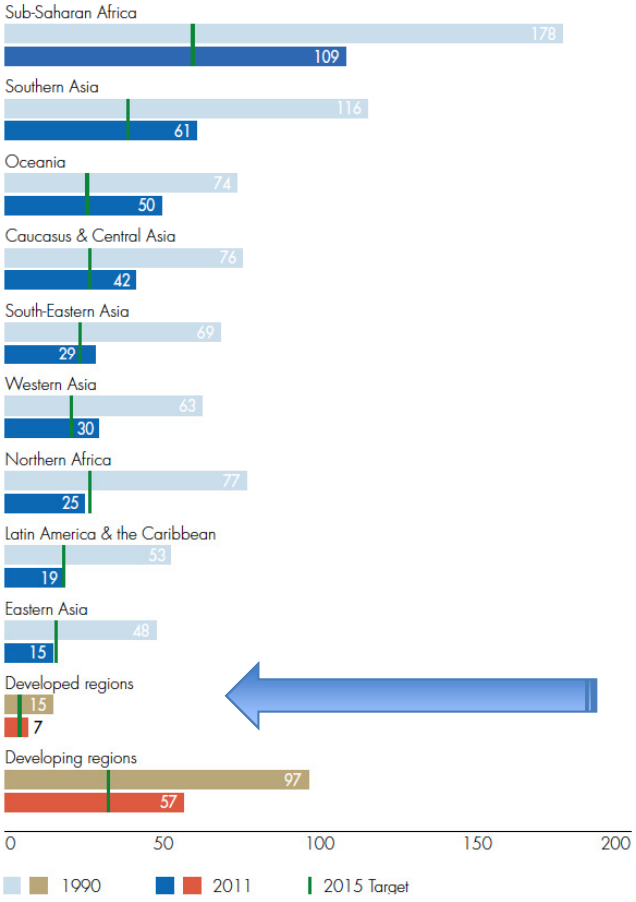
- Since 1990, the child mortality rate has dropped by 41 per cent; 14,000 fewer children are dying each day.
- Still, 6.9 million children under age five died in 2011—mostly from preventable diseases.
- In sub-Saharan Africa, one in nine children die before age five, more than 16 times the average for developed regions.

TARGET 4.A

Reduce by two thirds, between 1990 and 2015, the under-five mortality rate

Big gains have been made in child survival, but efforts must be redoubled to meet the global target

Under-five mortality rate, 1990 and 2011 (Deaths per 1,000 live births)



Worldwide, the mortality rate for children under five dropped by 41 per cent—from 87 deaths per 1,000 live births in 1990 to 51 in 2011. Despite this enormous accomplishment, more rapid progress is needed to meet the 2015 target of a two-

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Top Chart Treemap (caus...

- **Cause of Disease or Injury**: A. Communicable, mat...
- **Metric**: Deaths
- **Place**: United States
- **Year** 2010
- **Age**: Under 5 years
- **Sex**: Both | Male | Female
- **Depth** 4
- **Color**: Rate of Change

Bottom Chart Time Plot

- **Display**: Cause of Disease or In... / A. Communicable, mat...
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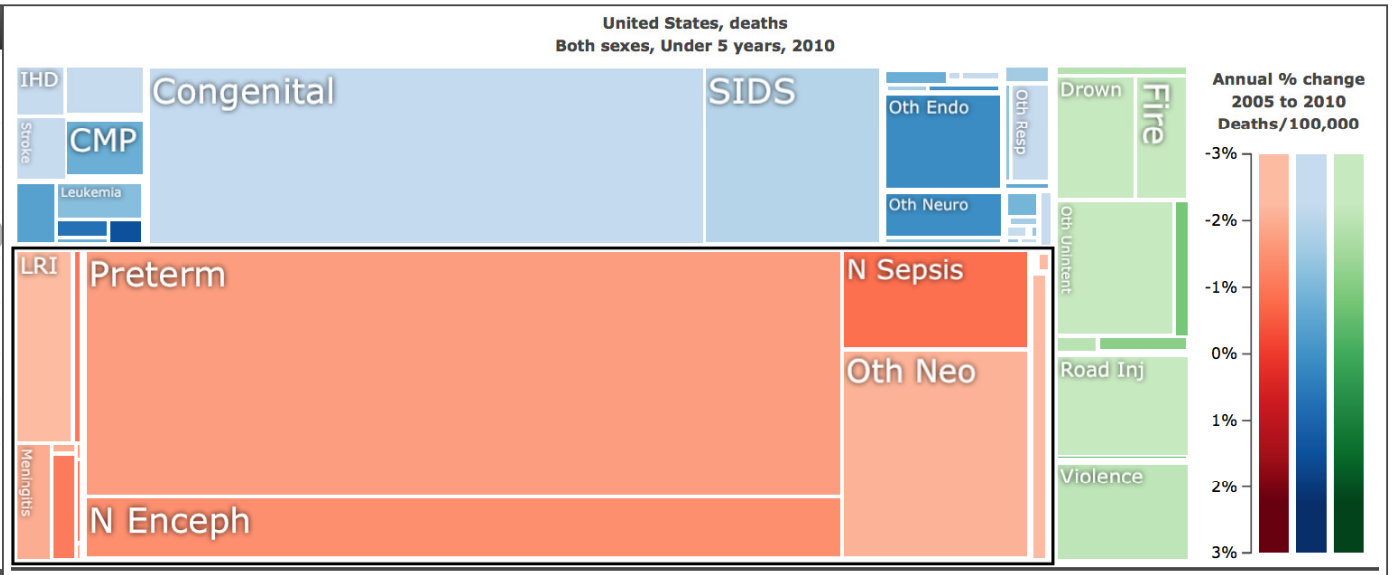
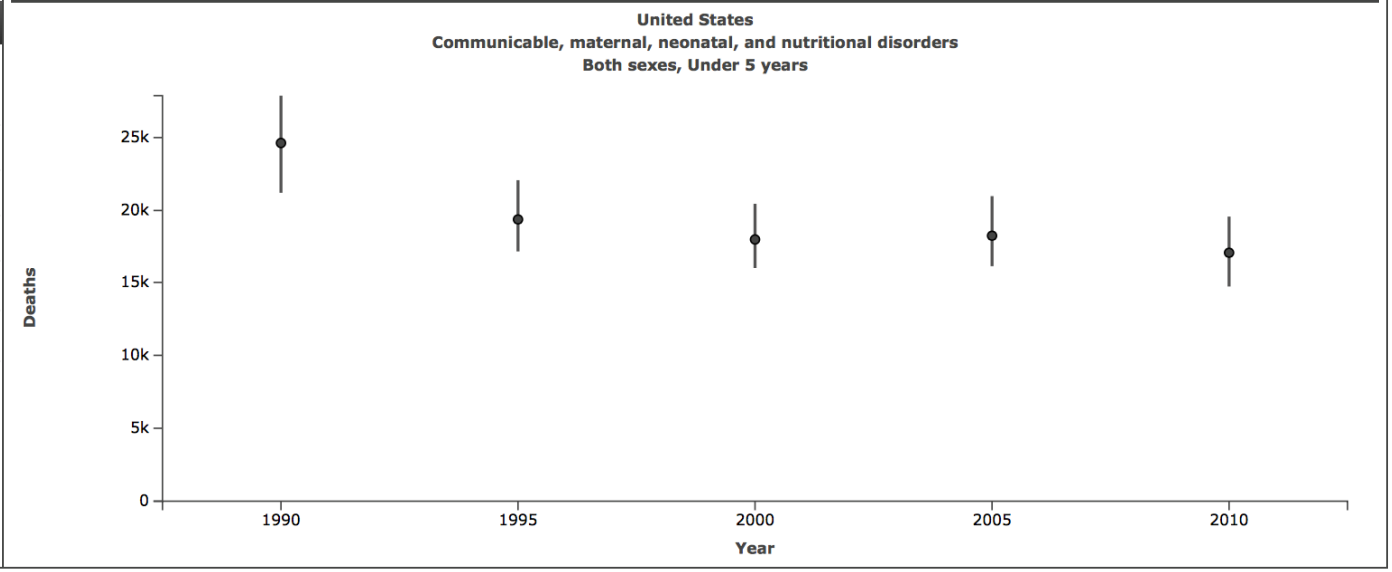
- **Units**: # | Rate | %





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Cause of Disease or Injury A.5.1. Preterm birth co...

Metric Deaths

Place United States

Year 2010

Age Under 5 years

Sex Both Male Female

Depth 4

Color Rate of Change

Bottom Chart Time Plot

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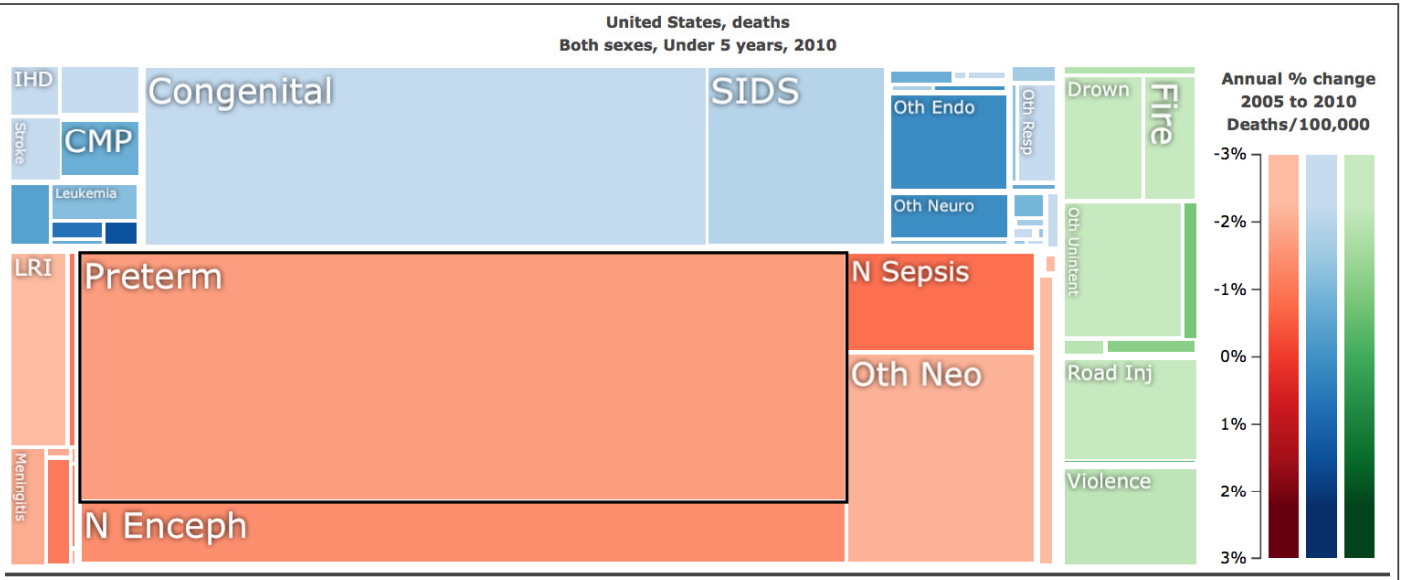
Metric Deaths

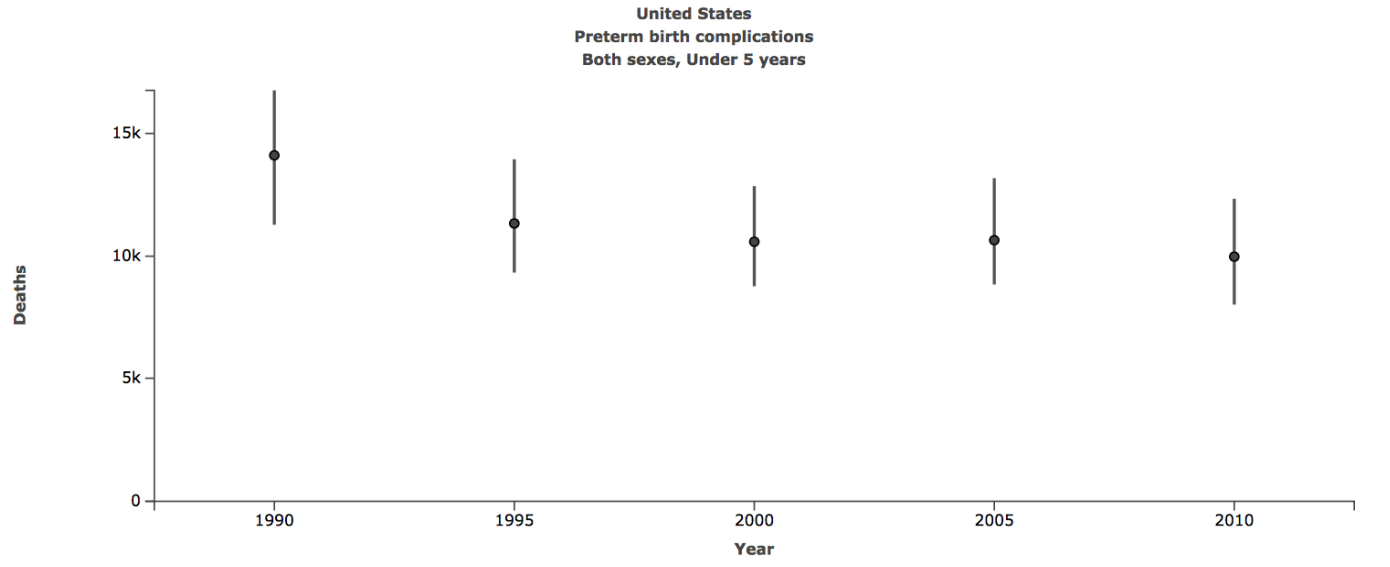
Place United States

Age Under 5 years

Sex Both Male Female

Units # Rate %





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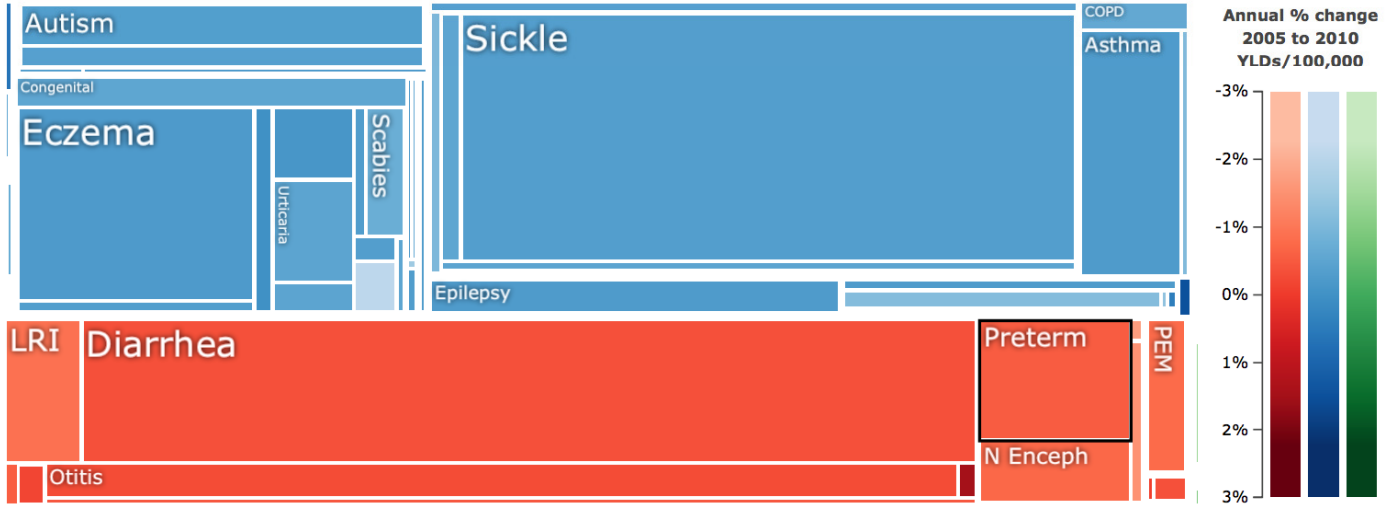
- **Depth** 4
- **Color**: Rate of Change

United States, YLDs
Both sexes, Under 5 years, 2010



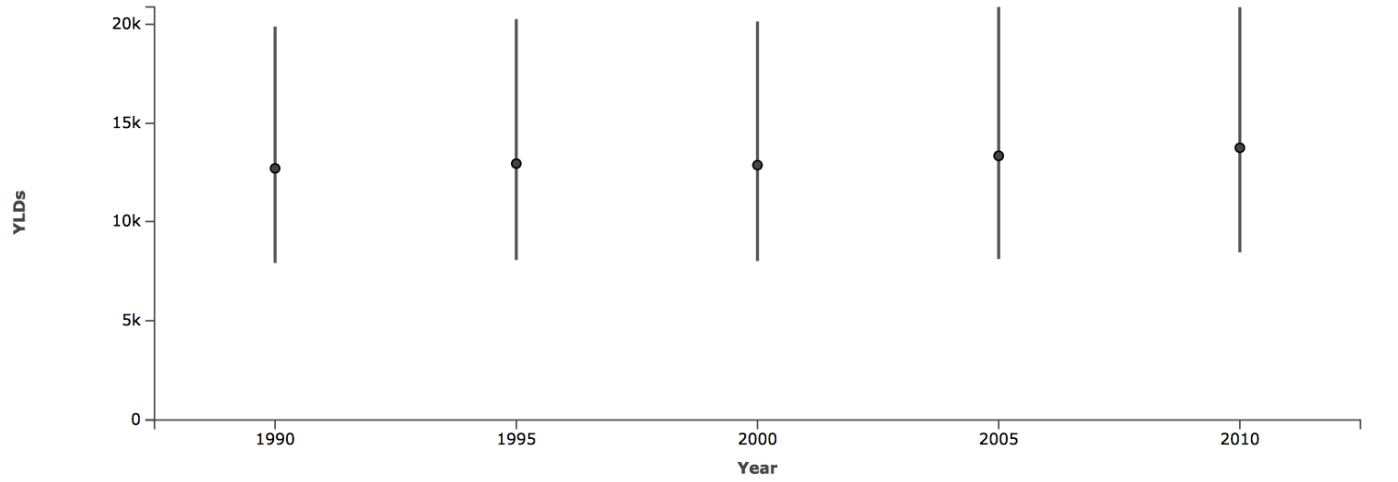
Annual % change
2005 to 2010
YLDs/100,000

