



IFOS WORLD MASTER COURSE
ON HEARING REHABILITATION
IN COLLABORATION WITH
GCC OTOLOGY, DUBAI, UAE

28-29-30
MARCH 2019

Mark Laureyns

*European Association of Hearing Aid Professionals – Brussels - Belgium
CRS (Amplifon Centre for Research & Studies) – Milan - Italy
Thomas More University College – Audiology Dept – Antwerp - Belgium*

Economic Impact of hearing loss: the different systems of hearing management



www.aea-audio.org



IFOS WORLD COURSE ON
HEARING REHABILITATION



Self-Reported Hearing Loss

- Includes Awareness: *If you experience and report hearing problems – you're more likely to take action*
- Available for more countries – EuroTrak – JapanTrak – MarkeTrak
- Empowers people – your experience & your needs

+/- 10%

7 < >
12%



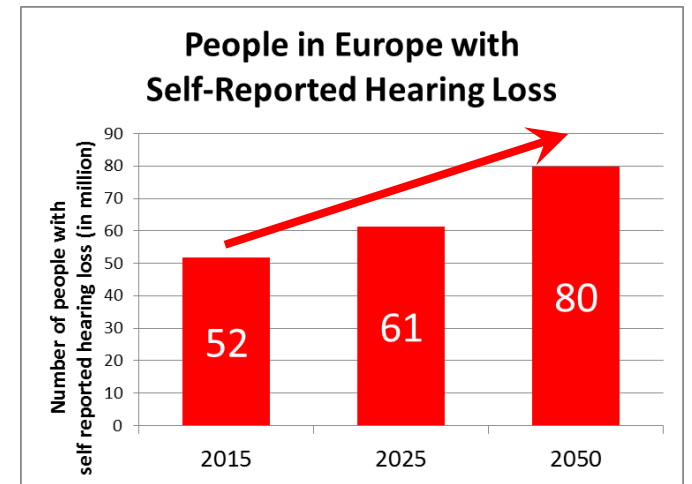
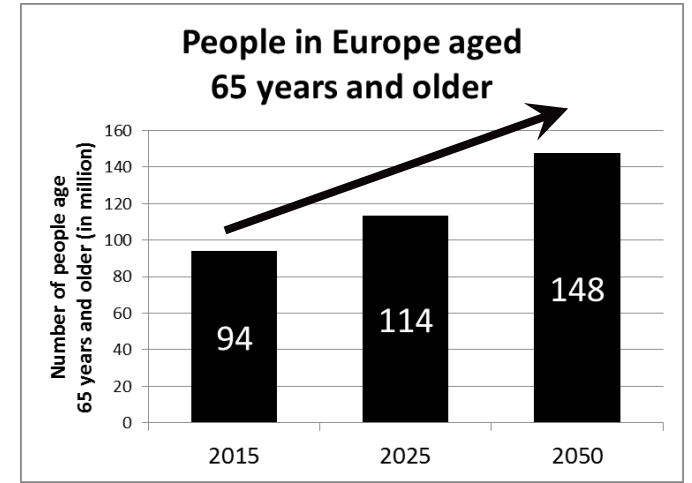
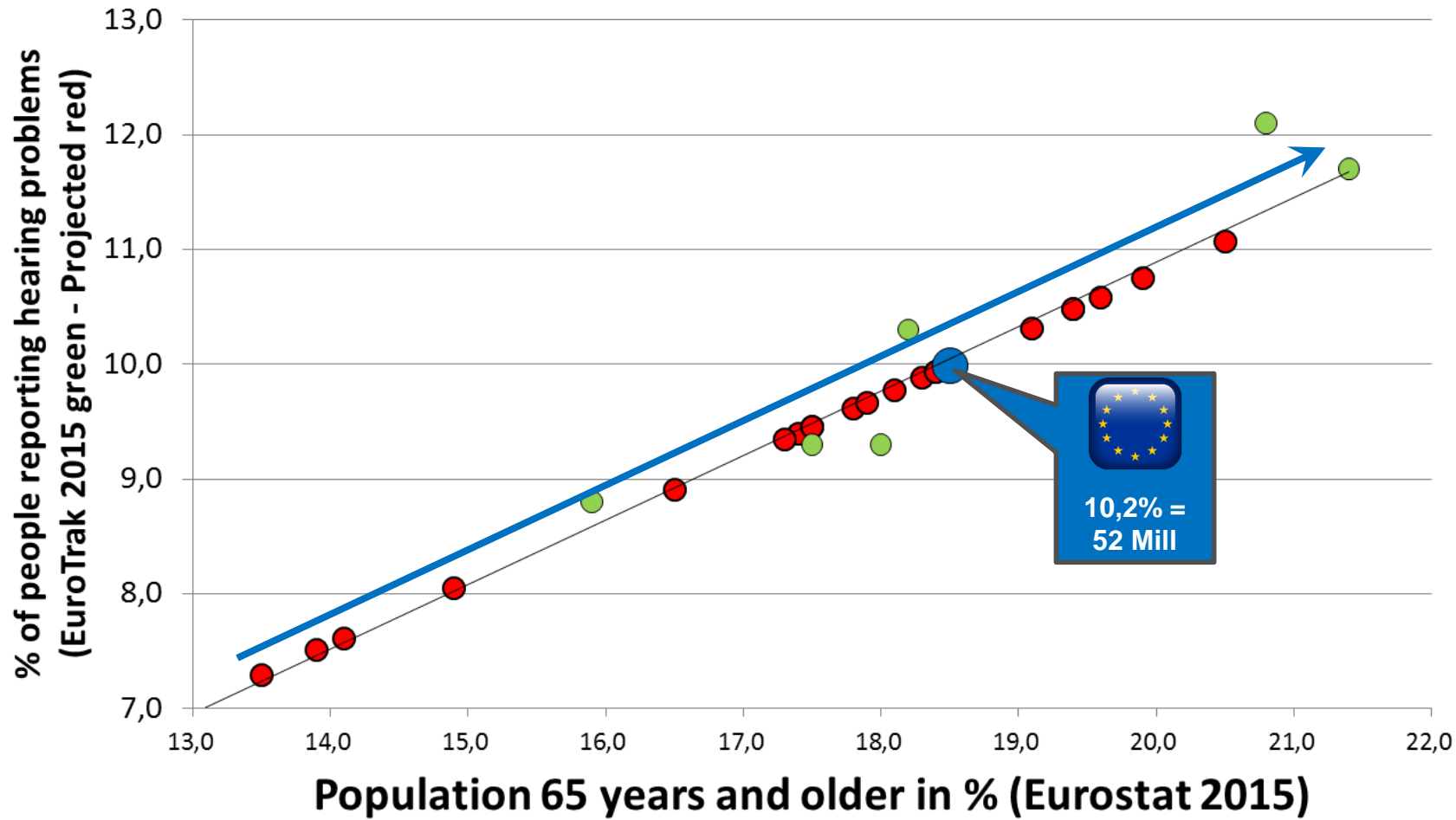
Measured Hearing Loss

- The Audiogram: *Assess when you start to hear soft pure tones*
- Many different definitions of hearing loss: *Mild Hearing Loss – Disabling Hearing Loss – WHO² - WHO – EC – ASHA - Can leads to confusing numbers*