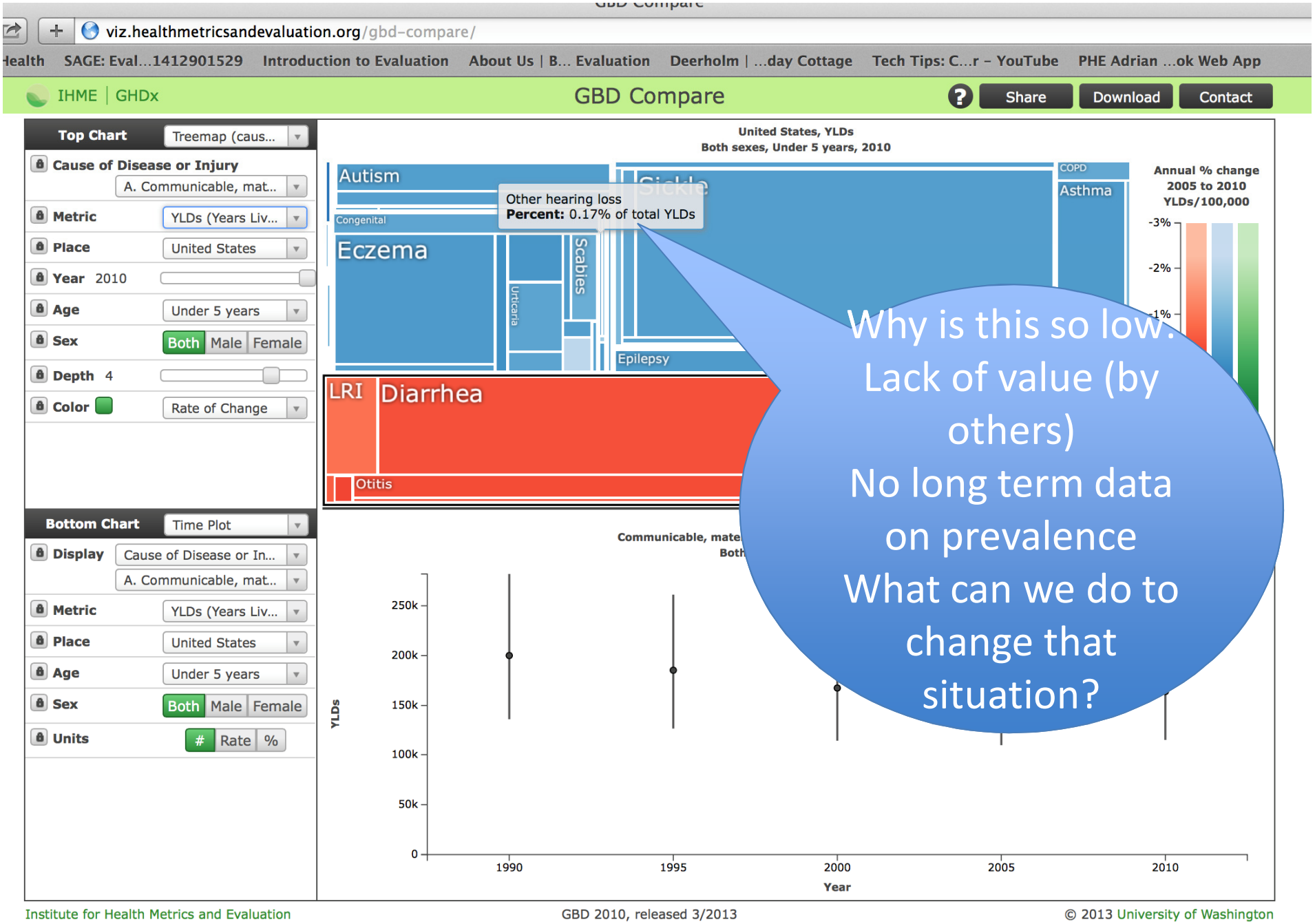
-3% -2% -1% 0% 1% 2% 3%

Bottom Chart Time Plot

- **Display**: Cause of Disease or In... / A.5.1. Preterm birth co...
- **Metric**: YLDs (Years Liv...
- **Place**: United States
- **Age**: Under 5 years
- **Sex**: Both | Male | Female
- **Units**: # | Rate | %

United States
Preterm birth complications
Both sexes, Under 5 years

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Place
United States
Age
Under 5 years
Sex
Both Male Female
Units
Rate %
United States, YLDs
Both sexes, Under 5 years, 2010
Autism
Congenital
Eczema
Urticaria
Scabies
Other hearing loss
Percent: 0.17% of total YLDs
Epilepsy
COPD
Asthma
LRI
Diarrhea
Otitis
Annual % change
2005 to 2010
YLDs/100,000
-3%
-2%
-1%
Why is this so low?
Lack of value (by others)
No long term data on prevalence
What can we do to change that situation?
YLDs
250k
200k
150k
100k
50k
0
1990
1995
2000
2005
2010
Year
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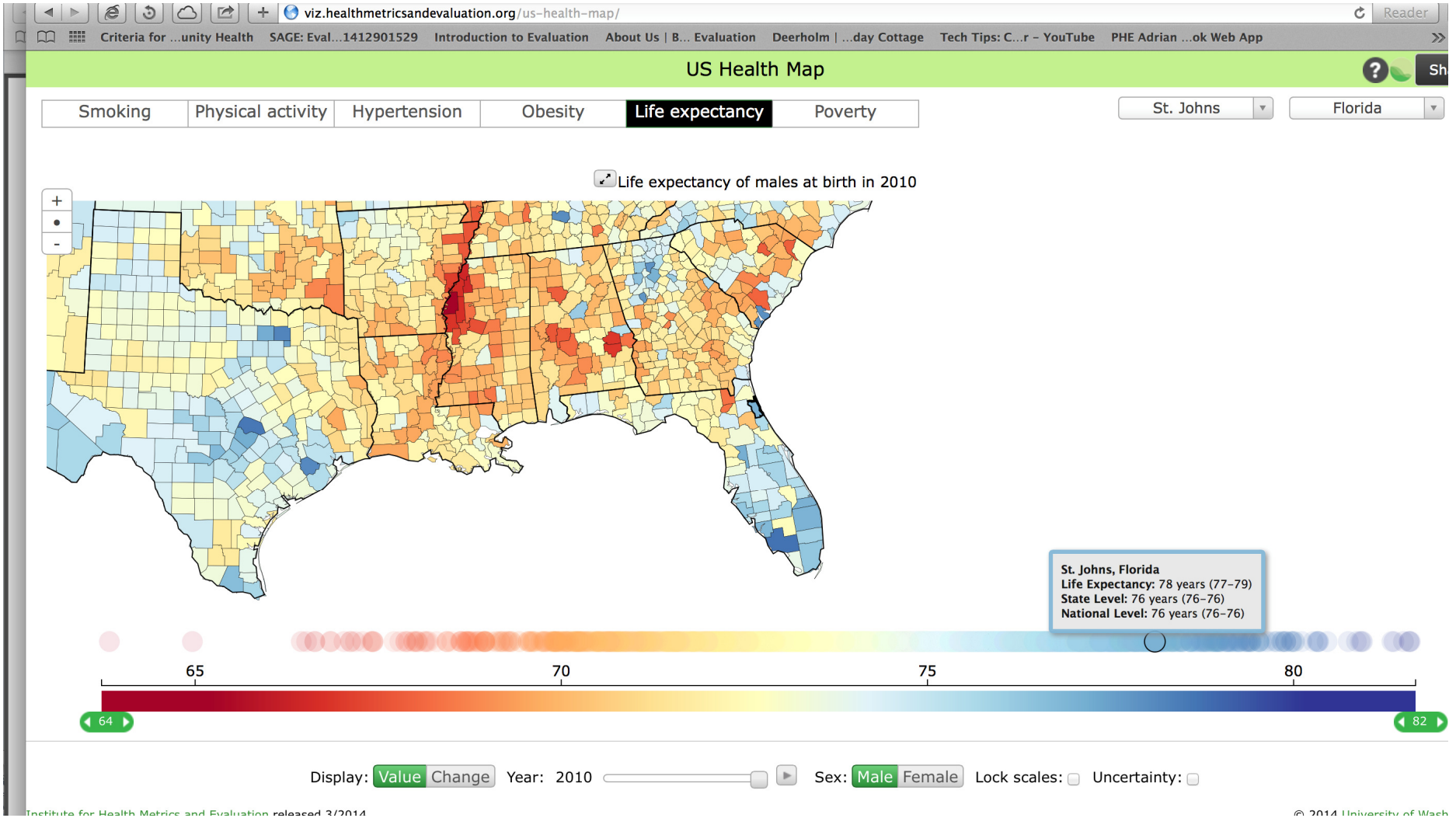
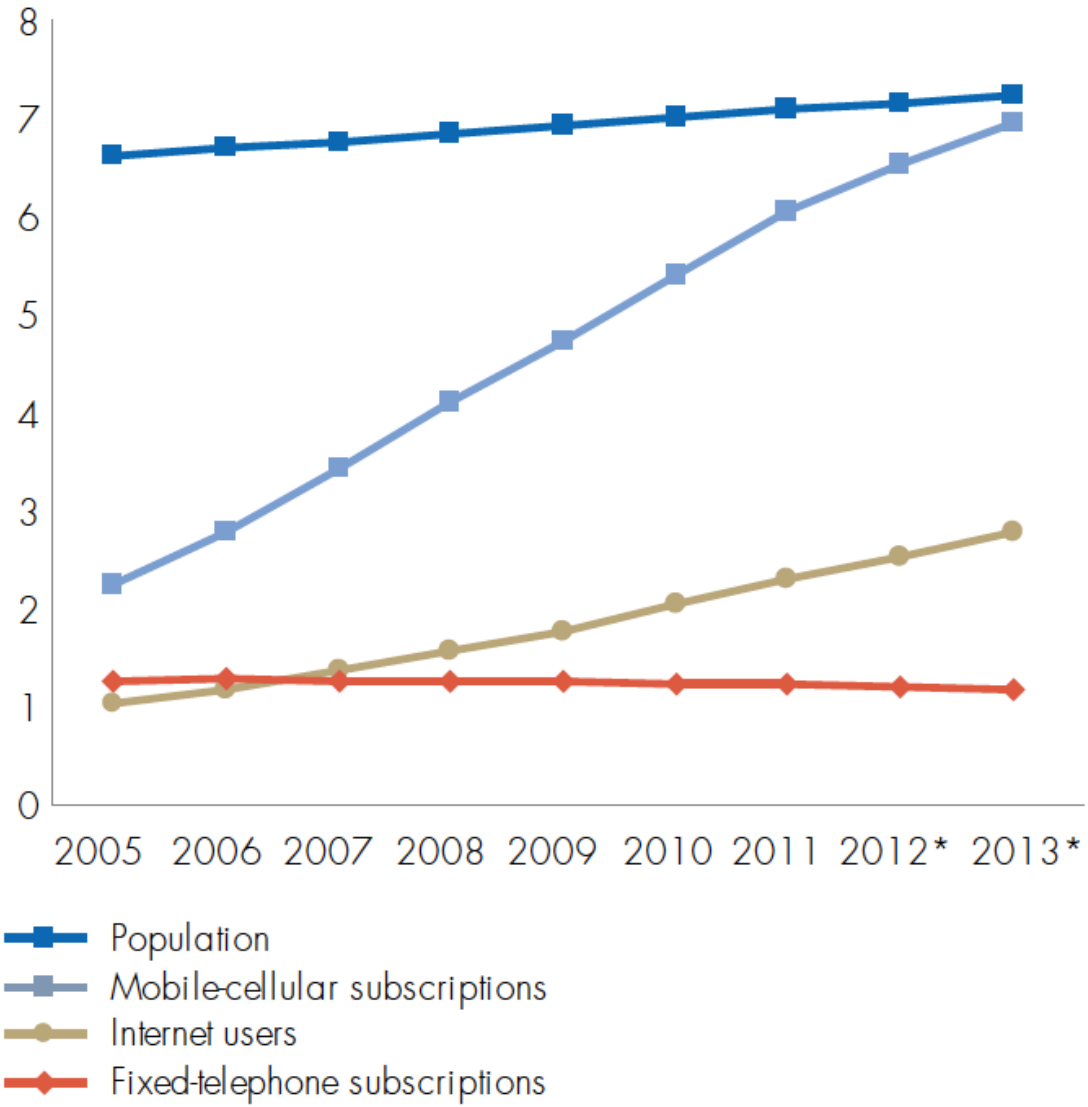


We need this map for hearing and especially for childrens hearing
Both in terms of the register of cases and the services they get and outcomes too!

Estimated number of mobile-cellular subscriptions, Internet users and fixed-telephone subscriptions, 2005-2013 (Billions)



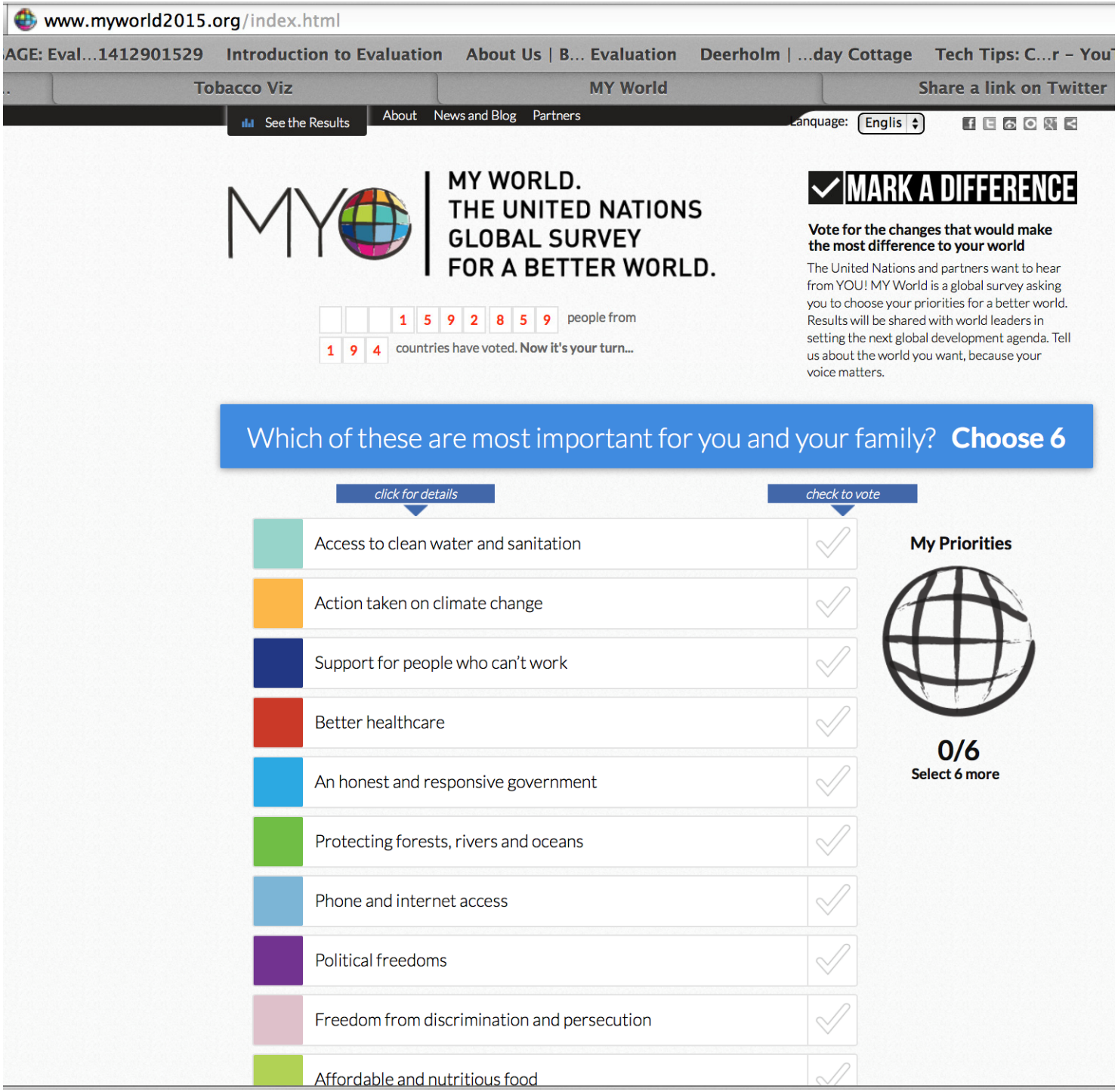
* Data for 2012 and 2013 are preliminary estimates.

Gives opportunities:

To explore use for
Health improvement

Loss to follow up

Support from
E-hearing health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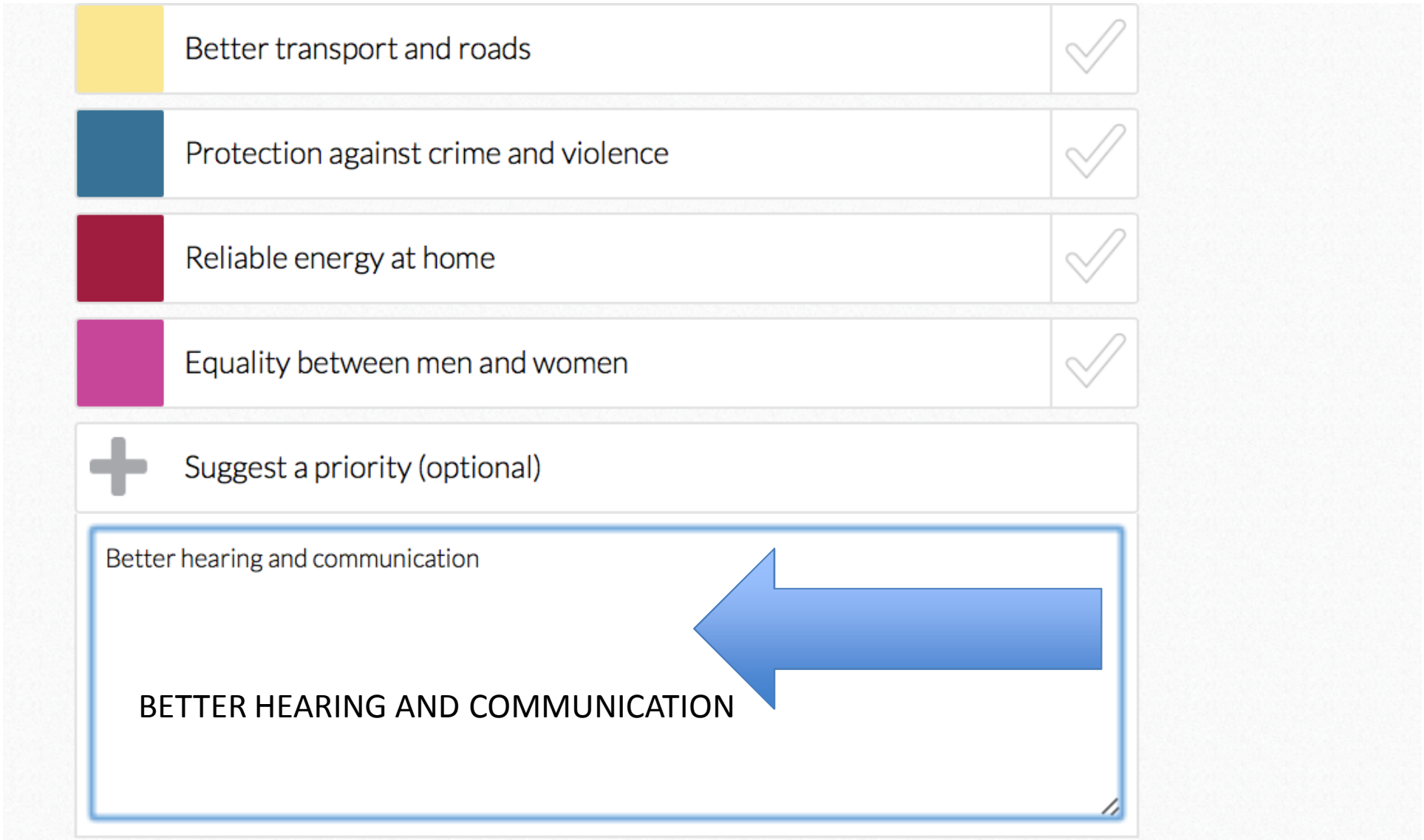
THE UNITED NATIONS
GLOBAL SURVEY
FOR A BETTER WORLD.
1 5 9 2 8 5 9 people from
1 9 4 countries have voted. Now it's your turn...
MARK A DIFFERENCE
Vote for the changes that would make the most difference to your world
The United Nations and partners want to hear from YOU! MY World is a global survey asking you to choose your priorities for a better world. Results will be shared with world leaders in setting the next global development agenda. Tell us about the world you want, because your voice matters.
Which of these are most important for you and your family? Choose 6
click for details
check to vote
Access to clean water and sanitation
Action taken on climate change
Support for people who can't work
Better healthcare
An honest and responsive government
Protecting forests, rivers and oceans
Phone and internet access
Political freedoms
Freedom from discrimination and persecution
Affordable and nutritious food
My Priorities
0/6
Select 6 more


Better transport and roads
Protection against crime and violence
Reliable energy at home
Equality between men and women
Suggest a priority (optional)
Better hearing and communication
BETTER HEARING AND COMMUNICATION

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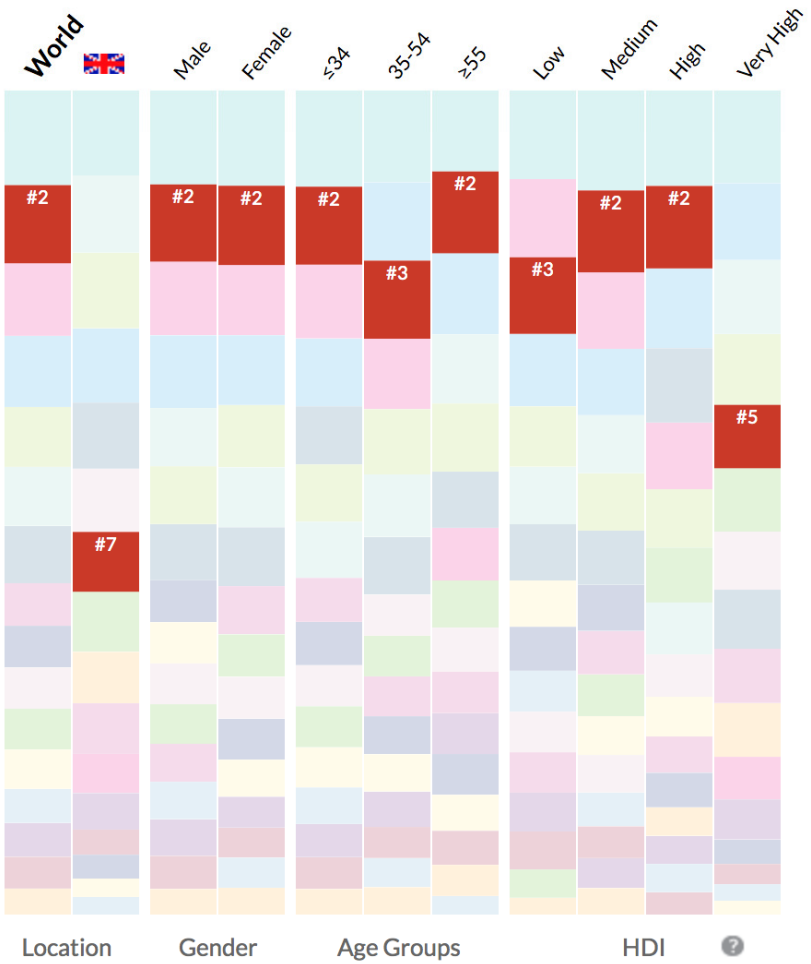
How the World Voted

Rankings of priorities (so far)

Roll over your selections to see how the world voted on them

People like you



Priorities

- A good education
- Freedom from discrimination and persecution
- Access to clean water and sanitation
- Phone and internet access
- Better healthcare
- Affordable and nutritious food

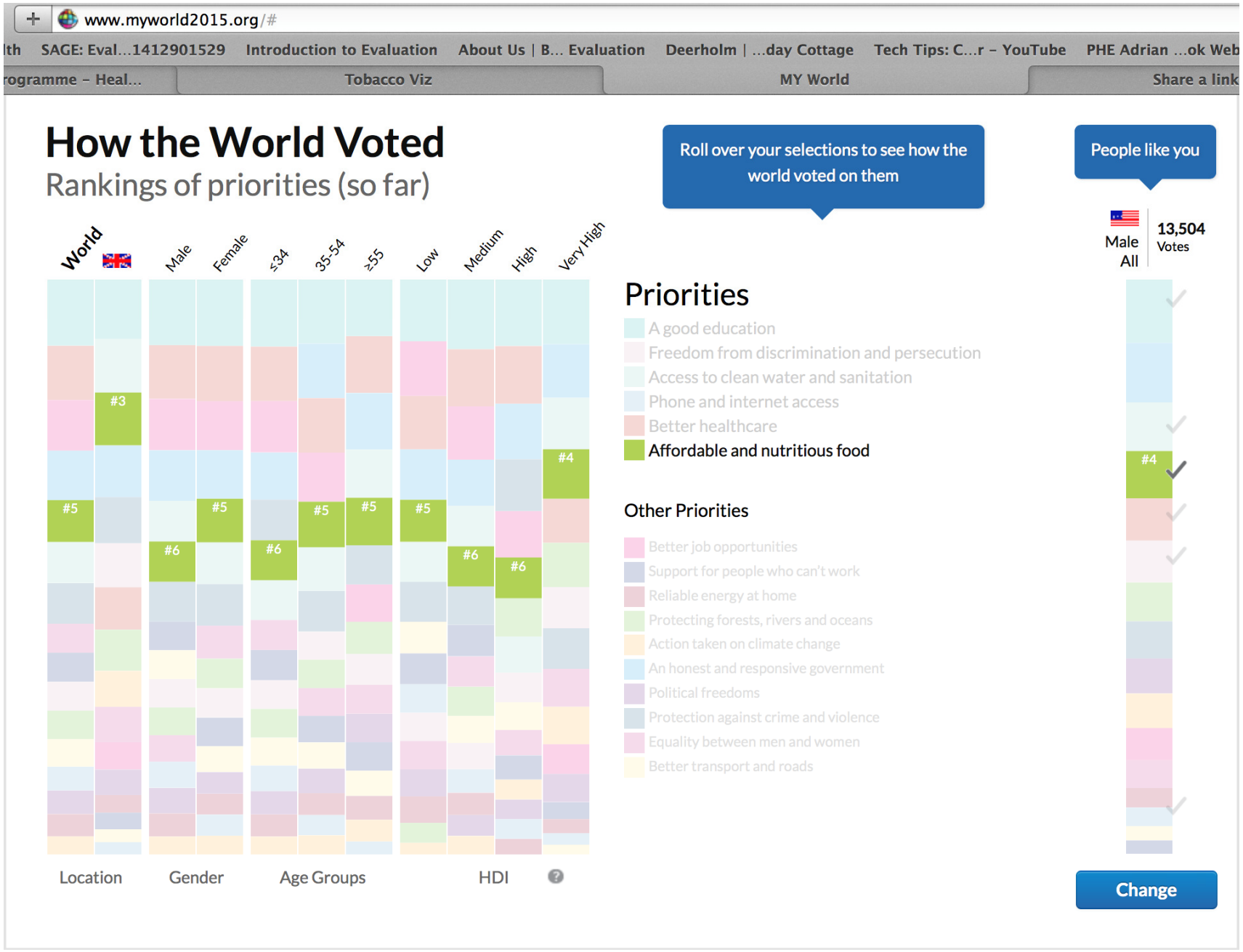
Other Priorities

- Better job opportunities
- Support for people who can't work
- Reliable energy at home
- Protecting forests, rivers and oceans
- Action taken on climate change
- An honest and responsive government
- Political freedoms
- Protection against crime and violence
- Equality between men and women
- Better transport and roads

Male
All

13,504
Votes

Change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How the World Voted
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People like you
World
Male
Female
≤34
35-54
≥55
Low
Medium
High
Very High
#3
#4
#5
#6
Male
All
13,504
Votes
Priorities
A good education
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Other Priorities
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Political freedoms
Protection against crime and violence
Equality between men and women
Better transport and roads
Location
Gender
Age Groups
HDI
Change

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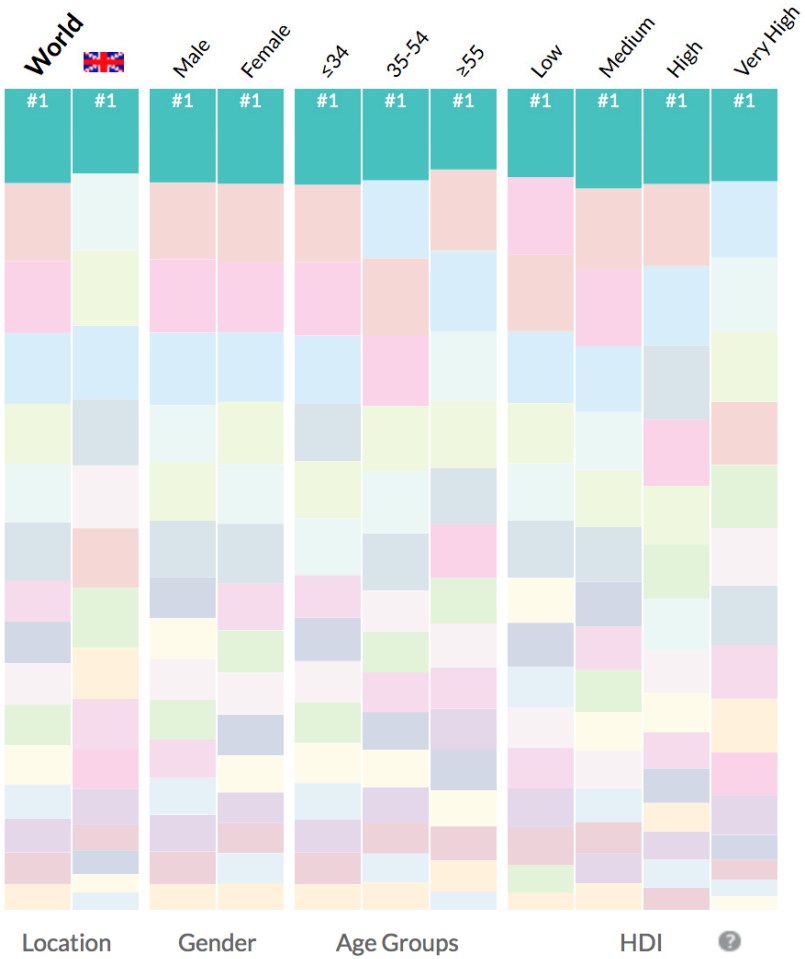
People like you

Male
All

13,504
Votes



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- Political freedoms
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- Equality between men and women
- Better transport and roads

Change

SHOULD WE WORRY!

- WHY IS HEARING RATING SO LOW WHEN PREVALENCE SO HIGH?
- YES – WE SHOULD HAVE SLEEPLESS NIGHT!
- WHY?
- WE HAVEN'T GOT MESSAGE ACROSS
- HEARING AND COMMUNICATION IS THE GLUE THAT KEEP FAMILIES, SOCIETIES AND THE WORLD TOGETHER

Please don’t (only) talk to each other !

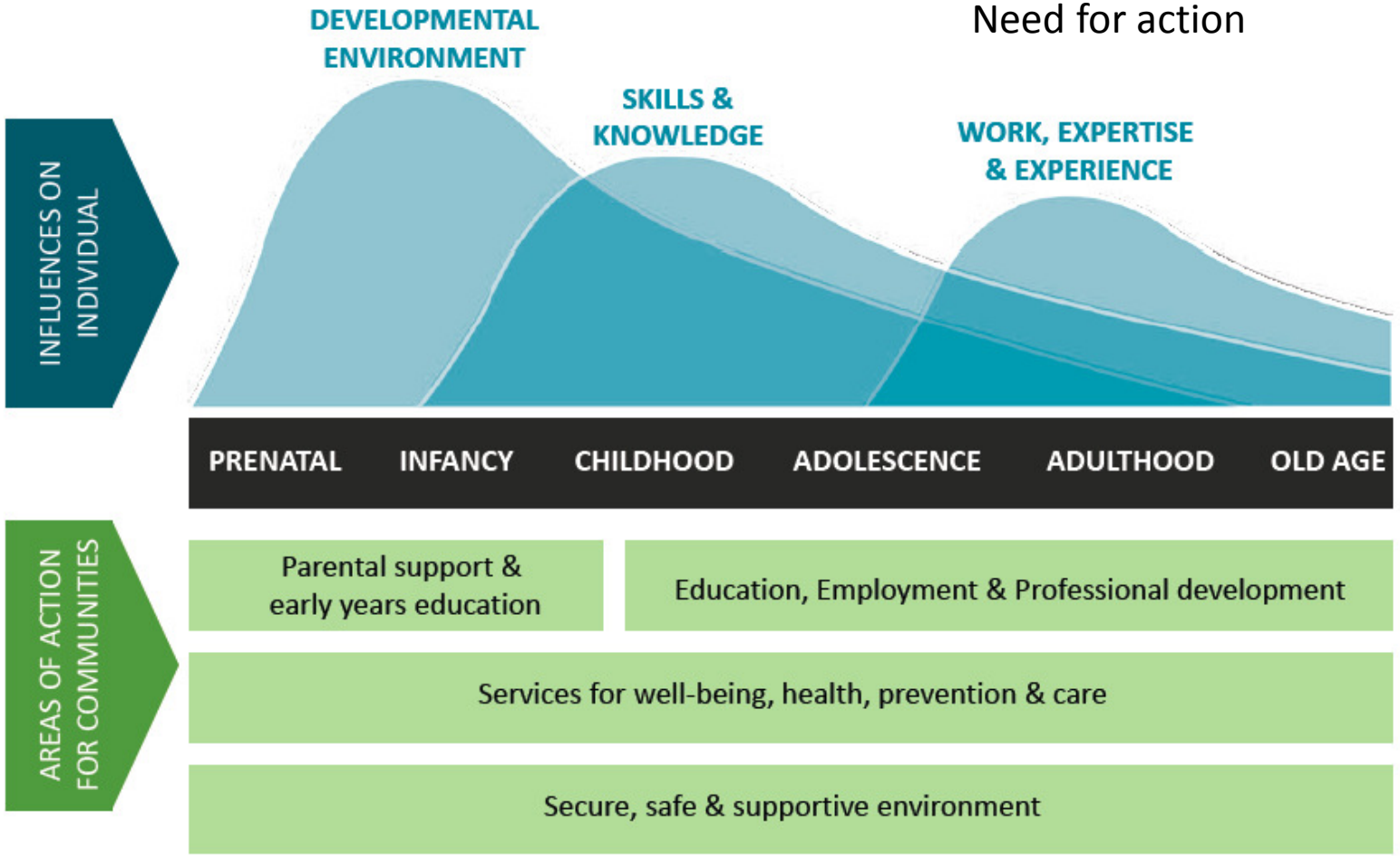
- Talk to your medical home provider
- Talk with your local businesses
- Talk with the communities and financiers
- Talk with other care organisations

Population hearing health: Getting it right from the start

- Systems that maximise hearing health
- Going beyond the process measures
- Integration of services
- Planning for resilience
- Do we need to include others

Life course model (Davies S, 2012)