+/- 16%

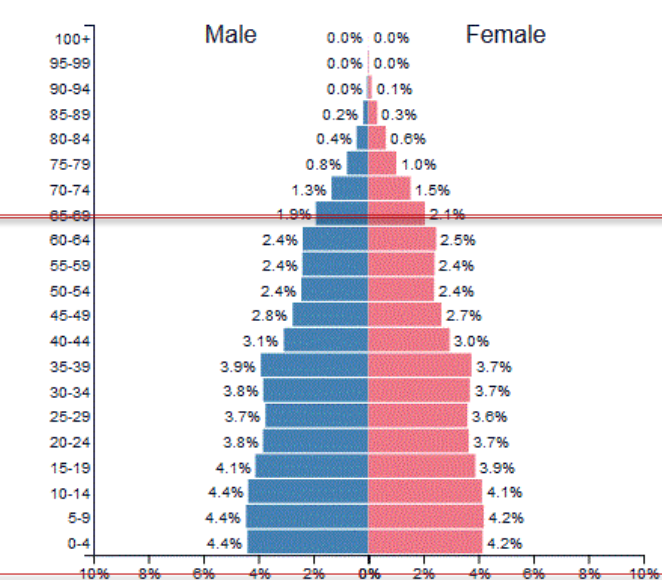
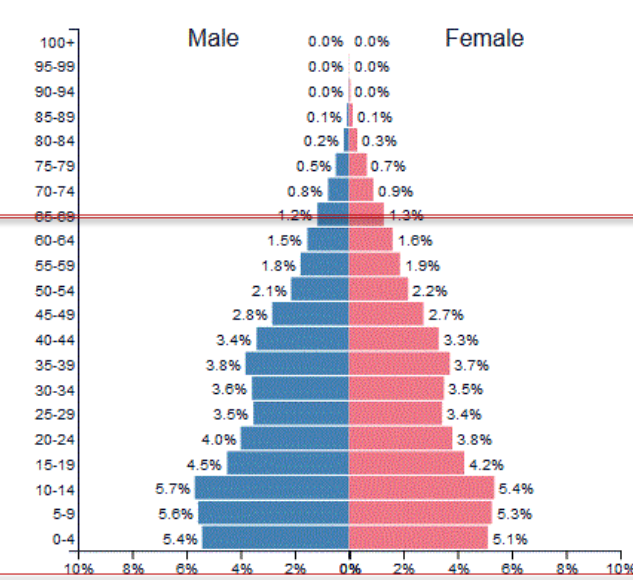
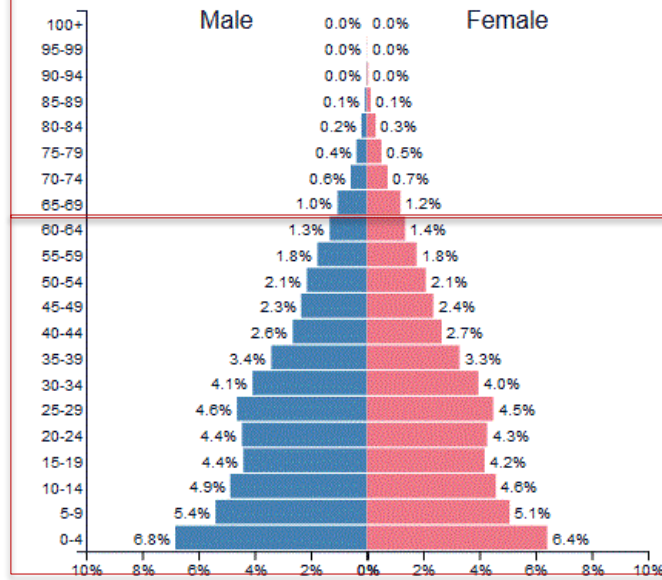
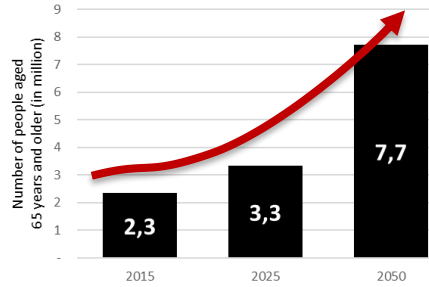
3 < >
27%

% Self Reported Hearing Loss <> Population 65 years and older





People in Egypt aged 65 years and older



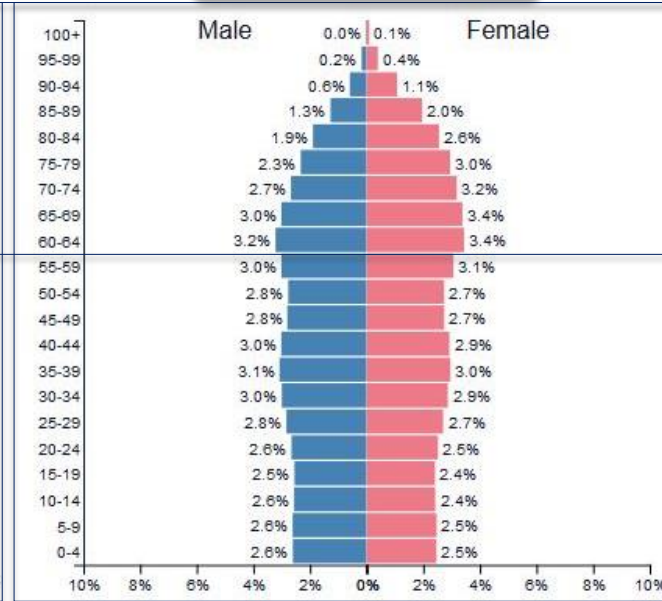
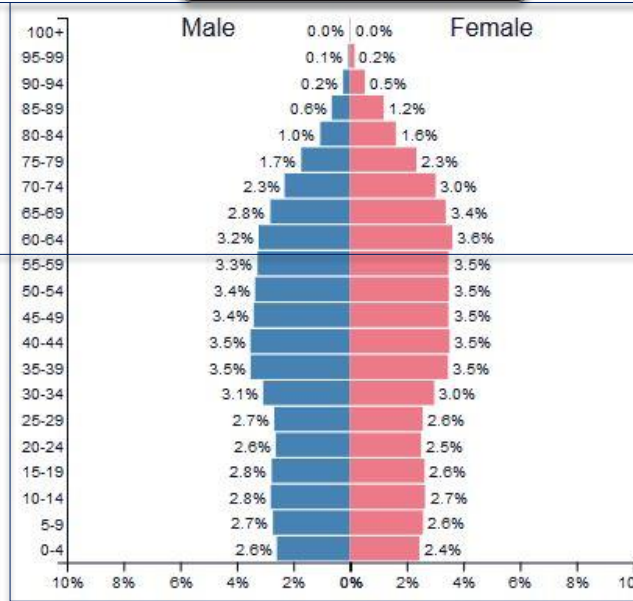
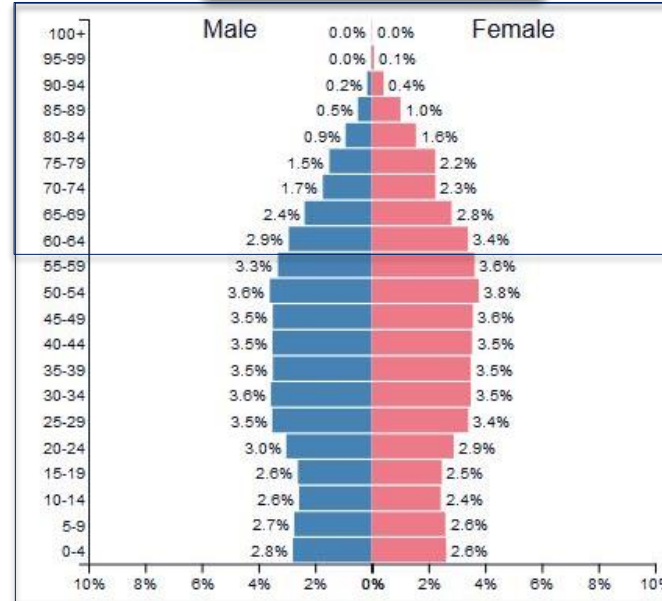
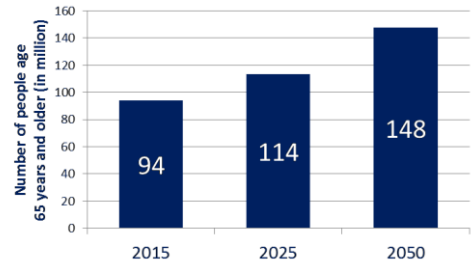
2015

2025

2050



People in Europe aged 65 years and older



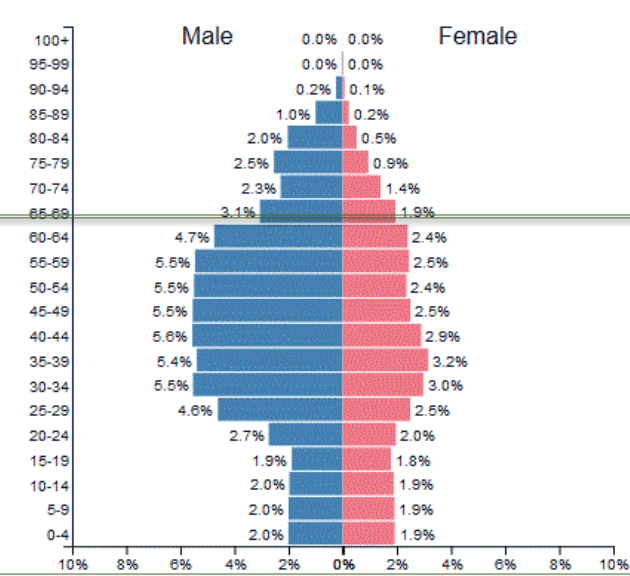
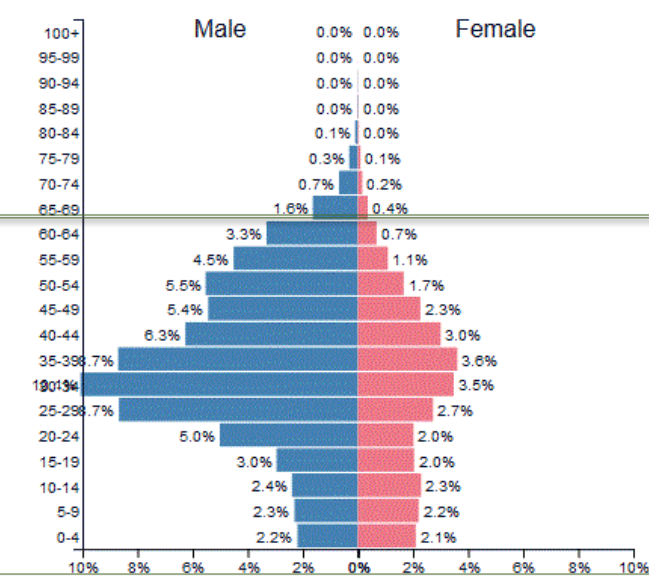
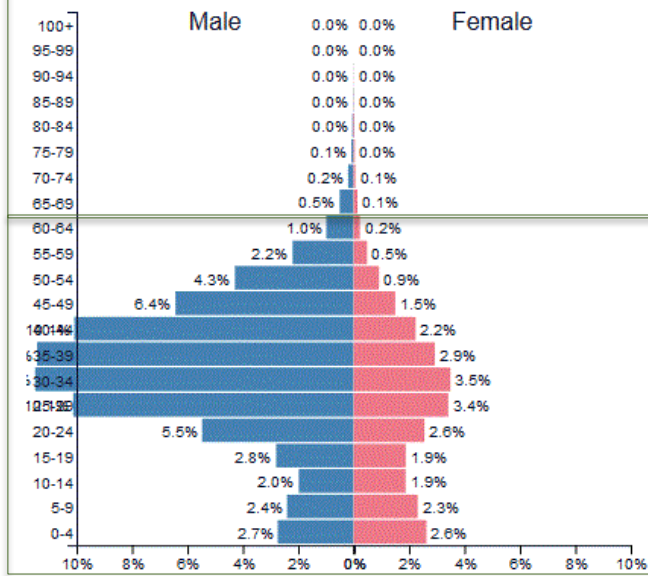
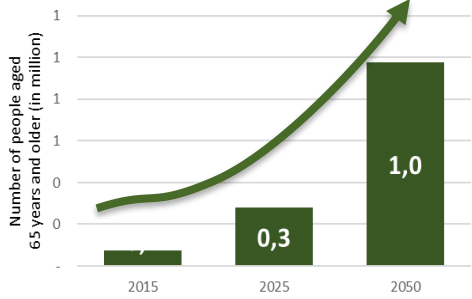
<https://www.populationpyramid.net>



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People in United Arab Emirates aged 65 years and older



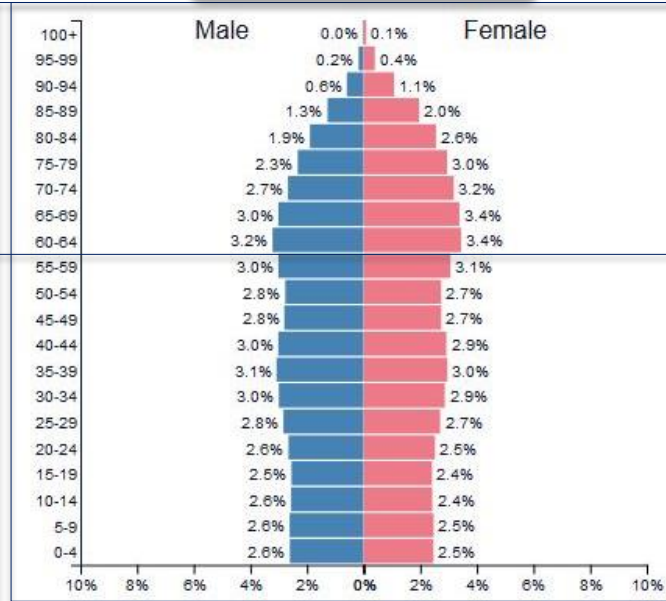
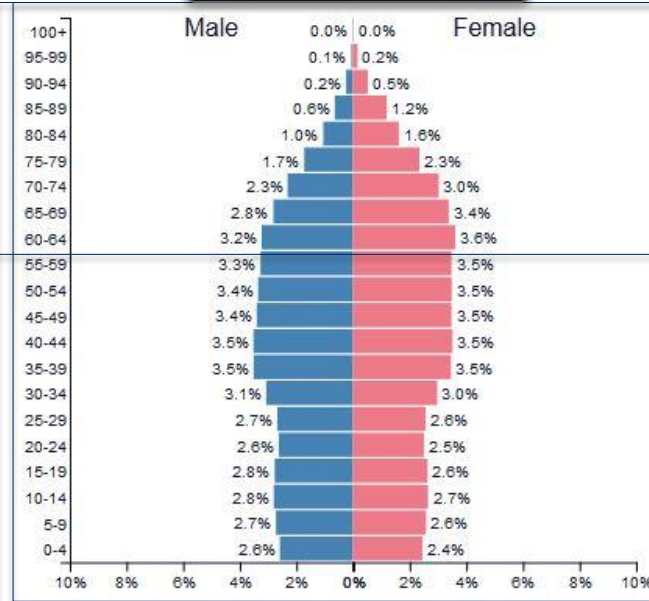
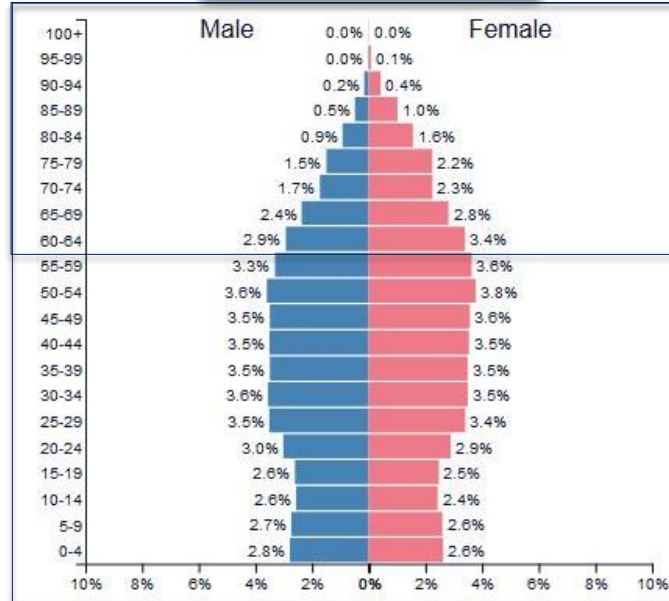
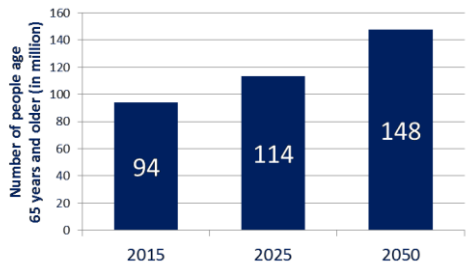
2015