Highlights lack of systematic high quality data on sensory – Need for action



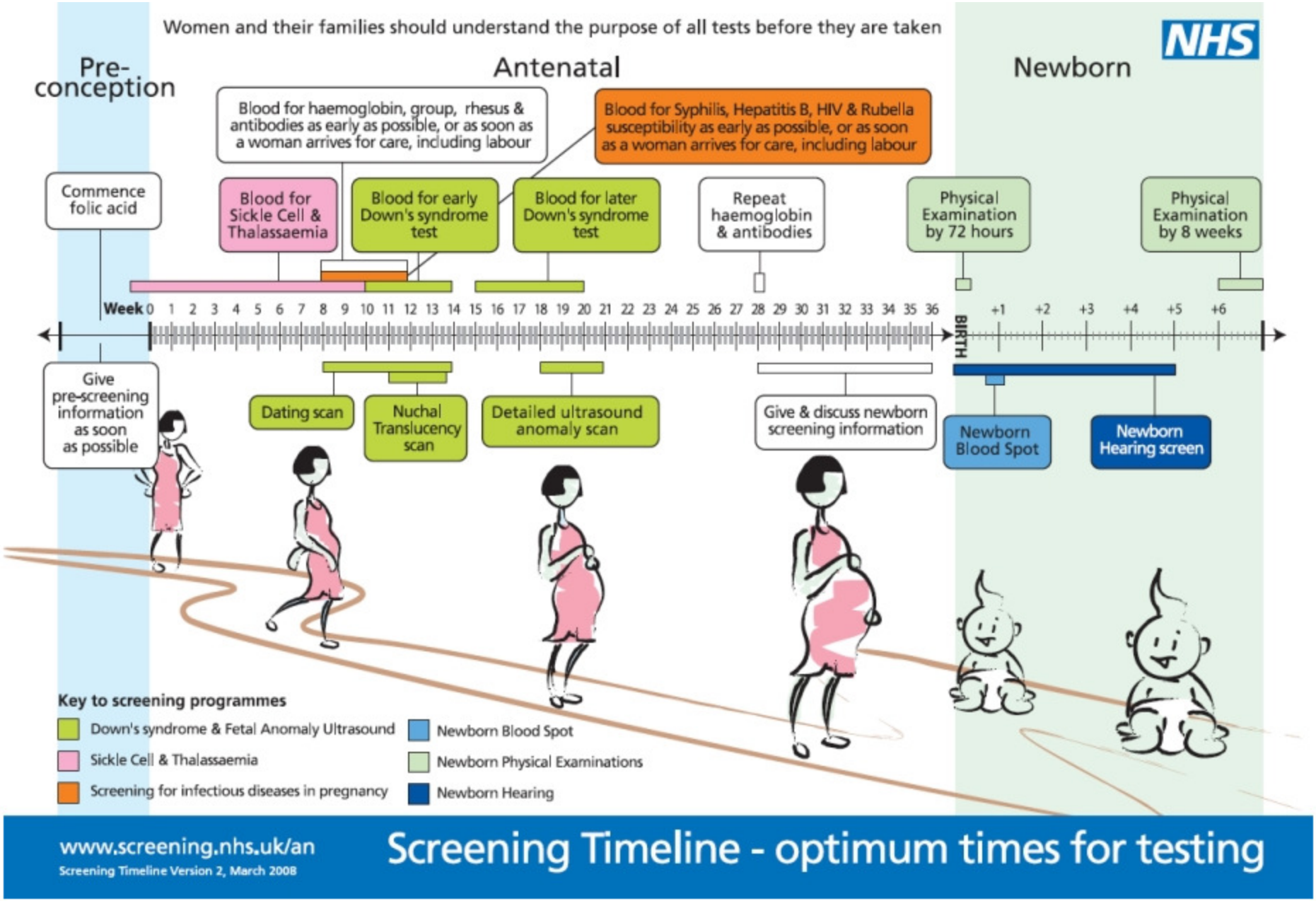
The model shows the need to consider the barriers to and promoters for good hearing and communication outcomes across the life-course and the need to consider both areas for action for communities, organisations and individuals across areas of central and local government

Opportunities to screen (for hearing) in the life-course

- Pre conception
- Ante natal
- Newborn
- Childhood
- School
- When using iPod
- Leaving school
- Entering job
- Leaving job
- Entering retirement
- During retirement
- On demand ??

When is it worthwhile

- Evidence base
- Does the evidence generalise EHDI situation?
- Universal newborn hearing screening
  - Follow up of Wessex study (Kennedy et al) shows 0.7SD advantage to screening and early intervention (<9mos for most language based outcomes including sign based getting ++ advantage from early)
  - But that is just an indicator, real benefits also shown to follow through to whole system (Bamford et al 2009 positive support project)



NHS Newborn Hearing Screening Programme

- Key successes

- Some major shortcomings

NHSP Programme Centre Vision:

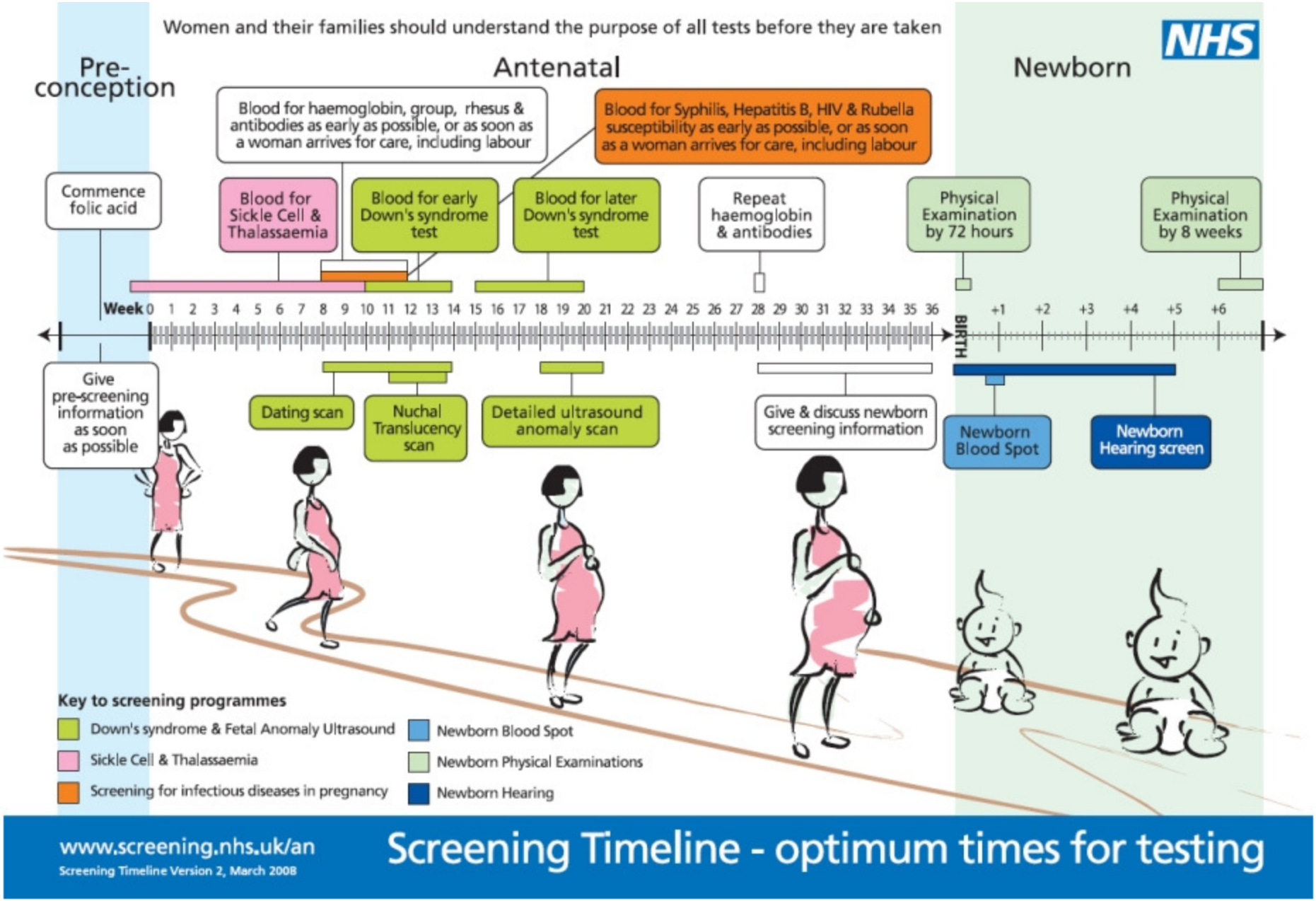
- **'Improving outcomes for every child through a high quality hearing screening programme, safe and effective assessments and family centred early intervention'.**
  - This is in keeping with child health strategy, which is for every child whatever their background or circumstances, to have the support they need to:
    - Be Healthy
    - Stay Safe
    - Enjoy and achieve
    - Make a positive contribution
    - Achieve economic well being

NHSP major aim

- **To support the vision by identifying all children born with moderate to profound permanent bilateral deafness within 4-5 weeks of birth and to ensure the provision of safe, high quality age-appropriate assessments and world class support for deaf children and their families.**
    - To ensure equality of access across England to all screen and follow-up services.

Key success

- NHS Newborn Hearing Screening
- Information system – national, integrated and useful
- Programme is holistic and therefore has standards for the parent and child journey & for professional journeys alongside
- Assurance that standards are achieved or not
  - Information for screeners, managers, payers, clinicians, educators, quality improvement – both current and trends over time
  - National register of children with permanent childhood hearing impairment



Integrated Screening programmes

- Need to keep equality of expression and aims across programmes
- Need to have similar process to agree standards

- Foetal Anomaly Screening
- Newborn
- Infant
- Children
- Adult

- Involving parents from the start

Areas covered by standards for all programmes

1.Identify cohort
2.Inform population
3.Invite people
4.Tests that work and how
5. Minimising harm
6. Assessment and Diagnosis
7. Intervention/ Treatment
8. Outcome
9.Staff
10. Commissioning and governance
11. User experience/ patient journey
12. Equality

AN EXAMPLE OF WHAT CAN MAKE A DIFFERENCE

- LIFE COURSE APPROACH
- BEST START TO LIFE – HEARING AND COMMUNICATION ASSURED
- BEST EDUCATION BECAUSE HEARING AND COMMUNICATION ARE ASSURED
- BEST LIFE OPPORTUNITIES

START OF LIFE

- HAVE WE GOT IT RIGHT?

- CAN SCREENING HELP
  - ANTENATAL
  - NEWBORN
  - INFANCY
  - PRE-SCHOOL
- IT IS ONLY PART OF THE SOLUTION AND WE NEED TO MOVE ON!

WHAT NEXT …

- WHOLE SYSTEM
- NOT JUST SCREENING
- EHDI has a great mission
- And needs to consolidate and learn from what is good and where mistakes have been made

Newborn Hearing Screening in England

- Universal since 2006

- 680, 000 births per year (>6m screenings)
- 99% of all babies tested

- 3 stage screen
  - AOAE1 → AOAE2 → AABR → assessment ABR
  - Both ears tested, one ear refer

What is the current organisation

- Currently 114 services across 195 maternity units in the NHS

- Core programme staff work for Public Health England
- Advisors to the programme

- Quality assurance becoming generic
- Quality improvement core and greater investment
- Integrated QA into antenatal and newborn screening programmes
- Single IT platform that access AOAE, AABR, Path labs, Child Health

- Accreditation of paediatric audiology through RCP / UKAS
- **Move towards national specification of diagnostic and rehab services**

- Integration operation and QA of screening
- Working towards integration of support for deaf children and their families
- Working towards maintaining close working between screening and support services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Welcome
This is the website of the English Newborn Hearing Screening Programme. Advisor to the programme is Professor Adrian Davis OBE FFPH FSS and the Programme Lead is Gwen Carr
LATEST NEWS
More news | Press office
11/04/14 NHS Numbers for Babies (NN4B) changes
08/04/14 NHSP conference presentations 2014
14/03/14 New consultation open on screening for T18 and T13
13/03/14 Education and Training Manager post advertised
5million
hearing.screening.nhs.uk/5million
QUICK LINKS
For the public: Information leaflets | Screening timeline | Screening in my area
For professionals: Standards and Protocols | Medical | Audiology | Job vacancies

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Care Pathways

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NHS Newborn Hearing Screening Programme

NHS Screening Programmes

Home | National Programme | Quality | Screening Information | Training | Help

Search GO

You are here: Quality > Care Pathways

- Standards and Protocols
- Evidence Base
- Care Pathways
- Quality Assurance
- Risk and Incident Management
- Equality

Care Pathways

Care pathways describe the route that a patient will take from their first contact with an NHS member of staff to the completion of their treatment. They help ensure that consistent care is provided throughout the NHS. The care pathways below were designed to be consistent with NHSP guidance and contain detailed advice for clinicians at each stage of the path.

NOTE Unfortunatel;y from 2012 changes in NHSP assessment guidance are yet reflected in these pathways and it is unclear if and when they will be

1. What is the Map of Medicine?
2. What benefits does Map of Medicine bring?
3. How are the pathways accessed?
4. NHSP Care Pathways: Interactive
5. NHSP Care Pathways: PDF versions

1. What is the Map of Medicine?

Map of Medicine is a visual representation of evidence-based, practice-informed care pathways for common and important conditions.

The UK National Screening Committing decided that the Map of Medicine was the best way to develop and present all the English screening care pathways in a

QA standards for:	Training standards for:
Screening	Screening
Assessment	Assessment
Audiology	Audiology
Education	Education
Social Care	Social Care
Medical care	Medical care

How do we implement quality improvement

- Quality standards

- Peer review

- Knowing what good looks like
- Appreciating what your friends wont tolerate
- What you would want for your children, family

- Use routine data, ad hoc data query
- Quality assurance – desktop, routine, in depth
- QA visit
- Report – improvement cycle

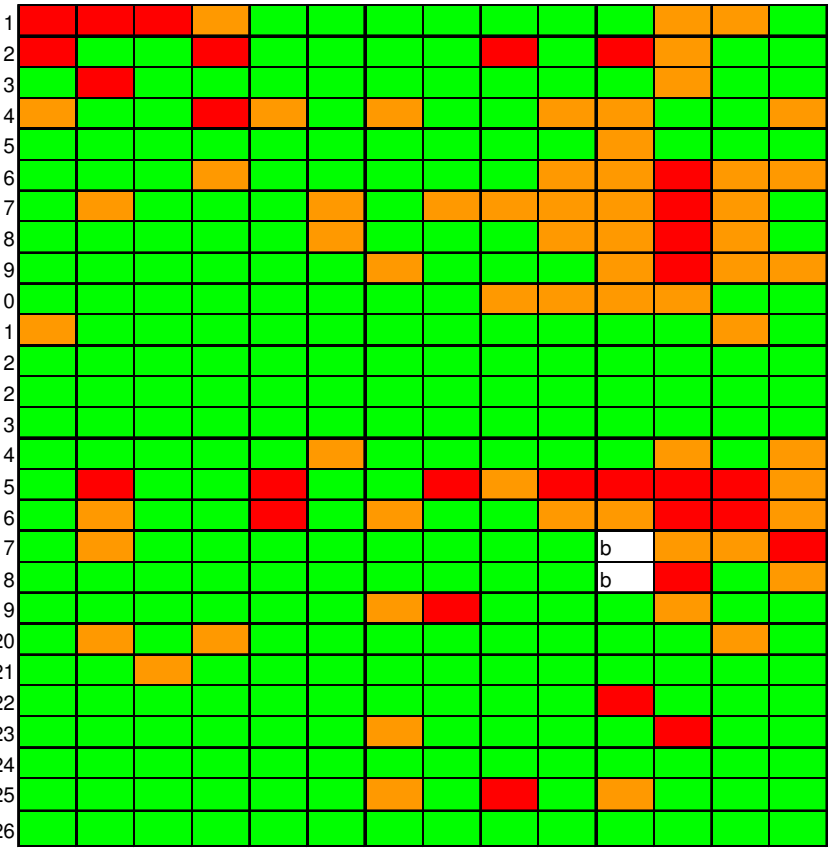
Accreditation of paediatric audiology services

- IQIPS accreditation

- Audiology
- Paediatric audiology

- Will become the major route to assure services meet standards and are independently asessed

Standard	Site
Interpreter available when needed	1
Antenatal information written and verbal given in appropriate language	2
NN4B numbers entered into eSP by midwives within timescales	3
Written and verbal information before and during screen in appropriate language	4
Coverage offered, started and completed within target	5
Started	6
Completed within target	7
Decline screens within target	8
Refer rates within targets	9
Screening outcome set by 3 months of age on 99% or more of cases	10
Data to be archived onto a secure location every 6 weeks	11
Results entered electronically onto eSP where possible and within targets for hospital sit	12
Data to be checked against national validity reports or the CDC	12
Checklist issued for screen/assessment completed or declined	13
Clearly defined pathway for screen fails to be referred to audiology within time targets	14
Babies seen within 4 weeks of screen refer	15
Babies confirmed with PCHI in target times	16
Explanation of assessment and result	17
Explanation of deafness and support mechanisms	18
Referral for aetiological investigations and paediatric assessment	19
Informing Education	20
Early support and common assessment	21
Key working/lead professional function	22
Hearing aid fitting offered for confirmed cases of hearing loss where appropriate	23
Parents to be informed and supported with respect to developing early communication w	24
Family care assessment (as part of a single assessment) and support offered	25
Confirmation of additional family and social care	26



Standards and specification

- Equipment
- False negatives
- False positives
- Transparency and openness in algorithms

Please don’t (only) talk to each other !

- Talk to your medical home provider
- Talk with your local businesses
- Talk with the communities and financiers
- Talk with other care organisations

Getting the best hearing and communication for all : building skills and **systems** for the future

- Adrian Davis

- Muir Gray

- A good start in life secures hearing for life!

Getting the best hearing and communication for all children

- Good hearing and communication are essential across the life course for the individual, their family and for the population. Getting the best outcomes for children, families and our society depends strongly on development of learning, social and emotional skills and competences and then on using these to fulfil their potential. The changes in commissioning and in the health and social care system give us a unique opportunity to stand back and discuss how children and their families can be best supported by the health, social care, education and other services where there is a manifest need.
- A clear signal that these services should look to integrate their support around the child and family has been given by government and plans are slowly coming together in some areas of care! There is a clear need to develop a narrative at the local level about how this might happen in terms of providing the best value services, how they can be networked, peer reviewed, provide innovative solutions for children and parents, integrate health, education and social care needs and technology.