2025

2050



People in Europe aged 65 years and older



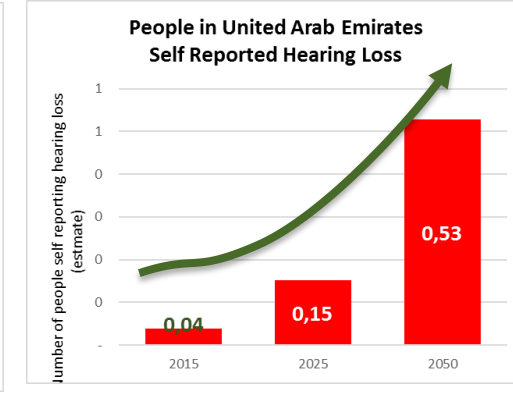
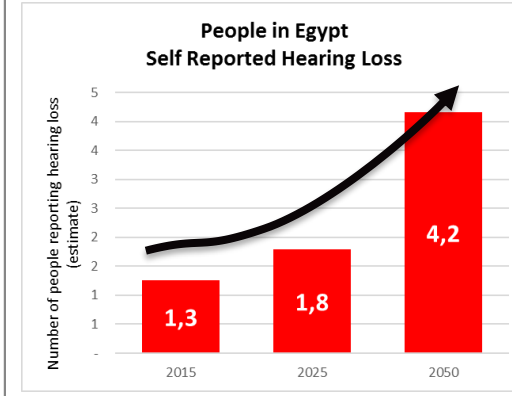
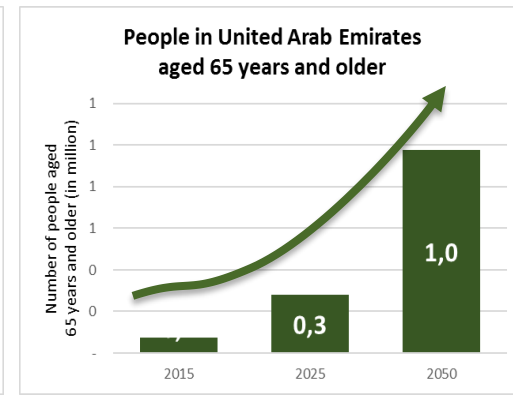
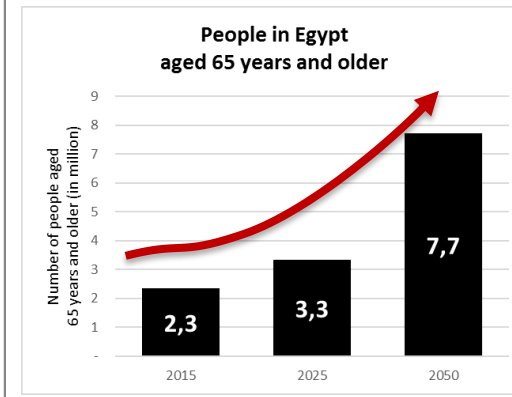
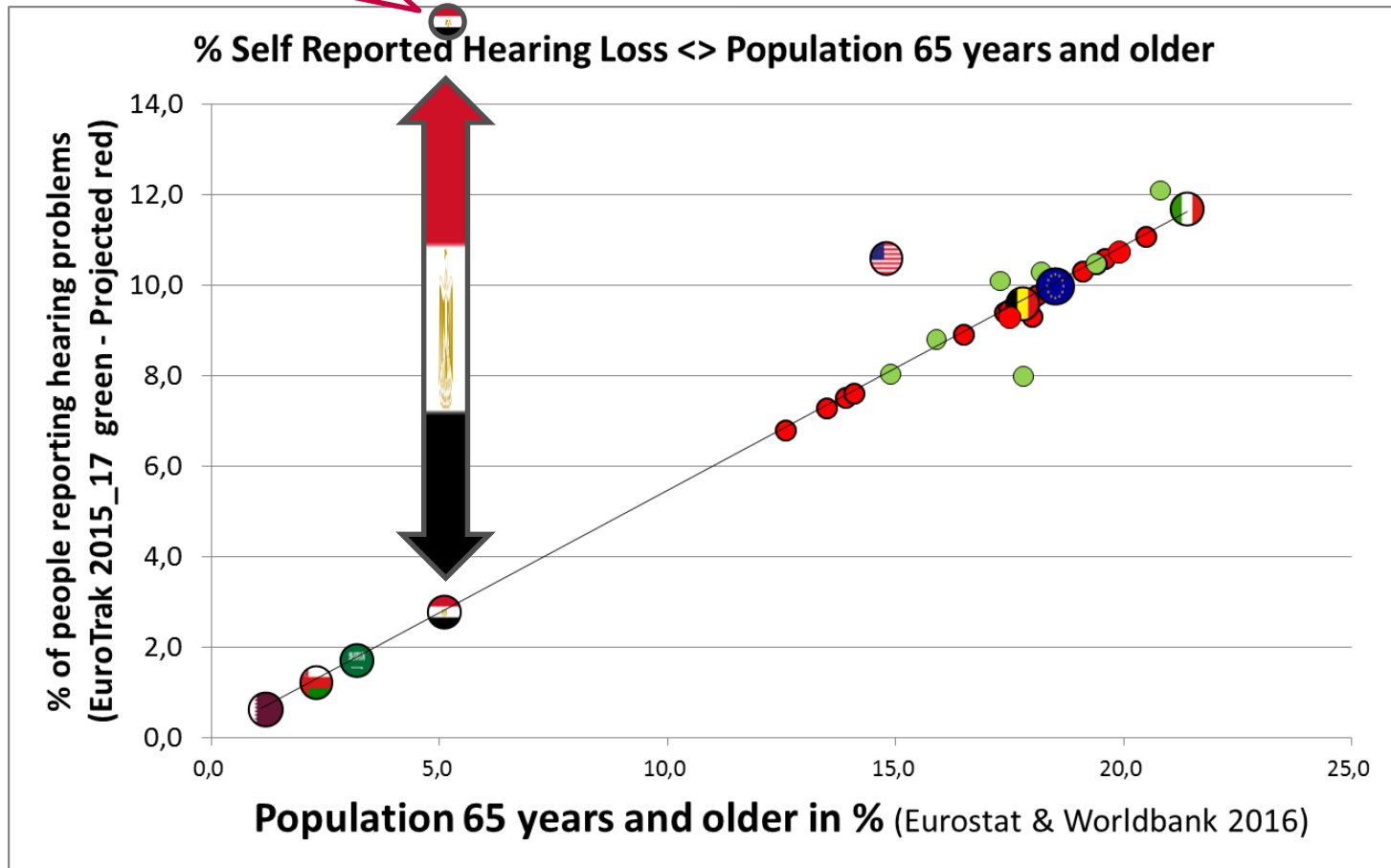
<https://www.populationpyramid.net>



IFOS WORLD COURSE ON HEARING REHABILITATION

Prevalence and patterns of hearing impairment in Egypt: a national household survey

O. Abdel-Hamid,¹ O.M.N. Khatib,² A. Aly,² M. Morad⁴ and S. Kamel¹



Source of basic data: EuroTrak 2015/18



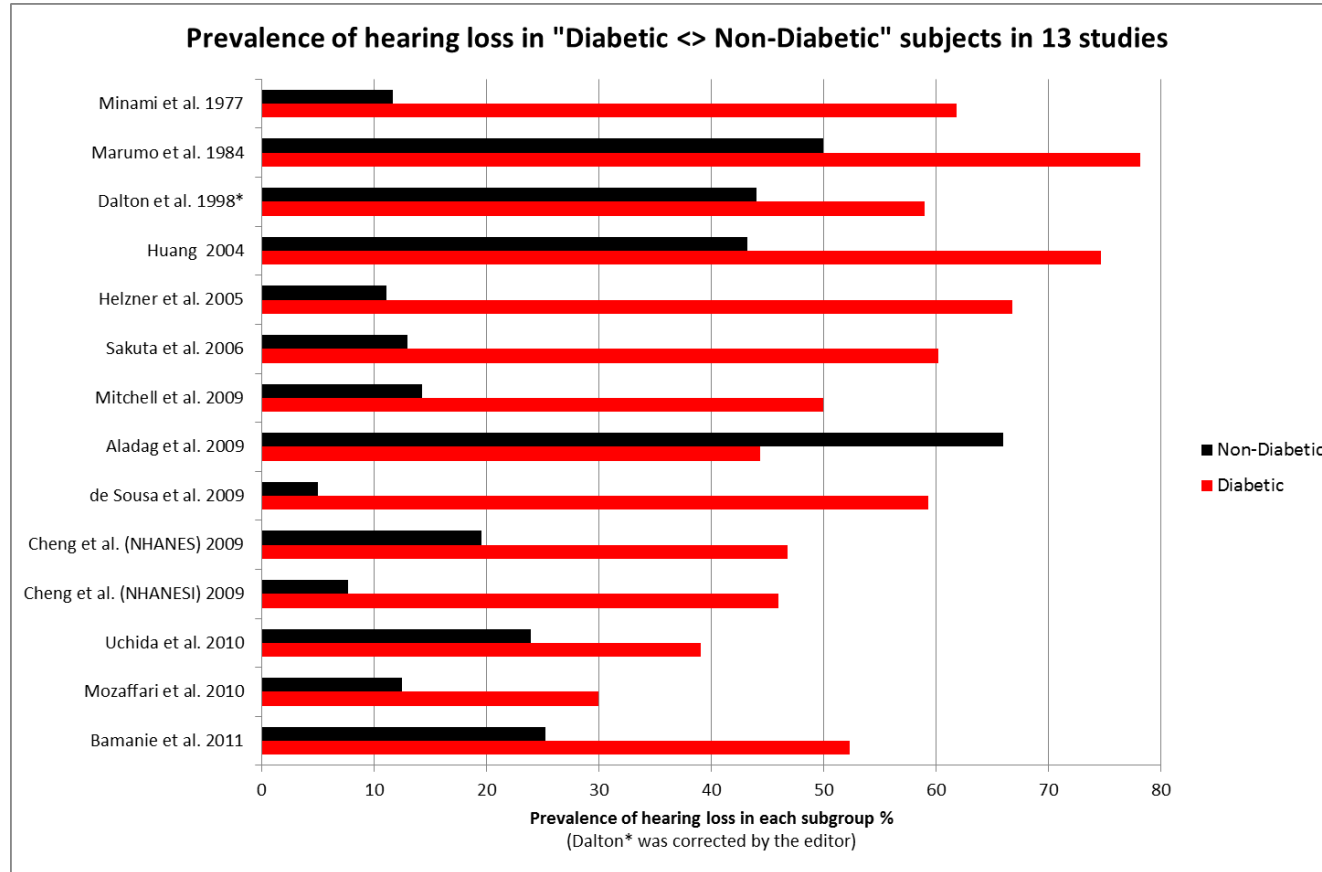
IFOS WORLD COURSE ON HEARING REHABILITATION

Specific focus for Middle East: Relation Diabetes & Hearing Loss

In 2013, Horikawa et al conducted a meta-analysis

They concluded that **diabetic patients were 2.15 times more likely to have hearing loss** than non-diabetic patients, regardless of age.

Meta-analysis of Akinpelu et al 2014
The odds of hearing impairment were 1,91 times higher for subjects with diabetes type 2



Subjects with Diabetes need a specific hearing care protocol !

More sensitive for loud sounds
Poorer recovery from noise exposure!

Specific focus for Middle East: Relation Diabetes & Hearing Loss

GLOBAL REPORT
ON DIABETES

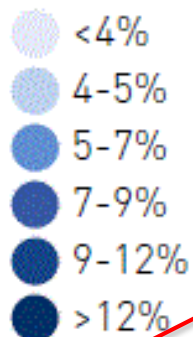


World Health
Organization



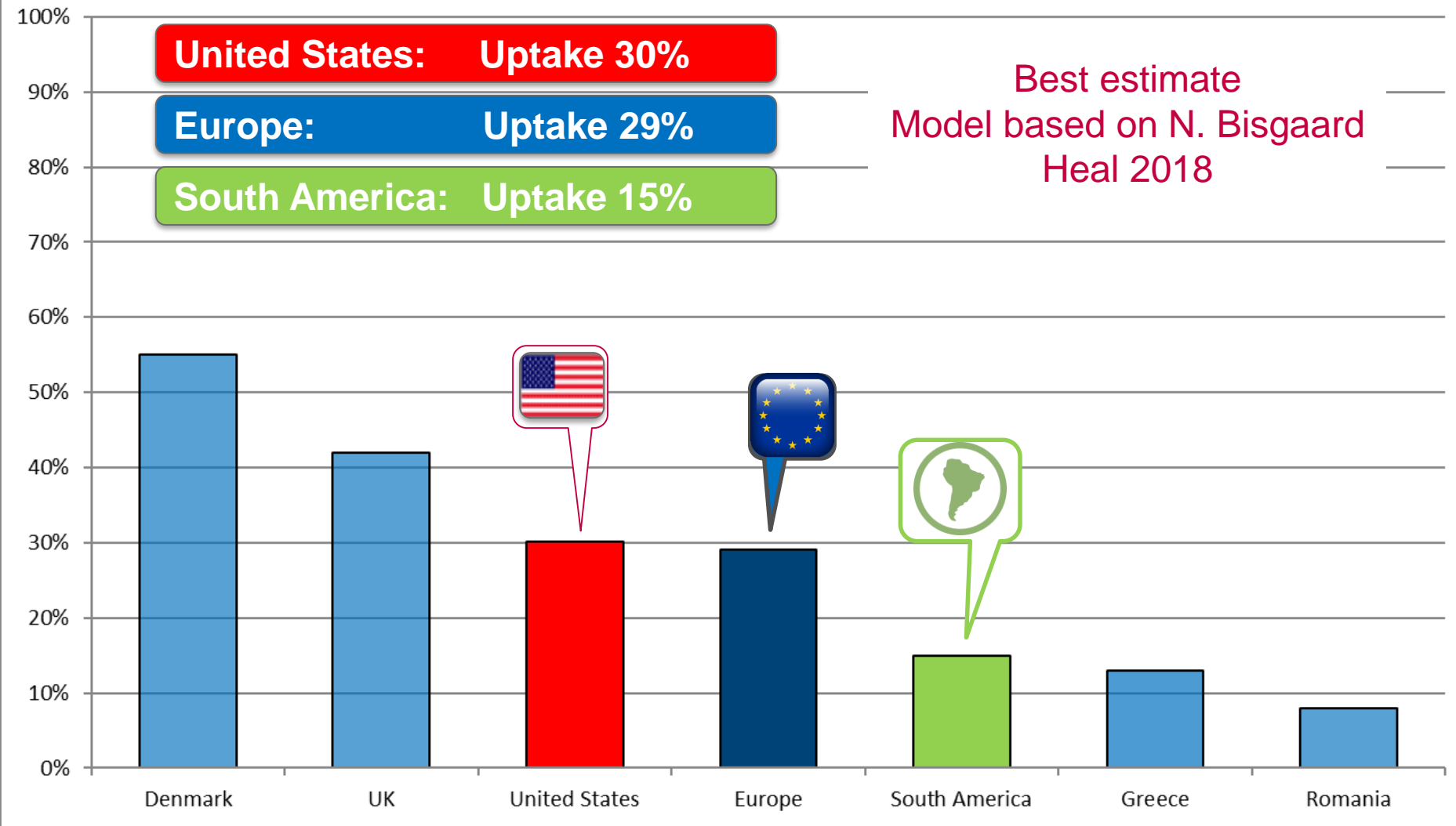
International
Diabetes
Federation

IDF DIABETES ATLAS
Eighth edition 2017



The age-adjusted comparative prevalence of diabetes worldwide in 2017: **World average 8.5% >< 10,8% in the Middle East.**

Best Estimate - Uptake Hearing Aids (Self Reported Hearing Loss)



We have little or no systematic information on the uptake of hearing aids in the middle east.

Estimates vary from 1% to 10% uptake

Prevention

- Avoid Noise
- Promote safe listening
- Protect your ears
- Prevent and treat ear infections ...



Guidelines for safe listening devices/systems

DIRECTIVE 2001/95/EC

Safety requirements to be met by European standards for personal music players



From MP3 players towards Smart Devices



Do you use earplugs when you know that that sound level is so loud it can create hearing loss?



DIRECTIVE 2003/10/EC

85 dBA

Hearing Protection Required



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Awareness

- **Hearing Screening**
 - National paediatric screening
 - School children screening
 - Adult screening (from 50 years onwards)
- **Information Campaigns**



Newborn and infant hearing screening

CURRENT ISSUES AND GUIDING PRINCIPLES FOR ACTION



Identify hearing loss early through screening of:

- newborns
- school children
- adults above 50 years

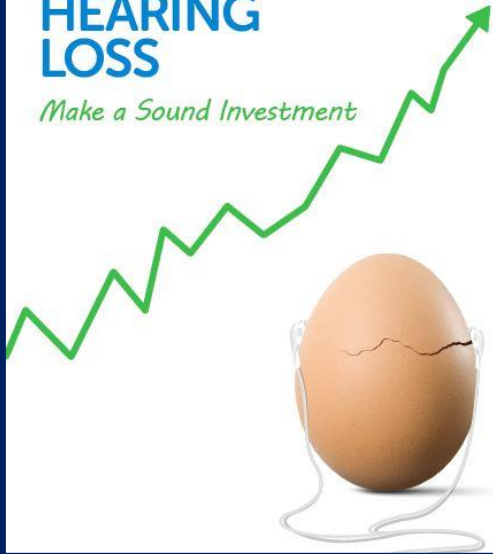
EU NETWORK OF EXPERTS ON NEWBORN SCREENING



ACTION FOR HEARING LOSS



Make a Sound Investment



Get your hearing checked !

"Action for Hearing Loss – Make A Sound Investment"
Hosts: MEP Helga Stevens (Belgium/Flanders, ECR) and MEP Roberta Metsola (Malta, EPP)



It will only take 3 minutes
4 teams of audiologists will test your hearing
They will give you a full report and extra information on how good your hearing is

Wednesday the 1st of March 2017 – | P1A002 | 09:00-11:00h



Adult Hearing Screening: Can we afford to wait any longer?

Brian Lamb OBE, Sue Archbold PhD

Report and research supported by a grant from Advanced Bionics.
The report is the work of the authors.



IFOS WORLD COURSE ON HEARING REHABILITATION

Awareness

- *Hearing Screening*
 - *National paediatric screening*
 - *School children screening*
 - *Adult screening (from 50 years onwards)*
- *Information Campaigns*



Intervention

- *Professional Hearing Care*
- *Hearing Systems & ALD's*
 - *Hearing Aids*
 - *Cochlear Implants & Other*
- *Rehabilitation & Tinnitus Management*



Make sure that intervention is
in place
before creating awareness !

Intervention

- Professional Hearing Care
- Hearing Systems & ALD's
 - Hearing Aids
 - Cochlear Implants & Other
- Rehabilitation & Tinnitus Management



World Health
Organization



\$750
billion¹
annually

Why do we need to invest in Hearing Care?

The cost of untreated hearing loss!

Communication

- Spoken language
- Ability to communicate

Education

- Increased need for assistance
- Fewer learning opportunities

Employment

- Higher unemployment rates
- Lower wages

Social and emotional

- Social exclusion
- Dependence and dementia

Intervention

- Professional Hearing Care
- Hearing Systems & ALD's
 - Hearing Aids
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- Rehabilitation & Tinnitus Management



Communication

- Spoken language
- Ability to communicate

Education

- Increased need for assistance
- Fewer learning opportunities

Why do we need to invest in Hearing Care?

Communication and Education

Otolaryngology–Head and Neck Surgery

Quality of Life in Children with Hearing Impairment *Systematic Review and Meta-analysis*

Lauren Roland, MD, MSCI, Caroline Fischer, Kayla Tran, more...

First Published April 26, 2016 | Review Article | 

<https://doi.org/10.1177/0194599816640485>

Conclusion:

Our analysis reveals that decreased QOL in children with HL is detected in distinct domains of the PedsQL. These domains “school activities and social interactions” are especially important for development and learning.

Intervention

- Professional Hearing Care
- Hearing Systems & ALD's
 - Hearing Aids
 - Cochlear Implants & Other
- Rehabilitation & Tinnitus Management



Why do we need to invest in Hearing Care?

Employment

The Laryngoscope
Lippincott Williams & Wilkins, Inc., Philadelphia
© 2000 The American Laryngological,
Rhino-logical and Otolological Society, Inc.

SPECIAL COMMUNICATION

Employment

- Higher unemployment rates
- Lower wages

Redefining the Survival of the Fittest: Communication Disorders in the 21st Century

Robert J. Ruben, MD, FACS, FAAP

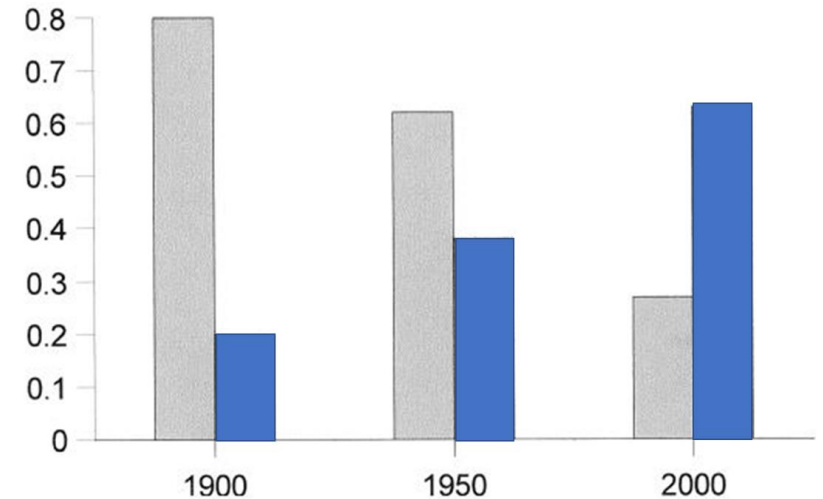


Fig. 1. Change in occupations in the United States from 1900 to 2000. Light grey bars indicate manual labor jobs, blue bars indicate communication jobs.