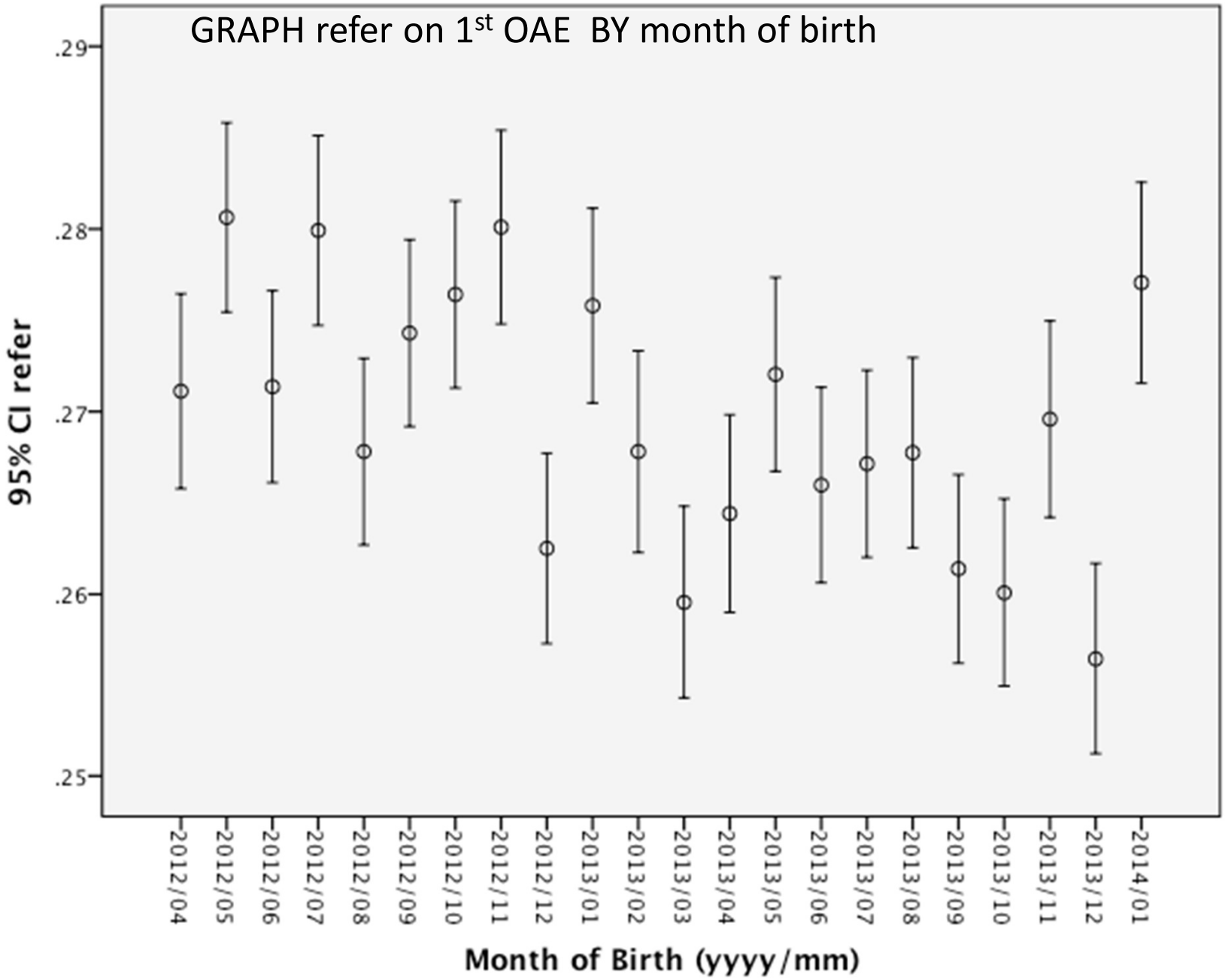
National system

- Child health (→ life long) health and well being
- What is the vision for the future
- Health and well being improvement, resilience, sustainability in culturally appropriate way
- Hearing and communication integral part of healthy child vision
- Guiding principles – addressing inequity, improving services to be fit for purpose in all respects