People with untreated Hearing Loss have a significant disadvantage in communication jobs!

Intervention

- Professional Hearing Care
- Hearing Systems & ALD's
 - Hearing Aids
 - Cochlear Implants & Other
- Rehabilitation & Tinnitus Management



Employment

- Higher unemployment rates
- Lower wages

People with untreated Hearing Loss experience significantly more listening effort ... this increases the risk of “burnout” in communication jobs

Why do we need to invest in Hearing Care?

Employment

AJA

Research Article

Relation Between Listening Effort and Speech Intelligibility in Noise

Melanie Krueger,^a Michael Schulte,^a Melanie A. Zokoll,^a Kirsten C. Wagener,^a Markus Meis,^a Thomas Brand,^b and Inga Holube^c

Hearing Research 351 (2017) 68–79



Contents lists available at ScienceDirect

Hearing Research

journal homepage: www.elsevier.com/locate/heares



Research Paper

Impact of stimulus-related factors and hearing impairment on listening effort as indicated by pupil dilation



Barbara Ohlenforst^{a, d, *}, Adriana A. Zekveld^{a, b, c}, Thomas Lunner^{c, d, e}, Dorothea Wendt^{d, f}, Graham Naylor^g, Yang Wang^{a, d}, Niek J. Versfeld^a, Sophia E. Kramer^a



Intervention

- Professional Hearing Care
- Hearing Systems & ALD's
 - Hearing Aids
 - Cochlear Implants & Other
- Rehabilitation & Tinnitus Management



Why do we need to invest in Hearing Care?

Employment

Employment

- Higher unemployment rates
- Lower wages

**ACTION ON
HEARING
LOSS**

HIDDEN DISADVANTAGE

Why people with hearing loss are still losing out at work

By Laura Arrowsmith

36% of the people who retired early in the UK, did so because of their hearing loss!

Hearing Loss in the Workplace

- 3.7m working age people with hearing loss in the UK.
- 4,000 member responses and 27 in depth case studies.
- Less than half people told their colleagues, only 37% told their employer.
- 14% changed jobs as a result of their hearing loss.
- 36% who retired early did so directly because of their hearing loss.

**ACTION ON
HEARING
LOSS**

A national charity since 1911

A research report
into hearing loss
in the workplace
By Laura Matthews

**ACTION ON
HEARING
LOSS**

**UNLIMITED
POTENTIAL?**

Intervention

- Professional Hearing Care
- Hearing Systems & ALD's
 - Hearing Aids
 - Cochlear Implants & Other
- Rehabilitation & Tinnitus Management



Social and emotional

- Social exclusion
- Dependence and dementia



Hearing Loss is the modifiable risk factor for Dementia with the highest impact!

Hearing Care = Prevention



Why do we need to invest in Hearing Care?

Dependence and dementia

www.thelancet.com Published online July 20, 2017 [http://dx.doi.org/10.1016/S0140-6736\(17\)31363-6](http://dx.doi.org/10.1016/S0140-6736(17)31363-6)

Dementia prevention, intervention, and care

Gill Livingston, Andrew Sommerlad, Vasiliki Orgeta, Sergi G Costafreda, Jonathan Huntley, David Ames, Clive Ballard, Sube Banerjee, Alistair Burns, Jiska Cohen-Mansfield, Claudia Cooper, Nick Fox, Laura N Gitlin, Robert Howard, Helen C Kales, Eric B Larson, Karen Ritchie, Kenneth Rockwood, Elizabeth L Sampson, Quincy Samus, Lon S Schneider, Geir Selbæk, Linda Teri, Naaheed Mukadam

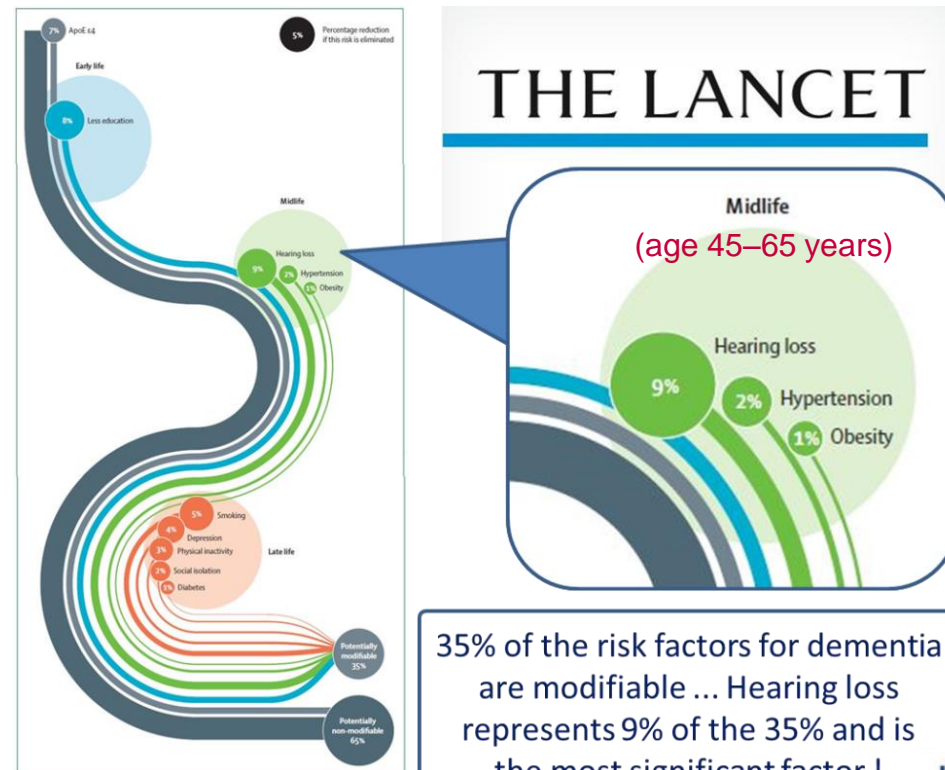


Figure 4: Life course model of contribution of modifiable risk factors to dementia. Numbers are rounded to nearest integer. Figure shows potentially modifiable or non-modifiable risk factors.



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Intervention

- Professional Hearing Care
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Social and emotional

- Social exclusion
- Dependence and dementia

Cognition is significantly poorer for subjects with hearing loss

Why do we need to invest in Hearing Care?

Dependence and dementia

Self-Reported Hearing Loss, Hearing Aids, and Cognitive Decline in Elderly Adults: A 25-Year Study

Hélène Amieva, PhD, Camille Ouvrard, MSc, Caroline Giulioli, MSc, Céline Meillon, MSc, Laetitia Rullier, PhD, and Jean-François Dartigues, MD, PhD



JAGS 63:2099–2104, 2015

Hearing

$p = 0,01^{**}$

Cognition

This team follows a cohort of 3777 subjects in Bordeaux for 25 years (they started in 1989 and will end in 2015). Every two years they run a full evaluation done by a psychologist.

- **Cognition (MMS & other) significantly poorer for subjects with hearing loss** ($p < 0,01$ – adjusted for age, gender and educational level)

Intervention

- Professional Hearing Care
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Social and emotional

- Social exclusion
- Dependence and dementia

Hearing Impaired Hearing Aid Users did not present Cognitive Decline ($p=0,08$)

Why do we need to invest in Hearing Care?

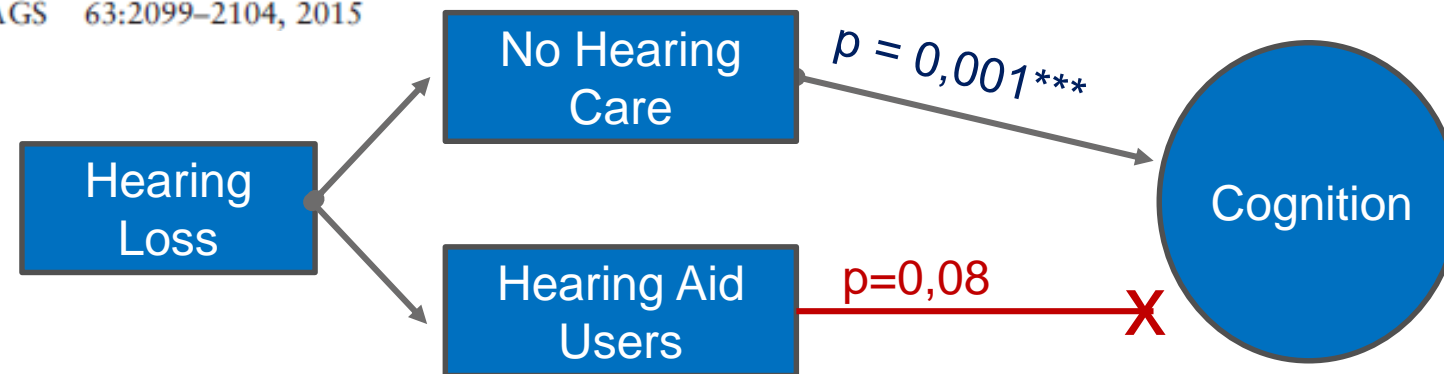
Dependence and dementia

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JAGS 63:2099–2104, 2015



- They also find a long term positive effect of hearing aids – For the hearing impaired subjects not using hearing aids there was a clear Cognitive Decline ($p < 0,001$) and **Hearing Impaired Hearing Aid Users did not present Cognitive Decline** ($p=0,08$)

Intervention

- Professional Hearing Care
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Social and emotional

- Social exclusion
- Dependence and dementia

IADL scale : *phone, shopping, housekeeping, meals, laundry, domestic finances, transports, medication*

IADL Independence significantly lower for subjects with hearing loss

Why do we need to invest in Hearing Care?

Dependence and dementia



THE GERONTOLOGICAL SOCIETY OF AMERICA*

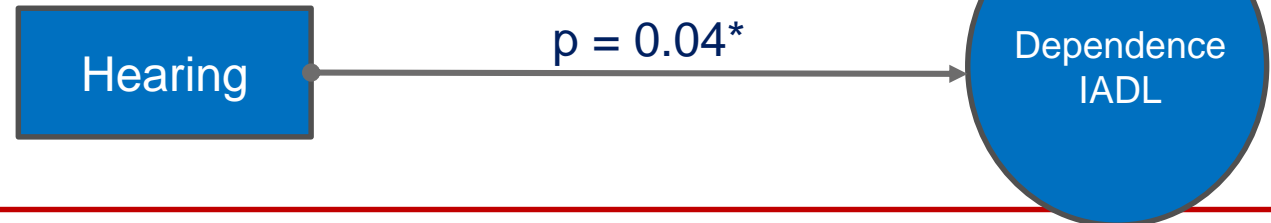
Journals of Gerontology: Medical Sciences
cite as: J Gerontol A Biol Sci Med Sci, 2018, Vol. 00, No. 00, 1-7
doi:10.1093/gerona/gbx250
Advance Access publication January 03, 2018



Research Article

Death, Depression, Disability, and Dementia Associated With Self-reported Hearing Problems: A 25-Year Study

Hélène Amieva, PhD, Camille Ouvrard, PhD, Céline Meillon, MSc, Laetitia Rullier, PhD, and Jean-François Dartigues, MD, PhD



This team follows a cohort of 3777 subjects in Bordeaux for 25 years (they started in 1989 and will end in 2015. Every two years they run a full evaluation done by a psychologist. b

- **IADL Independence significantly lower for subjects with hearing loss** (p 0,01 – adjusted for age, gender and educational level)

Lawton Instrumental Activities of Daily Living (IADL) Scale

Intervention

- Professional Hearing Care
- Hearing Systems & ALD's
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- Rehabilitation & Tinnitus Management



Social and emotional

- Social exclusion
- Dependence and dementia

IADL scale : *phone, shopping, housekeeping, meals, laundry, domestic finances, transports, medication*

Hearing Impaired Hearing Aid Users did not present decreased IADL (Independence)

Why do we need to invest in Hearing Care?

Dependence and dementia



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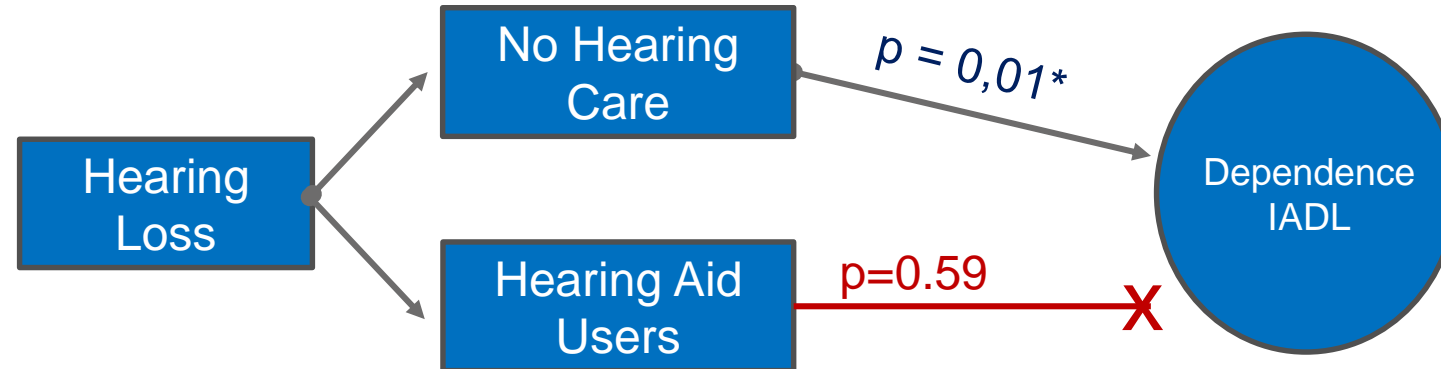
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- They also find a long term positive effect of hearing aids – For the hearing impaired subjects not using hearing aids there was a clear decrease of IADL Independence ($p < 0,001$) and **Hearing Impaired Hearing Aid Users did not present decreased IADL** ($p=0,59$)

Lawton Instrumental Activities of Daily Living (IADL) Scale

Intervention

- Professional Hearing Care
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Why do we need to invest in Hearing Care?

Cost-effectiveness of interventions

Global costs of unaddressed hearing loss
and cost-effectiveness of interventions

A WHO
Report,
2017

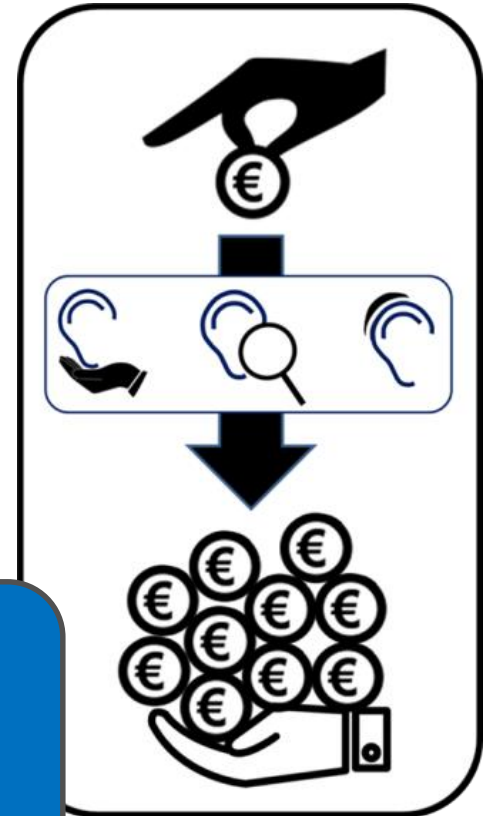
Cochlear implants are shown to be most cost-effective when fitted at an early age.
(WHO report – 2017)

Use of hearing aids is shown to be cost-effective, especially use is continuous and accompanied by audiological rehabilitation.
(WHO report – 2017)



World Health
Organization

Interventions in Hearing Care
(Hearing Aids & Cochlear
Implants) have a return on
investment of 10 to 1
(L. Hartmann – 2017)



SOCIO-ECONOMIC ASPECTS OF HEARING CARE

Laurence Hartmann, Health Economist
Conservatoire national des arts et métiers Paris