Pathway 1: the screening test should have reasonable referral rates

March 2014

Adrian Davis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95% CI refer
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.26
.25
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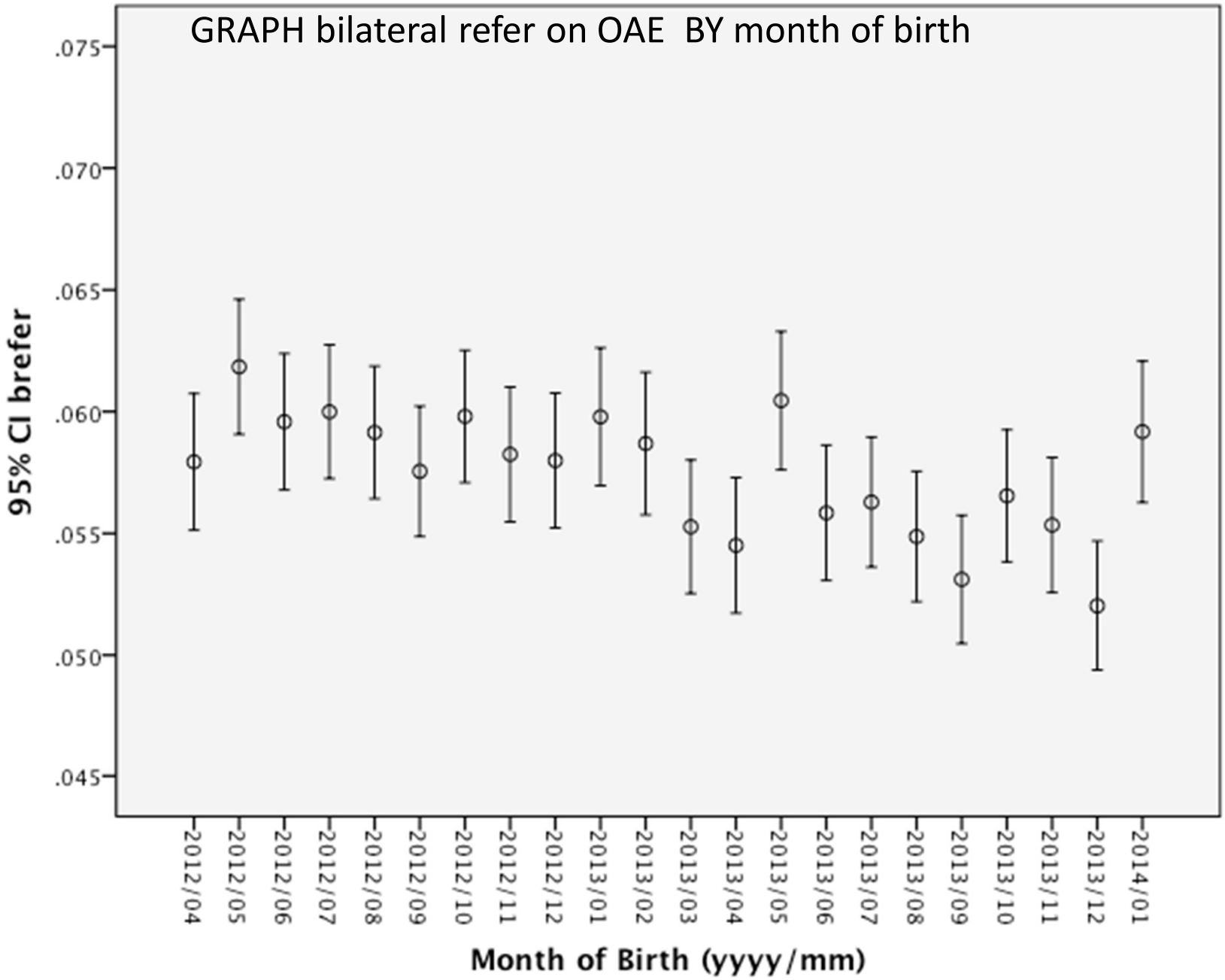
Month of Birth (yyyy/mm)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95% CI brefer
.075
.070
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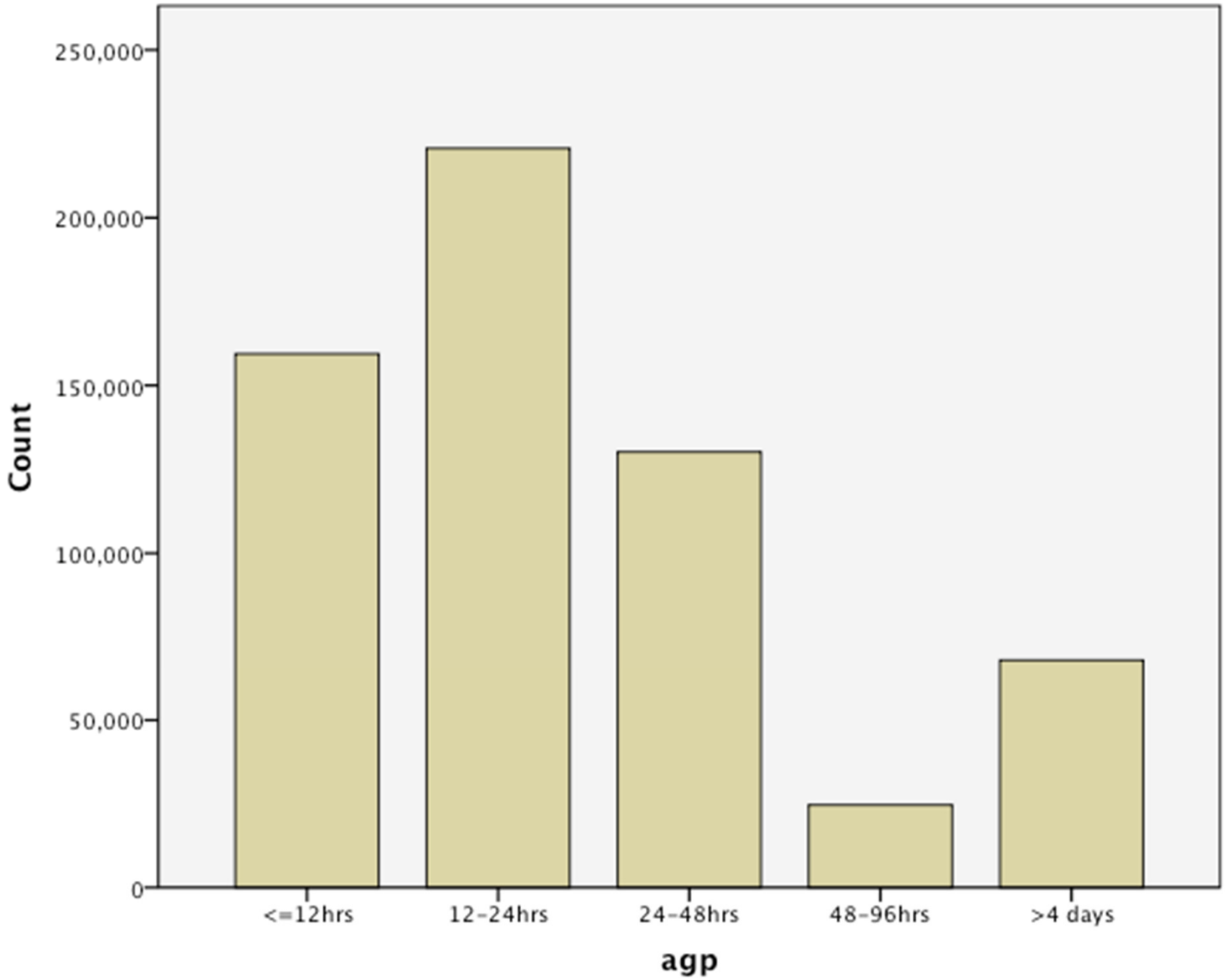
250,000
200,000
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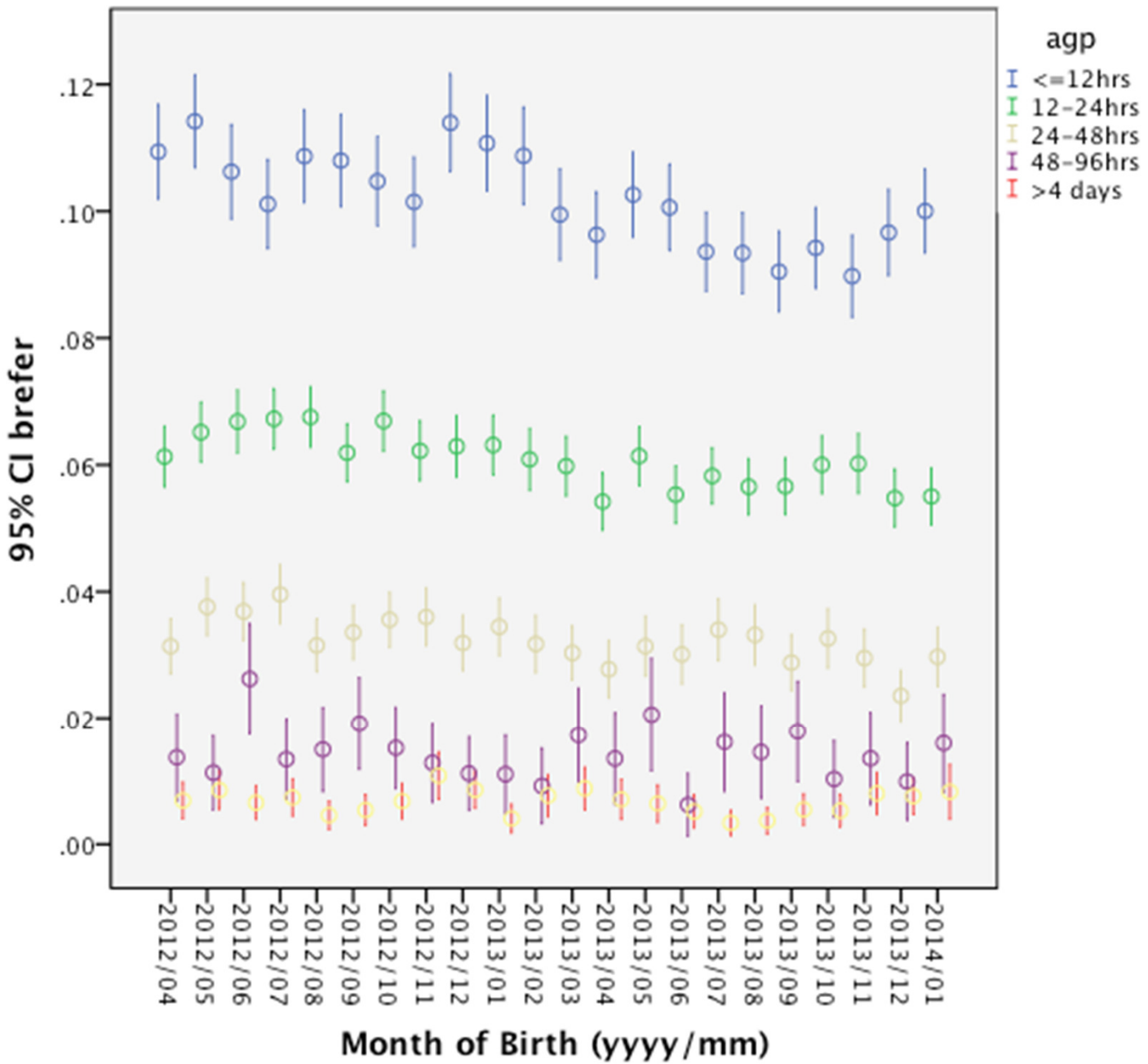
<=12hrs
12-24hrs
24-48hrs
48-96hrs
>4 days
agp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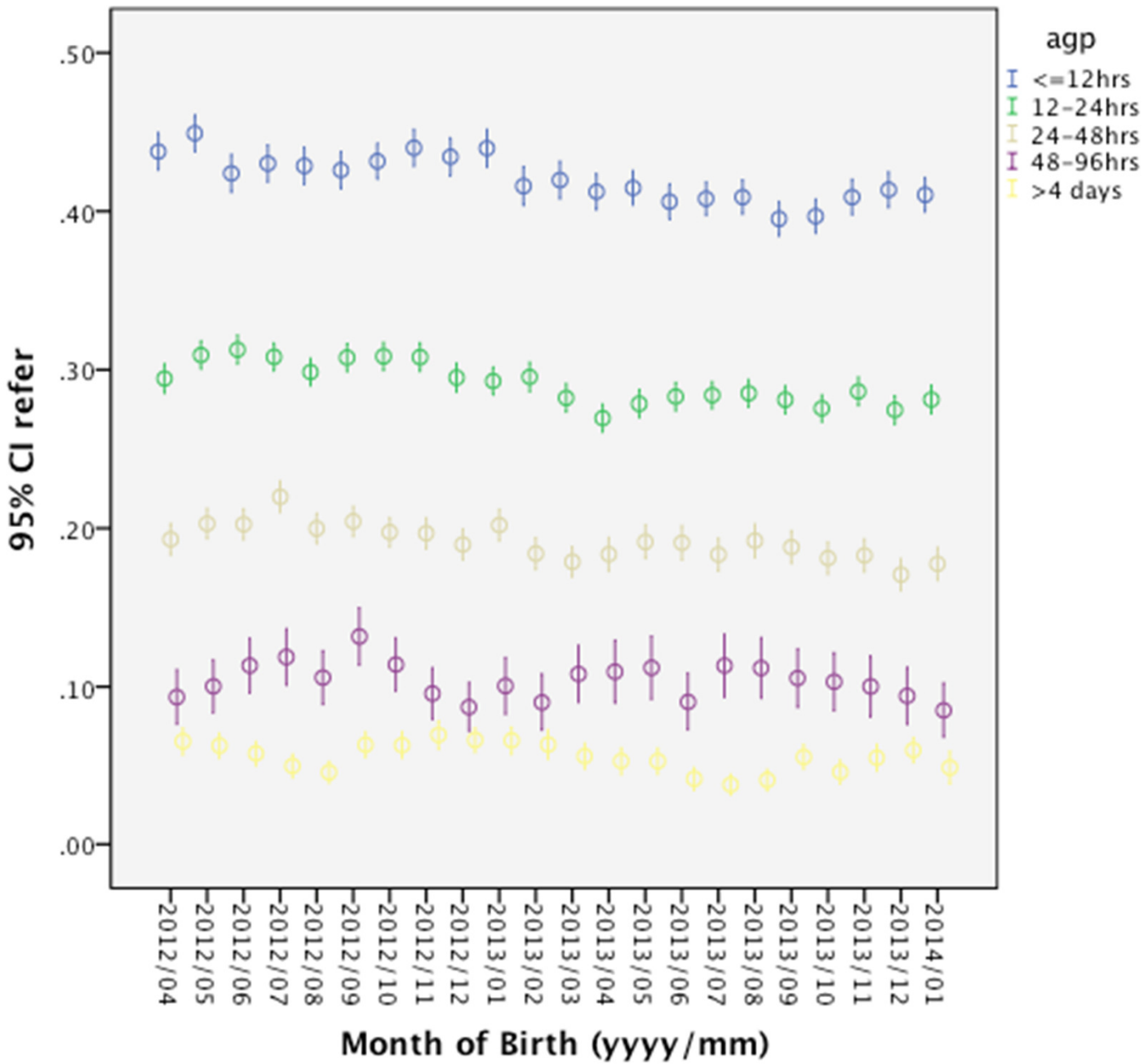
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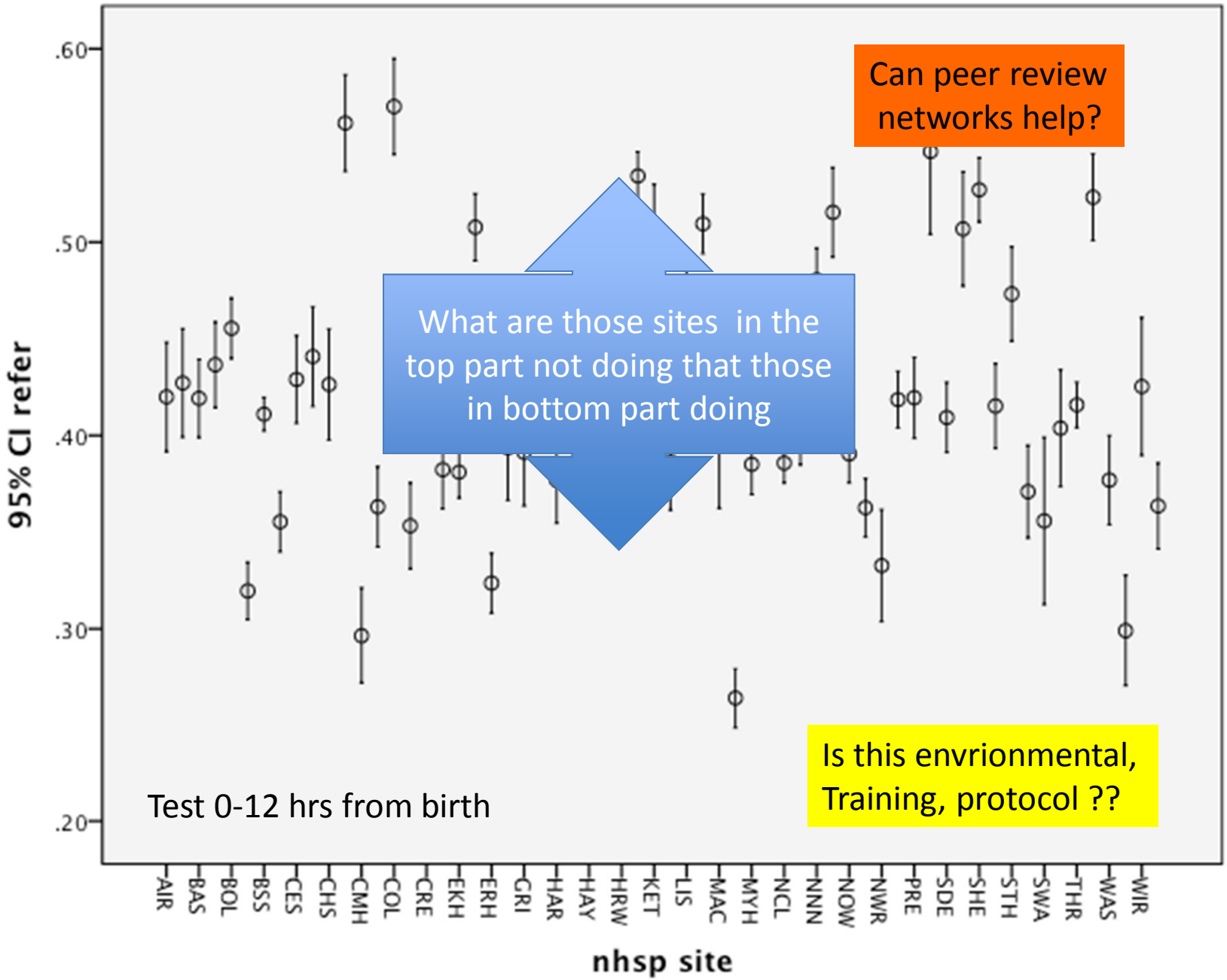
Can peer review networks help?
What are those sites in the top part not doing that those in bottom part doing
Is this envrionmental, Training, protocol ??
Test 0-12 hrs from birth
95% CI refer
.60
.50
.40
.30
.20
AIR
BAS
BOL
BSS
CES
CHS
CMH
COL
CRE
EKH
ERH
GRI
HAR
HAY
HRW
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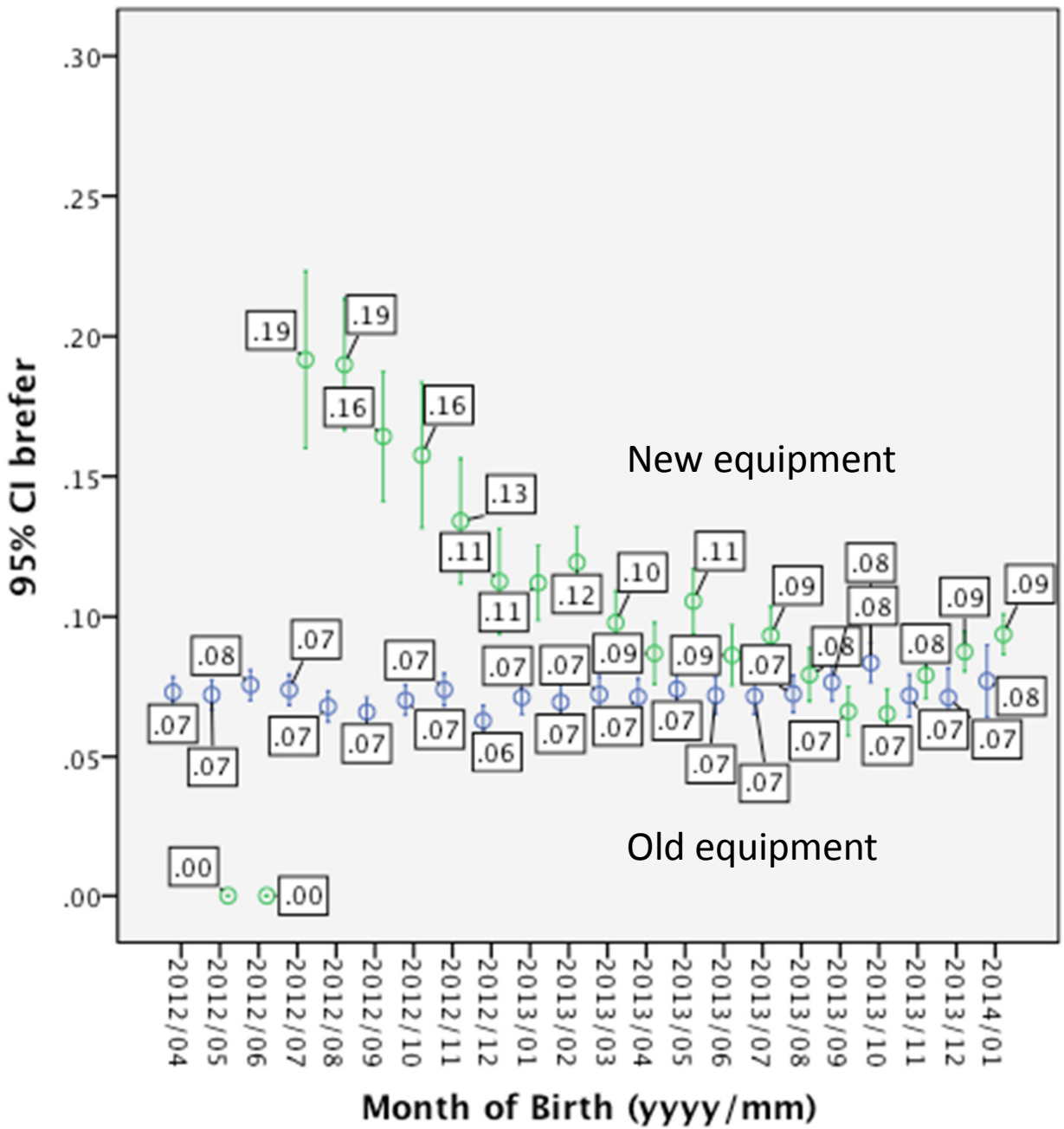
95% CI brefer
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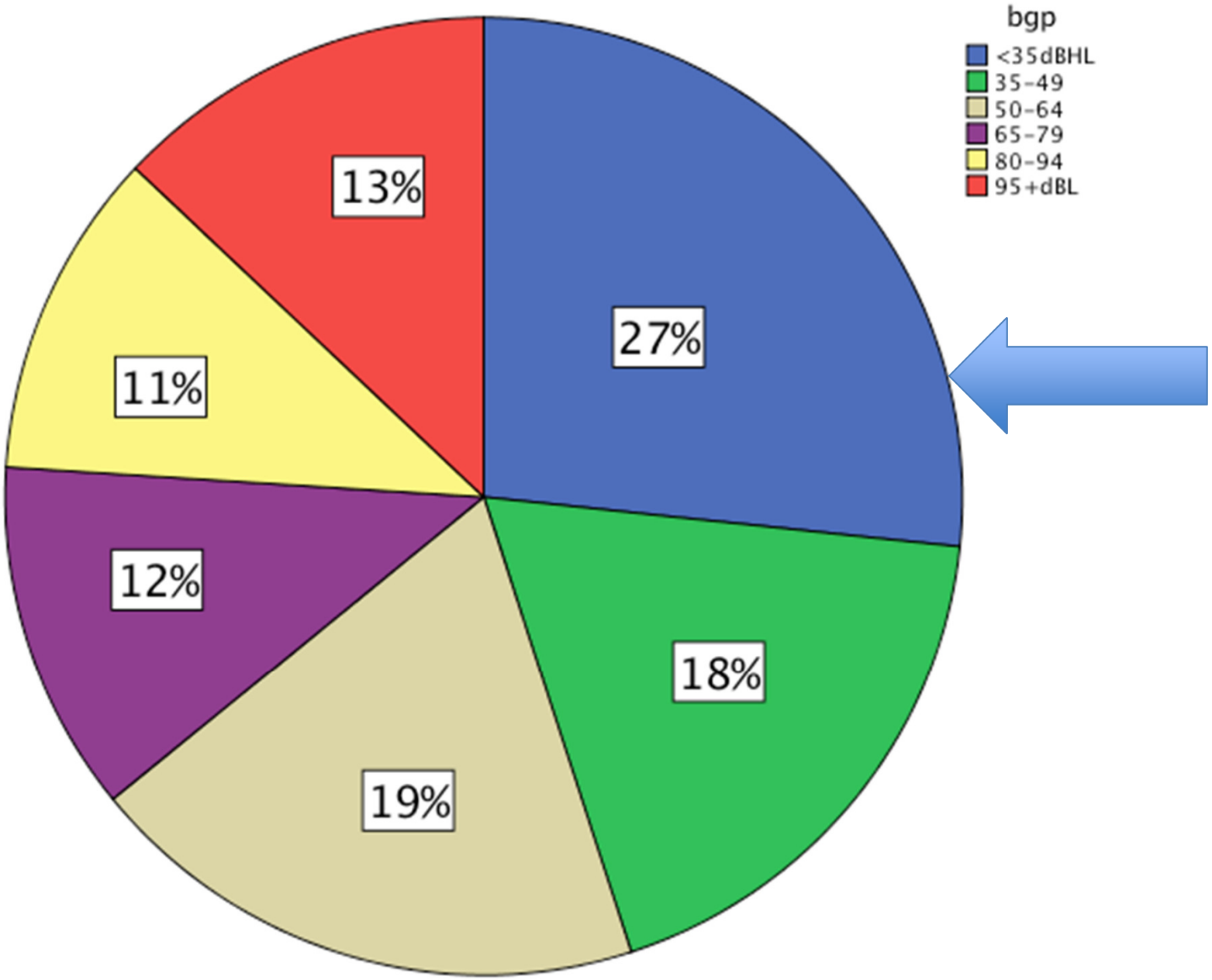
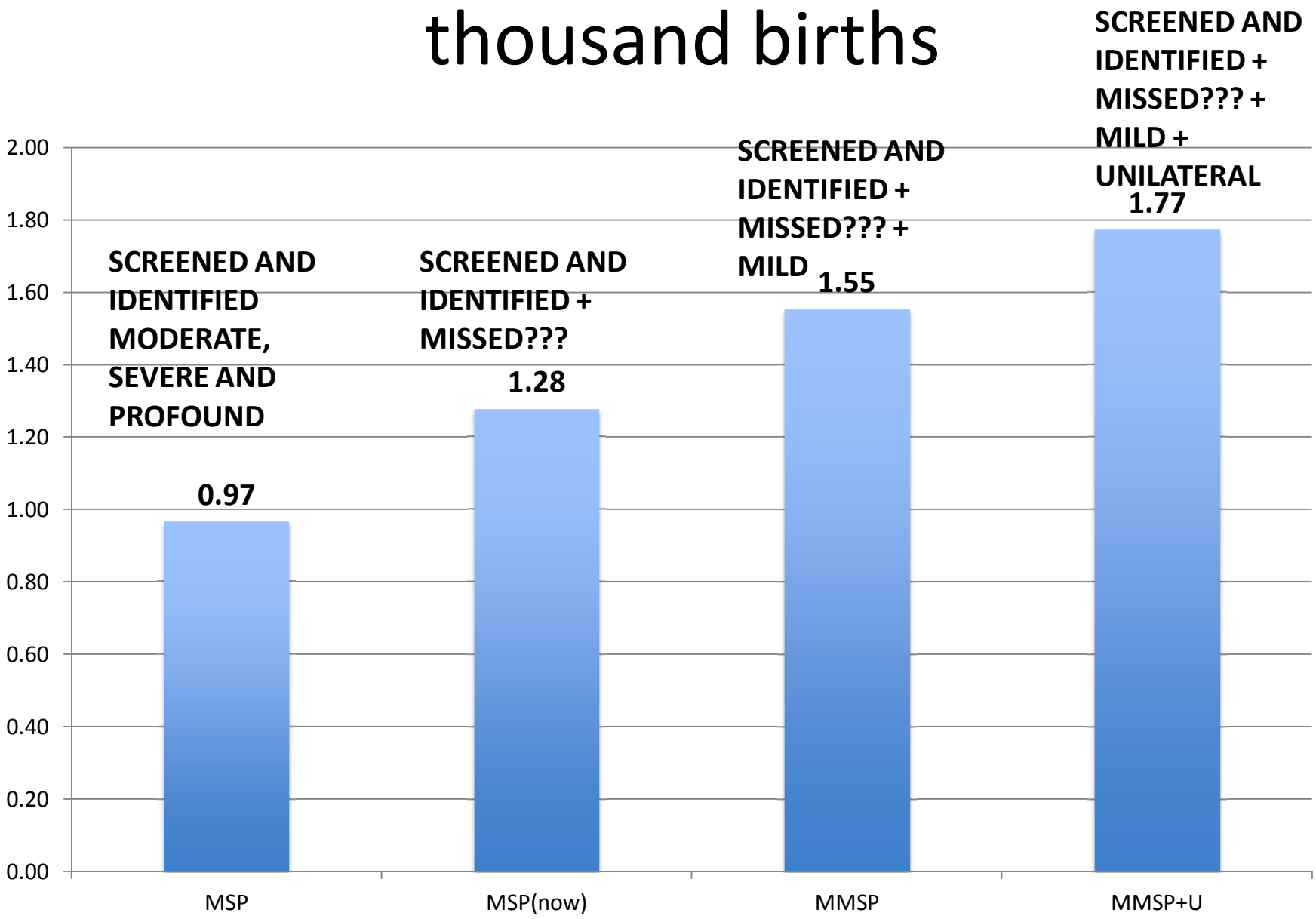
2013/12
2014/01
Month of Birth (yyyy/mm)

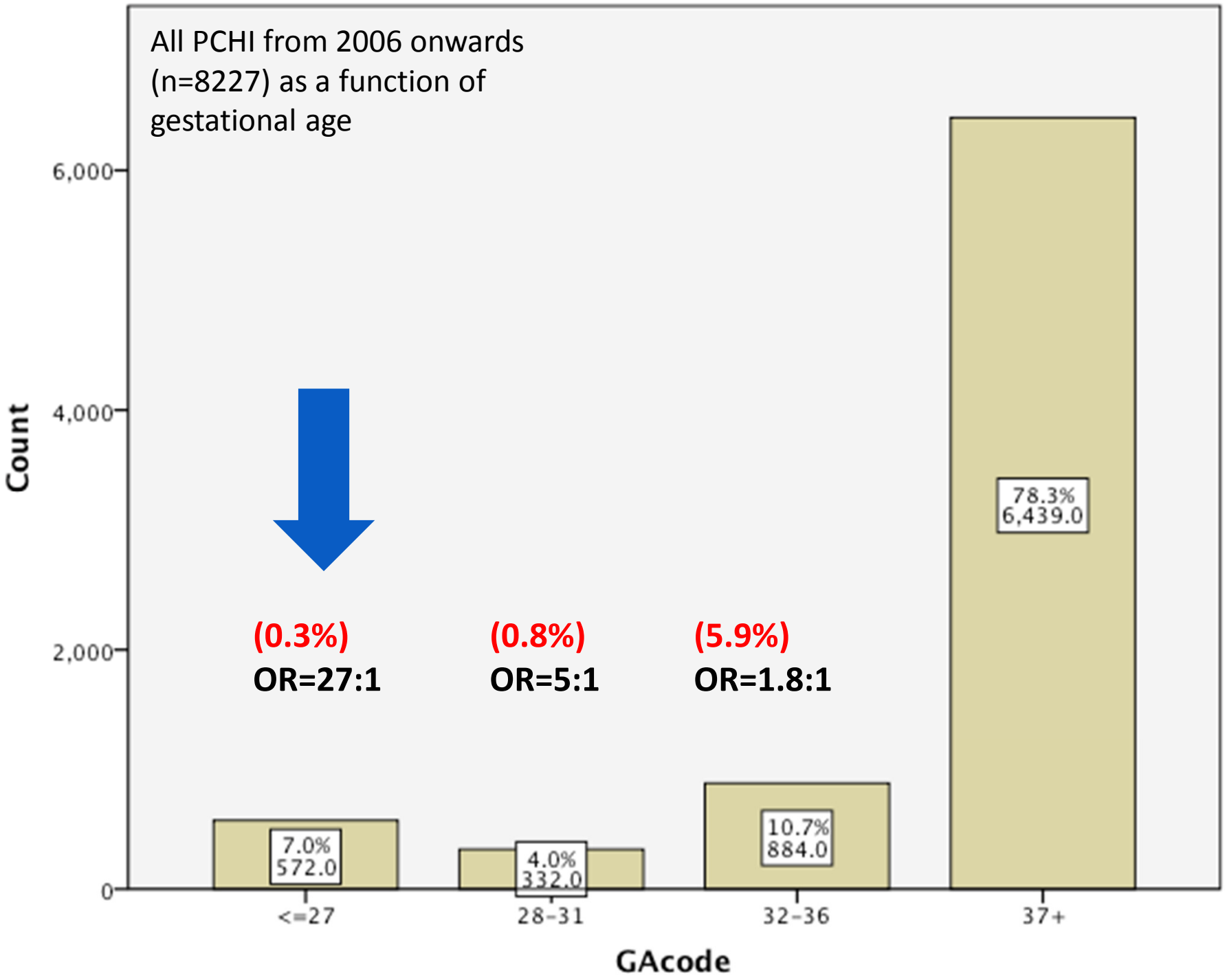
Pathway 2:
Key elements of screen are understanding yield, interpreting time at referral, assessment,diagnosis and support

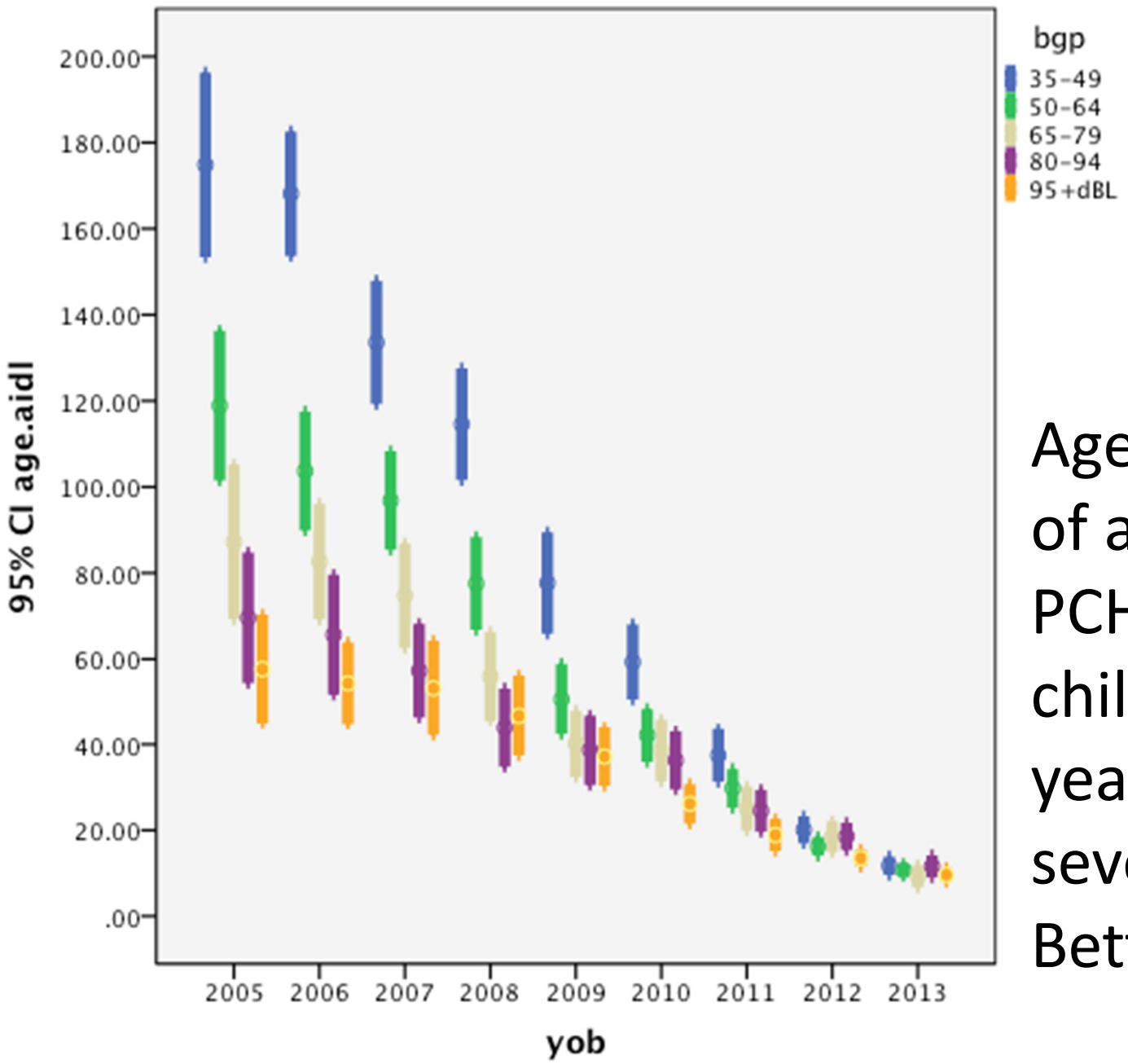
Distribution of hearing impairment on better ear for those with PCHI



Overall prevalence of hearing loss, per thousand births

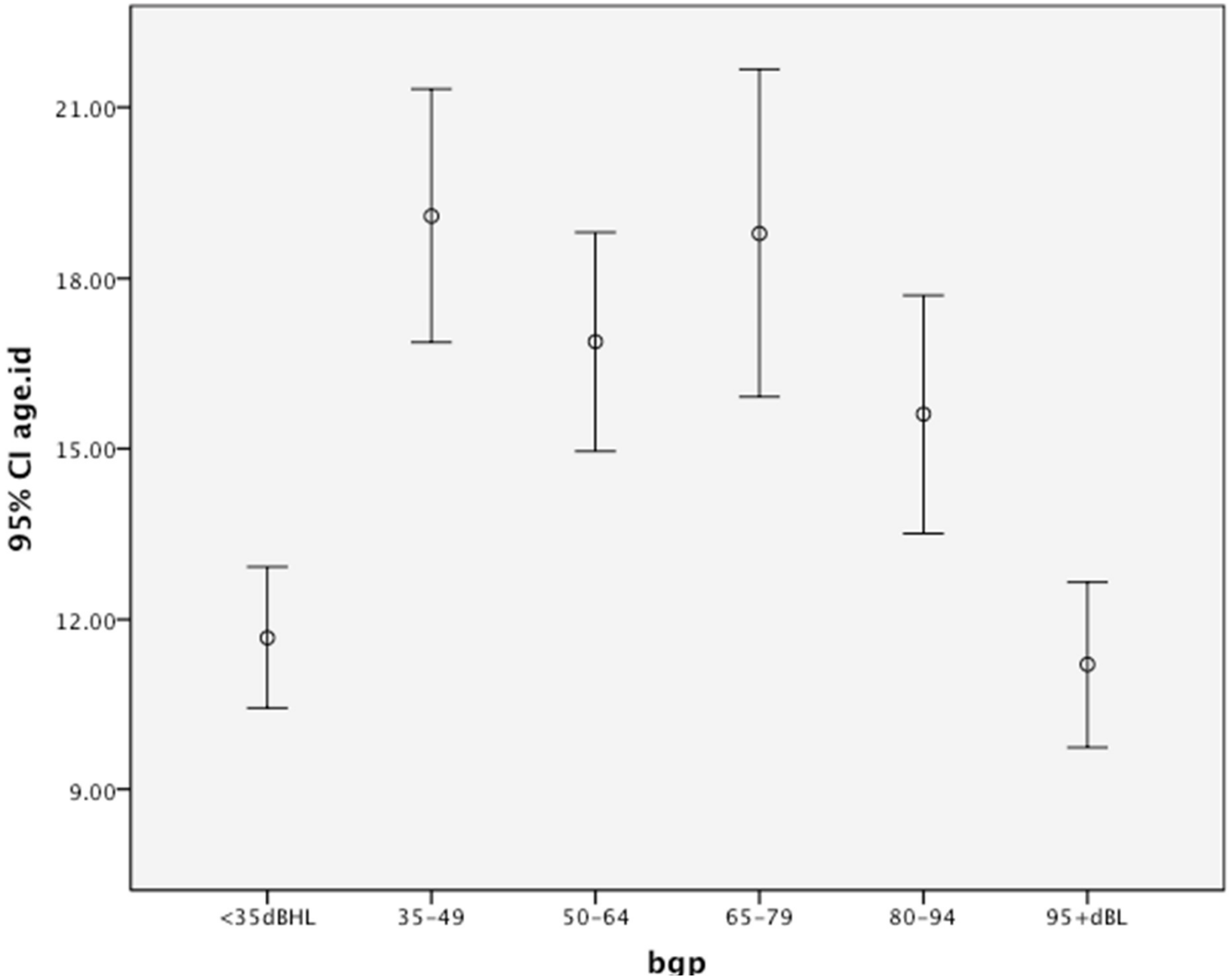


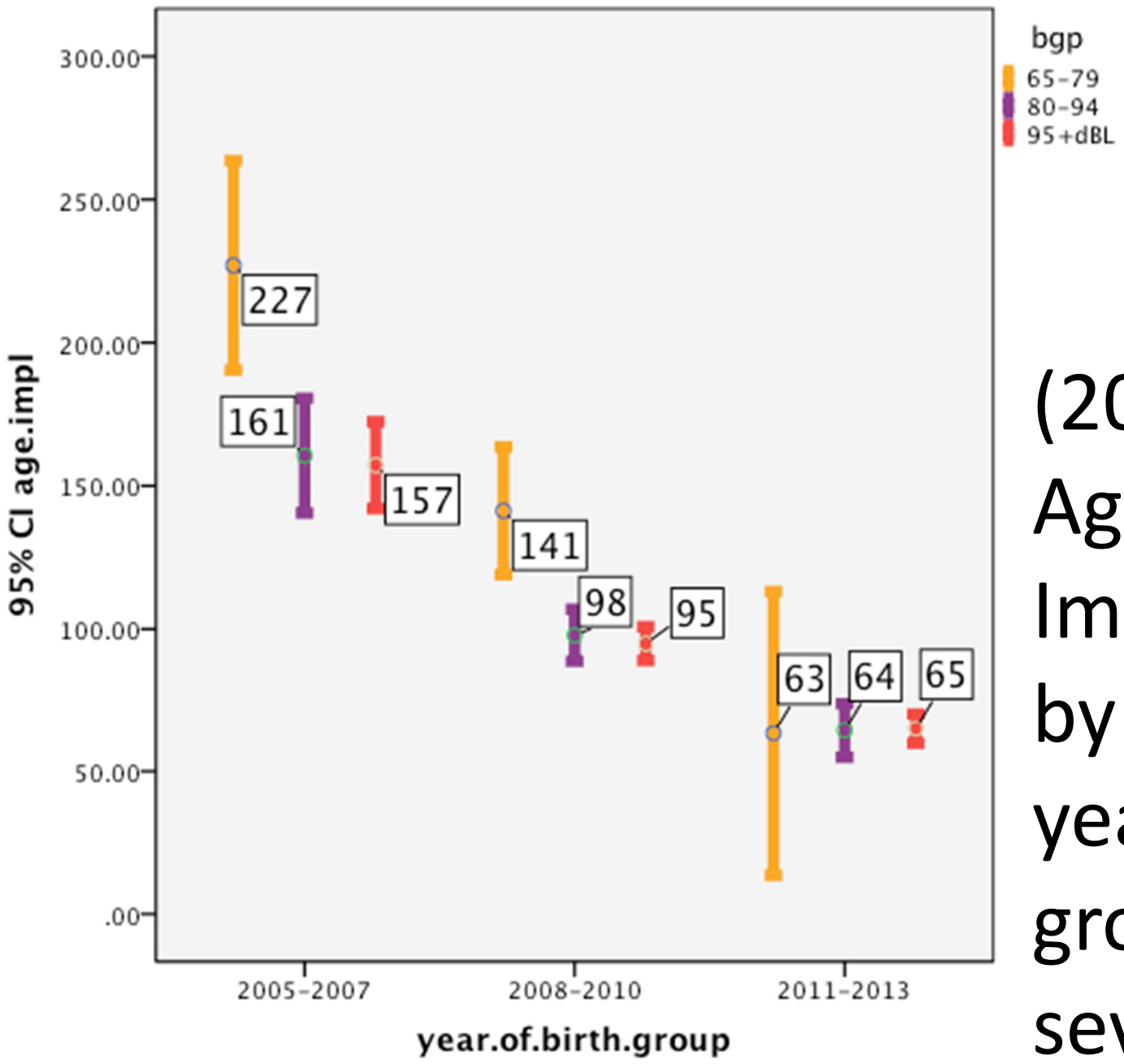

All PCHI from 2006 onwards (n=8227) as a function of gestational age
Count
6,000
4,000
2,000
0
(0.3%)
OR=27:1
(0.8%)
OR=5:1
(5.9%)
OR=1.8:1
7.0%
572.0
4.0%
332.0
10.7%
884.0
78.3%
6,439.0
<=27
28-31
32-36
37+
GAcode