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Intervention

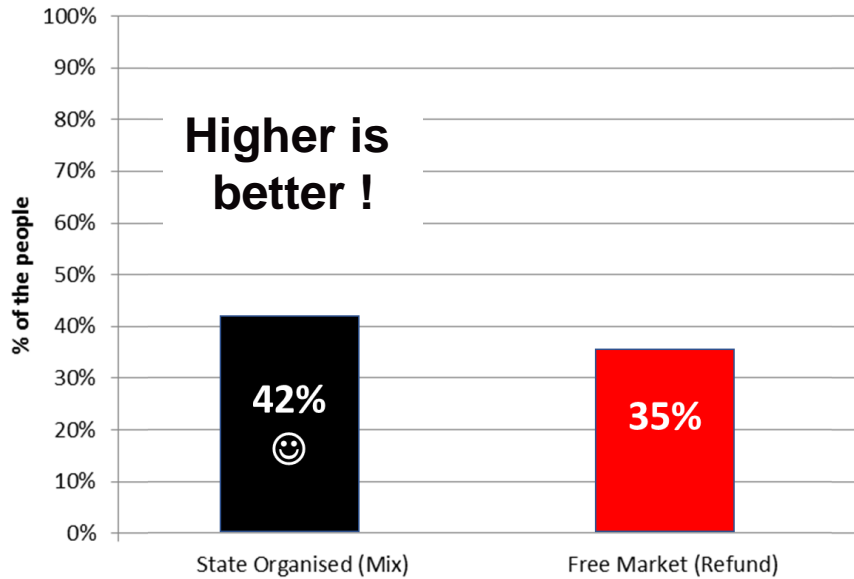
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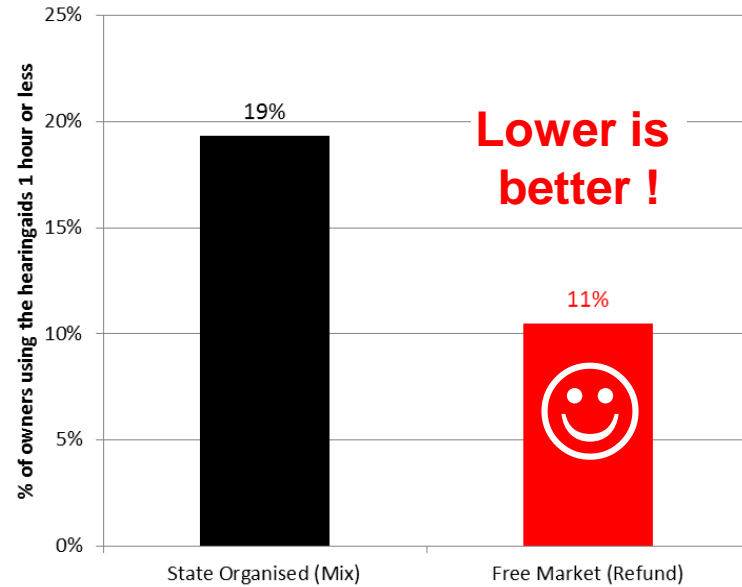
State Organised versus Free Market Hearing Care?

State Organised (Mix): Denmark – UK – Sweden – Norway
 Free Market (Refund): France – Switzerland – Germany - Italy

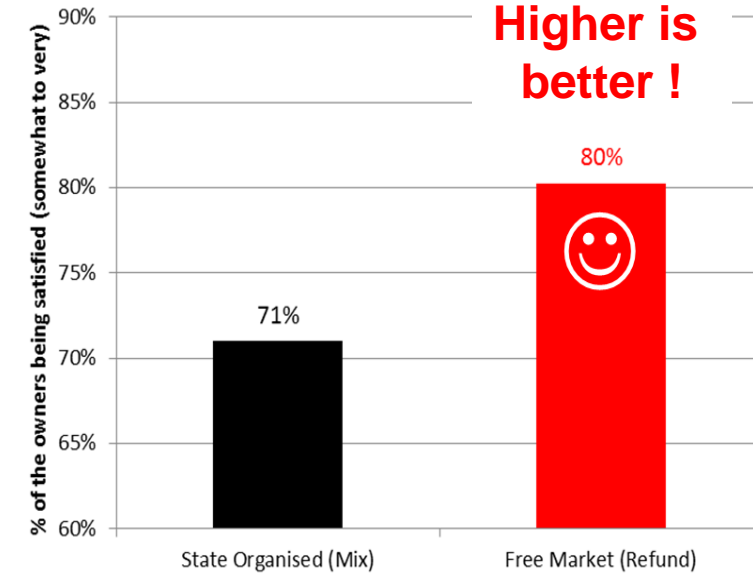
HI uptake (Self Reported HL)



Hearing Aid Use 1h or less



Hearing Care Satisfaction



State Organised Systems lead to more people having hearing aids

Free Market Systems lead to more active use of hearing aids

Free Market Systems lead to higher satisfaction with hearing care



Source of basic data:
EuroTrak 2012 - 2018



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State Organised versus Free Market Hearing Care?

State Organised (Mix): Denmark – UK – Sweden – Norway
 Free Market (Refund): France – Switzerland – Germany - Italy

Getting our numbers right on hearing loss

Published on Tuesday, 28 February 2017 13:52

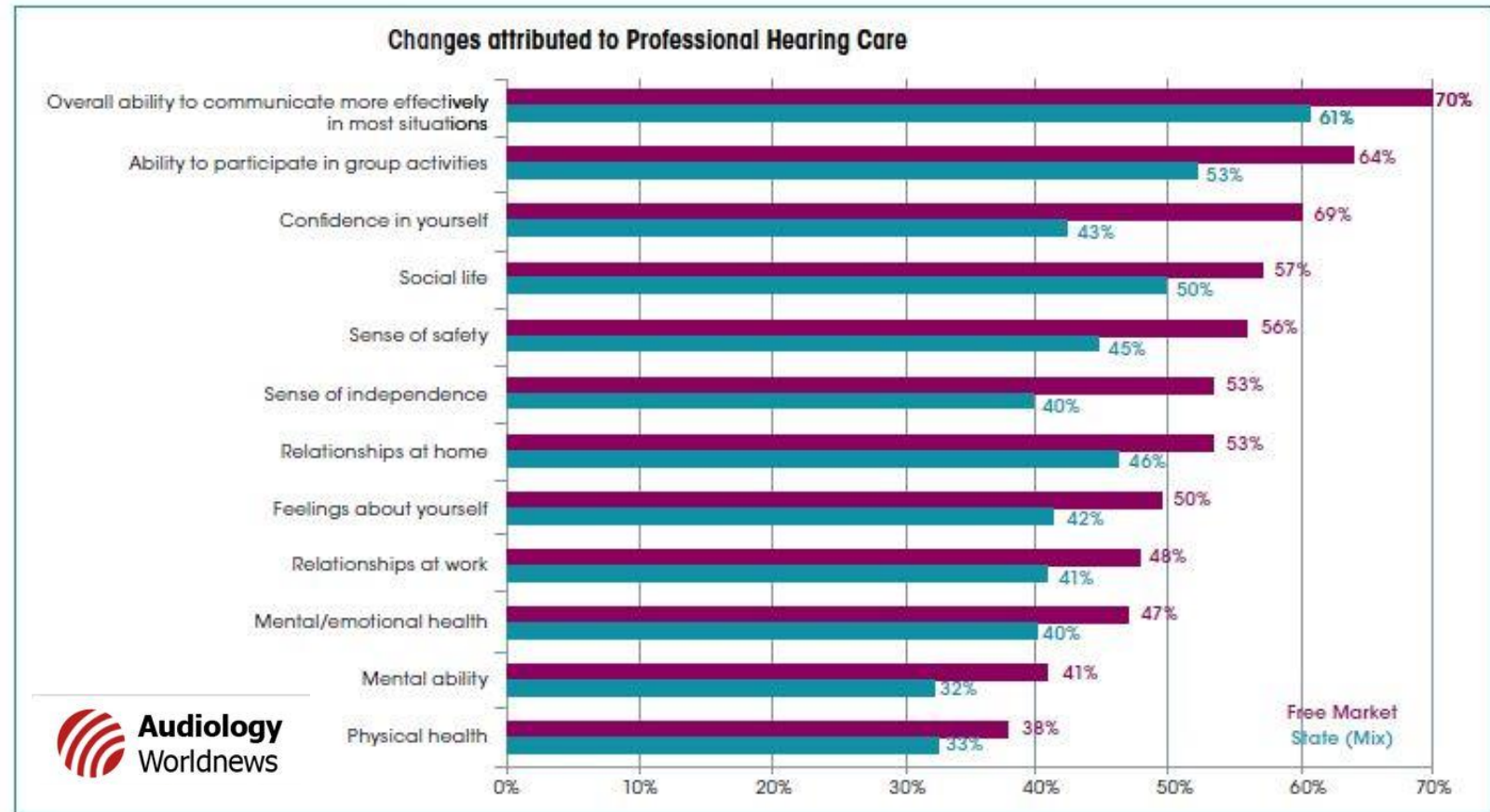
Involvement of the user
 Freedom of choice
 Selection to cover real needs

Easy Access to Quality Hearing Care
 Avoid long waiting lists
 Continued Quality Service

Take the time and listen to the user
 Counselling and empathy
 Combine psychology & technology



Source of basic data:
 EuroTrak 2012 - 2018



▲ Fig5: The percentage of people indicating better or significantly better results for all the aspects mentioned attributed to the use of hearing aids (professional hearing care) – Source of basic data: EHIMA-Anovum EuroTrak

Prevention

- Avoid Noise
- Promote safe listening
- Protect your ears
- Prevent and treat ear infections ...



- A lot of standards and laws are in place or in development
- But we need to change behaviour !
- Basis for the Safe Listening WHO action
- All hearing care professionals need to be promoters

Awareness

- Hearing Screening
 - National paediatric screening
 - School children screening
 - Adult screening (from 50 years onwards)
- Information Campaigns



- Paediatric Screening needs to get the highest priority
- School screening can also be organised as self-test
- Adults screening is the new challenge ... also here self-test could be a very cost-effective intervention
- **But is this always ethical? Awareness without Intervention? ... Needs to go step by step**

Intervention

- Professional Hearing Care
- Hearing Systems & ALD's
 - Hearing Aids
 - Cochlear Implants & Other
- Rehabilitation & Tinnitus Management



- Hearing care is cost-effective. 10 to 1 return on investment
- Education and Language development is improved
- Finding and Keeping a job is improved
- Hearing Care has to be seen as modifying a high risk factor for Dementia and Dependence

Conclusions