Age (weeks) of aiding of PCHI children by year and severity on Better ear

Age of identification (weeks) by severity for all children since 2011

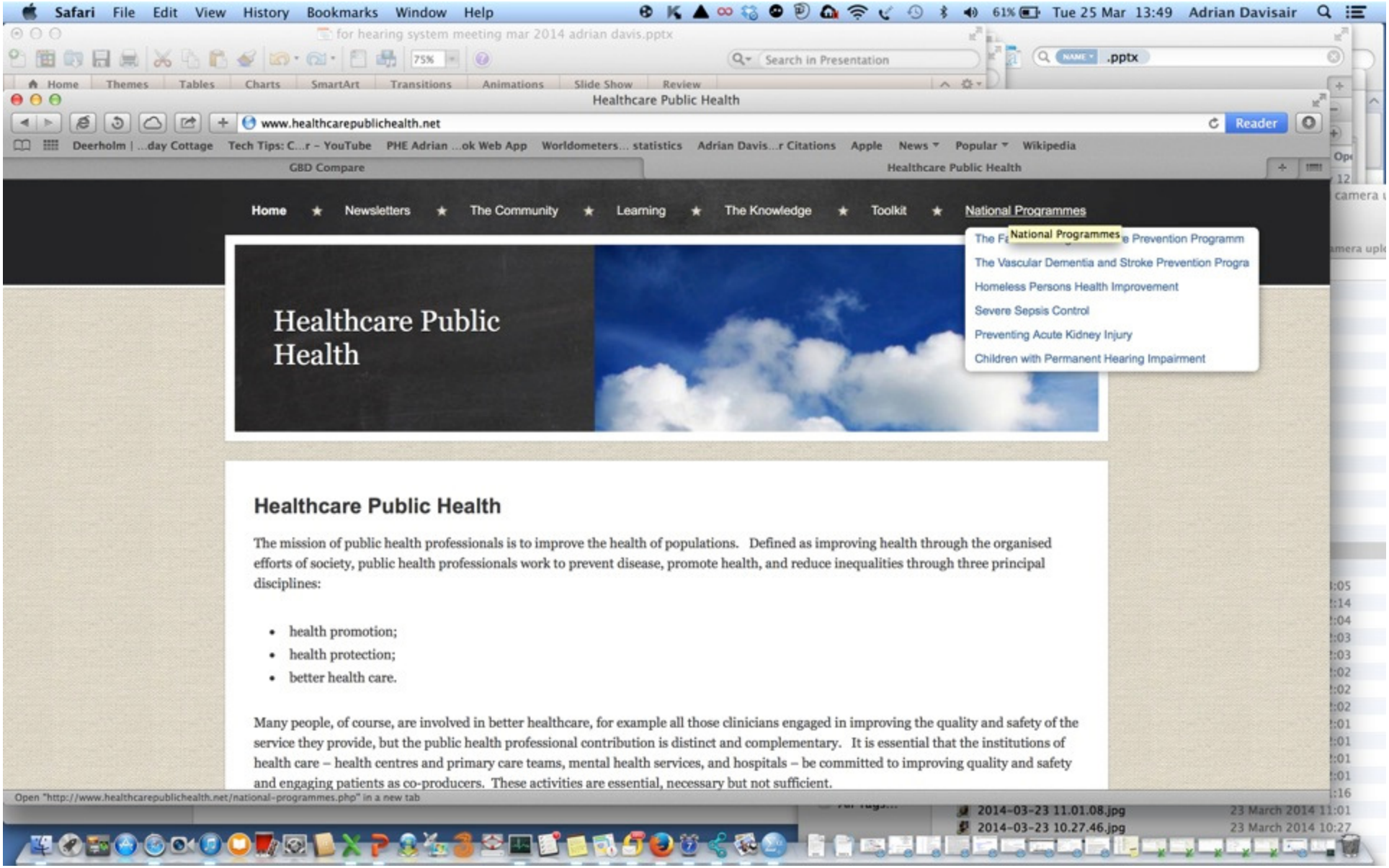




(2011-13) Age (wks)at Implant by year group and severity

Working together
Right care
Population Health Science

- Muir Gray, Adrian Davis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for hearing system meeting mar 2014 adrian davis.pptx
Search in Presentation
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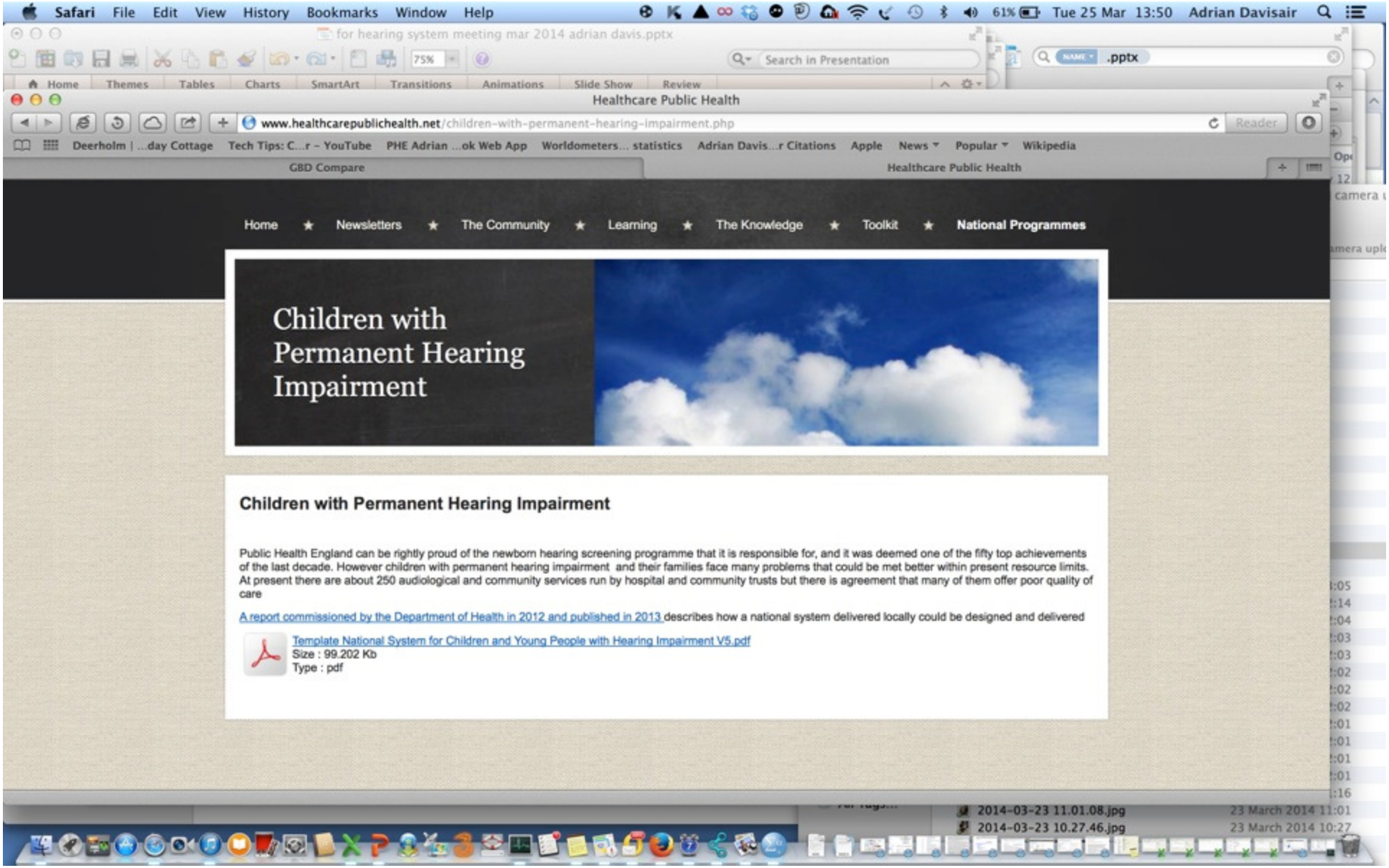
Healthcare Public Health
www.healthcarepublichealth.net
Reader
Deerholm | ...day Cottage
Tech Tips: C...r - YouTube
PHE Adrian ...ok Web App
Worldometers... statistics
Adrian Davis...r Citations
Apple
News
Popular
Wikipedia
GBD Compare
Healthcare Public Health
Home ★ Newsletters ★ The Community ★ Learning ★ The Knowledge ★ Toolkit ★ National Programmes
National Programmes
The Vascular Dementia and Stroke Prevention Progra
Homeless Persons Health Improvement
Severe Sepsis Control
Preventing Acute Kidney Injury
Children with Permanent Hearing Impairment
Healthcare Public Health
Healthcare Public Health
The mission of public health professionals is to improve the health of populations. Defined as improving health through the organised efforts of society, public health professionals work to prevent disease, promote health, and reduce inequalities through three principal disciplines:
health promotion;
health protection;
better health care.
Many people, of course, are involved in better healthcare, for example all those clinicians engaged in improving the quality and safety of the service they provide, but the public health professional contribution is distinct and complementary. It is essential that the institutions of health care – health centres and primary care teams, mental health services, and hospitals – be committed to improving quality and safety and engaging patients as co-producers. These activities are essential, necessary but not sufficient.
Open "http://www.healthcarepublichealth.net/national-programmes.php" in a new tab
2014-03-23 11.01.08.jpg
23 March 2014 11:01
2014-03-23 10.27.46.jpg
23 March 2014 10:27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Healthcare Public Health
www.healthcarepublichealth.net/children-with-permanent-hearing-impairment.php
Reader
Deerholm | ...day Cottage
Tech Tips: C...r - YouTube
PHE Adrian ...ok Web App
Worldometers... statistics
Adrian Davis...r Citations
Apple
News
Popular
Wikipedia
GBD Compare
Healthcare Public Health
Home ★ Newsletters ★ The Community ★ Learning ★ The Knowledge ★ Toolkit ★ National Programmes
Children with Permanent Hearing Impairment
Children with Permanent Hearing Impairment
Public Health England can be rightly proud of the newborn hearing screening programme that it is responsible for, and it was deemed one of the fifty top achievements of the last decade. However children with permanent hearing impairment and their families face many problems that could be met better within present resource limits. At present there are about 250 audiological and community services run by hospital and community trusts but there is agreement that many of them offer poor quality of care
A report commissioned by the Department of Health in 2012 and published in 2013 describes how a national system delivered locally could be designed and delivered
Template National System for Children and Young People with Hearing Impairment V5.pdf
Size : 99.202 Kb
Type : pdf
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23 March 2014 11:01
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DRAFT

NATIONAL SYSTEM FOR CHILDREN AND YOUNG PEOPLE WITH HEARING IMPAIRMENT

1. Scope of the system	The system is designed for children and young people in England with all degrees of hearing impairment up to the point of transition to adulthood and adult services (which should occur before the age of 25). All stages in the management of children and young people with hearing impairment and support for their parents should be included: screening, assessment, differential diagnostics, and all aspects of subsequent management including education and social support. This also includes temporary or recurrent episodes of temporary, hearing impairment, unilateral, conductive hearing losses and other specialised paediatric audiological services such as auditory processing disorders, auditory neuropathy/spectrum disorder, and children with complex needs. The system does not include paediatric balance disorders, which should be covered by a separate system.
2. Population served	The system covers the whole population of England with care being delivered through local systems which have an annual birth rate of between 15-30K.
3. Aim of the service	The aim of the system is to enable children and young people to fulfil their social, emotional, communicative and educational potential, by maximising their use of auditory sensory information. Central to this is the facilitation of confident communication. The importance of non-speech environmental sound awareness was also acknowledged, as are the needs of sign language users.
4. Objectives of the service	1. To identify children and young people with hearing impairment through screening and other pathways as early as possible. 2. To confirm the nature and degree of hearing impairment accurately and quickly. 3. To provide effective medical and surgical assessment and management of hearing impairment and appropriate technical assistance including implantable devices. 4. To prevent preventable permanent hearing impairment. 5. To provide integrated multidisciplinary cross-organisational support. 6. To provide support and information to the child or young person and their family and support them through transition to adult services. 7. To enable each child to develop effective communication skills. 8. To develop the skills of all staff involved with children and young people with hearing impairment. 9. To mitigate inequity. 10. To make the best use of resources. 11. To promote and support research and the adoption of innovation. 12. To provide an annual report to the population served by the system.

The scope of the system

- Elodie, Ni, Elsa and their families

5. Developing criteria and performance levels

Objective	Criteria	Levels of performance for quality standards
1. To identify children and young people with hearing impairment through screening and other pathways as early as possible.	1. A NHSP programme is in place across the system. 2. School screening programme in place which may include a school exit screen, and online self testing in schools.	1. The programme is delivered to defined approved national standards. 2. 95% coverage; records to include date of assessment; record of loss; and record of intervention.
2. To confirm the nature and degree of hearing impairment accurately and quickly.	1. A comprehensive range of audiological tests and a full audiological assessment is carried out appropriate for the child's age and stage of development and taking into account the presence of additional and complex needs. 2. The tests that are carried out accurately measure the child's hearing. 3. The tests are undertaken in a timely fashion. 4. A full explanation of the assessment and results is given to the parents or carers. 5. A full explanation of hearing loss, deafness and the available management and support is given to parents and carers. 6. A system of active "watchful waiting" is available for children with "glue ear".	1. a) All referrals are investigated using appropriate testing for the child's age and development. b) All staff with the clinical responsibility for the child must have a specialist qualification in paediatric audiology. 2. a) The equipment used in the assessments is serviced and calibrated at least annually in accordance with the periodic verification of audiometric equipment specified in IEC 60645-1 and ISO 8253-1. b) All children should be assessed in a family friendly, sound proofed room complying to DH Technical memorandum 2045 and ISO 8253. 3. 80% of children with PCHI of any degree have their hearing loss confirmed within 3/12 of referral with 98% confirmed within 6 months. 4. a) All parents and carers accompanying the child are given an appropriate verbal explanation of the assessment results on the day of the assessment. b) All parents and carers accompanying the child are given details of the next steps on the day of the assessment. c) All parents and carers accompanying the child are given information and contacts for sources of support. 5. All parents and carers accompanying the child are given an appropriate explanation and information about hearing loss and deafness including written information about "glue ear" or permanent hearing loss, to include the Early Support information and details of the multi-agency support available. 6. All children with "glue ear" are offered an audiological assessment following the period of active "watchful waiting".
Objective	**Criteria**	**Levels of performance for quality standards**
3. To provide effective medical and surgical assessment and management of hearing impairment and appropriate technical assistance (including	1. Referral for aetiological investigation and paediatric assessment.	1. All parents of babies and children with confirmed hearing loss to be offered referral to appropriate medical consultants in a timely fashion – evidence based or informed by professional guidance. 2.

implantable devices).	2. Provision of appropriate amplification as required: a) Hearing aid fitting offered for confirmed cases of hearing loss where appropriate. b) Hearing aids fitted to match the amplification needs of the infant in order to provide effective amplification. c) Provide support for hearing aid use and monitor hearing aid function. 3. Referral for cochlear implant assessment is offered where indicated.	a) All appropriate cases offered hearing aid fitting within 4 weeks of confirmation of hearing loss, unless delayed for management reasons. b) Appropriate hearing aids are fitted according to MCHAS guidelines and programmed with appropriate features using real ear measures and prescriptive fitting rule. c) Robust ongoing audiological care including regular checking of hearing aids, hearing aid settings, and use in the home is carried out. This information is shared with colleagues to form part of each child's integrated support and audiology care plan. 3. 90% of profoundly deaf children identified through newborn screening whose parents wish for implantation to be implanted before the age of 12 months.
4. To prevent preventable permanent hearing impairment.	1. Promote awareness of preventable causes of hearing impairment. 2. Raise awareness among healthcare professionals of the preventable causes of hearing impairment. 3. Provide robust evidence to support epidemiology of hearing loss.	1. Information available in all healthcare settings. 2. Reduction in number of children with preventable hearing impairment per 1,000 births.
5. To provide integrated multidisciplinary cross-organisational support.	1. Cross organisational integrated care from multidisciplinary teams is available to support children and their families. 2. Develop a common approach to pathway support and the data needed to assure the pathway.	1. a) A written agreement (with terms of reference) which details how different service providers will give integrated support across disciplines and organisations is available. b) The universal Health and Development review process is used and reviewed every 2 years. c) Education Health and Care assessments (detailed in the Children and Families Bill) are delivered through appropriately commissioned joint arrangements. 2. Data is available to, and shared across all partners providing care to children and their families. The system is working towards shared data systems.

Objective	Criteria	Levels of performance for quality standards
6. To provide support and information to the child or young person and their family, and to support them up to and during their transition to adult services.	1. Availability of reliable evidence based, age, cultural and language appropriate information (for children, young people and their families); access to information through a range of media including email and web based technologies. 2. Information is developed in partnership with children, young people and their families to ensure it is appropriate. 3. All children with permanent hearing impairment to have access to support from an appropriately skilled workforce 52	1. All families are given information in appropriately accessible form 2. Information given to families reflects a partnership approach to its development. 3.

	weeks of the year: a) Informing education/support services b) Availability of early support c) Support networks d) Ongoing coordinated support e) Access to social care support 4. Transition to adult services. 5. Developing early communication.	a) Children's Services (usually education) are notified within one working day of confirmation of PCHI. Families are offered a visit within two working days of contact (year round). b) All families of babies and children with confirmed PCHI are provided with an explanation of the full range of support available. c) All families of babies and children with PCHI are given the opportunity to meet other families of deaf children and also contact with older deaf children and adults. d) All families of babies and children with confirmed PCHI are offered a main professional contact to provide ongoing regular support and ensure a co-ordinated and coherent service. Integrated support and audiology care plans are shared with children, young people and their families; education and social care plans are shared across all partners. e) The social care needs of all families with a deaf child should be reviewed as part of an initial assessment by the lead professional. In all areas there should be available a member of Social Care staff, with appropriate expertise in working with deaf children and their families to respond to the identified needs. 4. All families are supported through a structured transition to adult services and independent self-care where appropriate. 5. All families of babies with PCHI to be given information about the full range of communication approaches and supported in their choices, in accordance with the principles of Informed Choice.

Objective	Criteria	Levels of performance for quality standards
7. To enable each child to develop effective communication skills.	1. Information about the ways in which children's communication skills are developed and the relationship between hearing and communication is given at the audiological assessment. 2. Information is given to the parents on accessing resources and facilities which are available to support and develop the child's communication.	1. All parents and carers accompanying the child are given information which will contribute to the integrated support and audiology care plan and which addresses the child's communication skills and requirements. 2. a) All children with a PCHI must have their integrated support and audiology care plan reviewed regularly and at least annually. b) All children with a PCHI should have their language and communication progress continually monitored and outcomes measured at regular and prescribed intervals. c) The results of the language and communication assessments must be available to the parents and the multi-agency team with ongoing assessments available to monitor the child's

	3. Communication and language development of children with PCHI should be equivalent to their normally-hearing peers.	progress. 3. Children with PCHI should have language and communication skills at the key developmental stages comparable to their hearing peers.
8. To develop the skills of all staff involved with children and young people with hearing impairment.	1. Staff can produce documented evidence of appropriate and ongoing professional development.	1. All staff to participate in appropriate CPD and educational programmes.
9. To mitigate inequity.	1. Action across the multidisciplinary teams to support hard to reach and engage families, children and young people with hearing loss. 2. Appropriately trained interpreters available when required. 3. Minimum training standards for care professionals supporting hard to reach and engage families, coordinated across professional groups. 4. Routine collection of data on service use in areas of deprivation.	1. All services 2. All services 3. All services 4. All services
10. To make the best use of resources.	1. Systems are in place to minimise missed appointments. 2. With the agreement of the parent or carer, information is properly shared across clinical staff and agencies. 3. There is a system of joint procurement and rationalisation of hearing aids, listening systems and other devices to minimise purchase and maintenance costs.	1. DNA rate <5%. 2. Compliance with the sharing of information on children assessed in the audiology department is regularly audited. 3. The use of hearing aids, listening systems and other devices that have been purchased through a joint procurement system is regularly audited.

Objective	Criteria	Levels of performance for quality standards
11. To promote and support research and the adoption of innovation.	1. Establish networks for sharing research expertise and for joint data collection. 2. Participate in locally and nationally led research projects. 3. Understand the national and international evidence to promote early adoption of innovation. 4. Links with Academic Health Science Networks for support and help. 5. Establish protected time for research and the promotion of innovation adoption.	1. All services 2. All services 3. All services 4. All services 5. All services
12. To provide an annual report to the population served by the system.	1. Data on meeting the standards outlined in this template to be published by networks.	1. All services

6. Resources (Identify all the resources in the system, to create a system budget)	
7. Partners (All the partners to be engaged in a clinical network)	
8. System specification	
9. Define a plan to build the system	

What next?

6. Resources

- Identify all the resources in the system, to create a system budget

7. Partners

- All the partners to be engaged in a clinical network

8. System specification

9. Define a plan to build the system

An annual report for each network with some examples

- Screening (coverage, referral, PPV, cost??)
- Audiology (assessments, peer review, hearing aid fitting, RECD)
- Medical and other clinical input (ENT, CI)
- Early support and intervention (language devp, peer support)
- Communication (eg turn taking)
- Education

Building skills and **systems** for the future

- Training
- Education
- CPD

- Systems …..

Getting the best hearing and communication for all children

- **How many childrens hearing services do we need?**
- How many community audiology services do we need?
- How many implantable device services do we need?
- How do they relate to services for children with permanent impairment and to those with transient or mild problems?
- How do we know which networks give the best outcomes and learn from them?
- What are the top ten items to go into a networks annual report?
- Articulate Research strategy
- A discussion on how we get agreement on key elements will be facilitated and the outcomes disseminated as an action plan for developing paediatric audiology services in the coming year

Need for systematic collation of data on population hearing loss and services

- Can we capture the real impact of hearing problems on people in USA the extent to which services give worthwhile outcomes for USA

- This conference should mark the determination to collect big national and state data systematically on incidence, prevalence and outcomes for the population with hearing loss and other auditory dysfunction

- Start by clinical audit
- Publishing data annually by services?
- And go onto look at that by implant centres ?
- Annually

You are the future!

- Experience in USA ..
- For USA …

- Don’t let it happen
- Be part of it

- Get involved

- Help co-produce your paediatric early detection and intervention system so that children can have the best start in life

- And then bring added happy years to life

Gareth and colleagues (BAA),

What can we do from audiology
Profession to take this forward

Making multidisciplinary work
Good examples


Tony
Medical input and screening need
To be tackled systematically

Adrian Dighe

How can we move this on for paediatrics

Suki,

What are the next
practical steps I
Can take in my area

How can we bring this across sector
What are the implications of
The new act?

Needs your input to make
 the detail work

THANKS VERY MUCH FOR INVITING ME