Audio and Elderly Mobility needs in the City

Survey on Speech Intelligibility and Sound Alarm Localization

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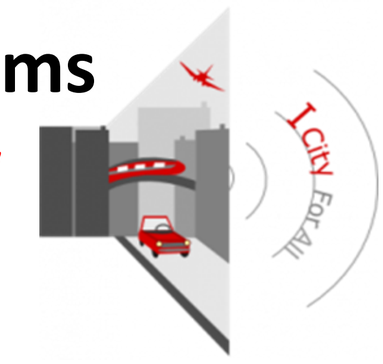
Age Sensitive ICT Systems for Intelligible City For All



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www.icityforall.eu

The project **I'CityForAll** aims at enhancing the sense of **safety and self-confidence** of presbyacousic persons whose **hearing degradation increases with age.**

For elderly persons, this is impacting on the **intelligibility of vocal messages** and their perception of the **distance-direction of alarm sounds** and of their **alarming power**.

The **I'CityForAll system solutions** will be "transparent" and embedded **in mass products for the large public** at reasonable cost for persons with pseudo-normal and presbyacousic hearing without impacting normal hearing people: concept "**for All**".

I'CityForAll partners:
UPD (France)
ENEA (Italy)
TUM (Germany)
CRF (Italy)
CENTICH (France)
ACTIVE AUDIO (France)
EPFL (Switzerland)

Subcontractors:
LinkLab –TELNET (Tunisia)
ESCOOP (Italy)

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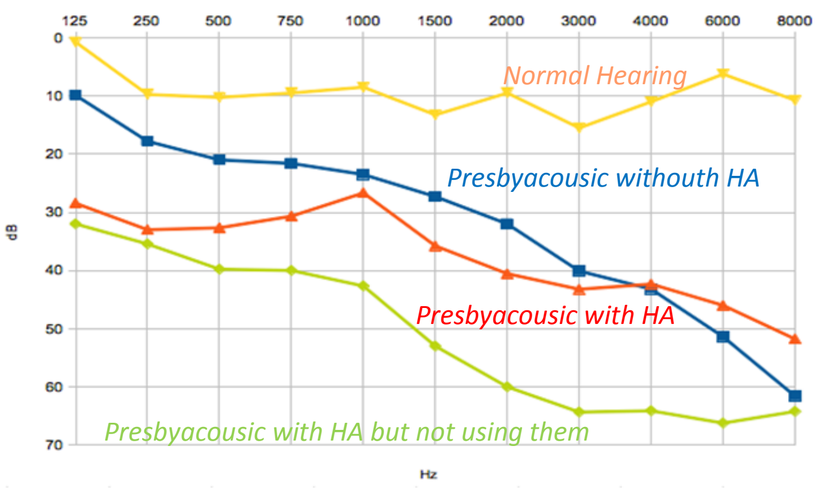
Survey on users requirements

The first stage of **I'CityForAll** involved a **cohort of 49 users** who are "presbycusic" and normal hearing and older than 50 years:

- In **Italy**: 2 with hearing aids, 8 with hearing disorders, but without hearing aids, 11 normal disorders and 7 deaf people without hearing aids.
- In **France**: 12 patients without hearing aids and 9 patients with hearing aids

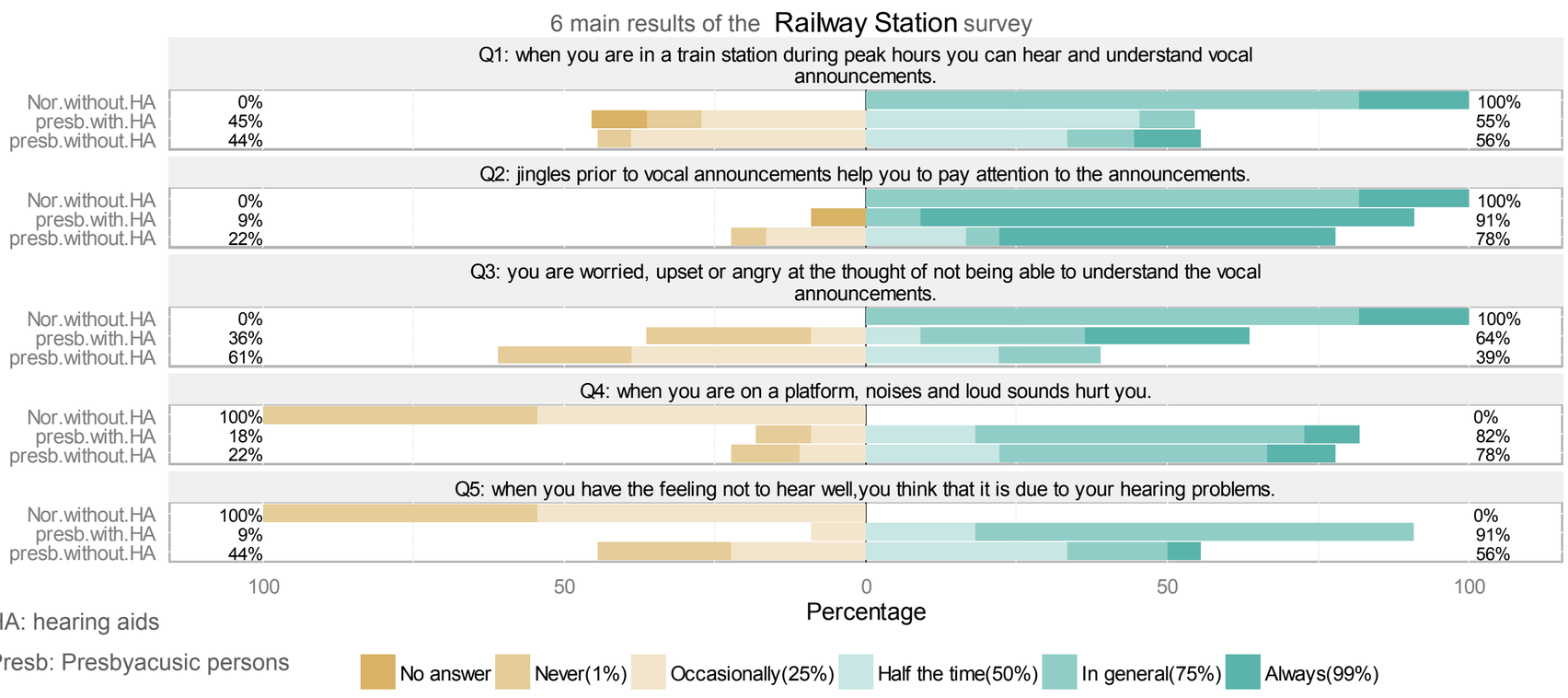
Average audiograms



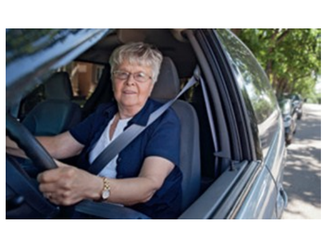
To better address the **two [I'CityForAll solutions]** focusing on 2 situations:

Mobility in public confined spaces

[I'CT –loudspeaker] Smart Loudspeakers for **better Intelligibility** of vocal announces

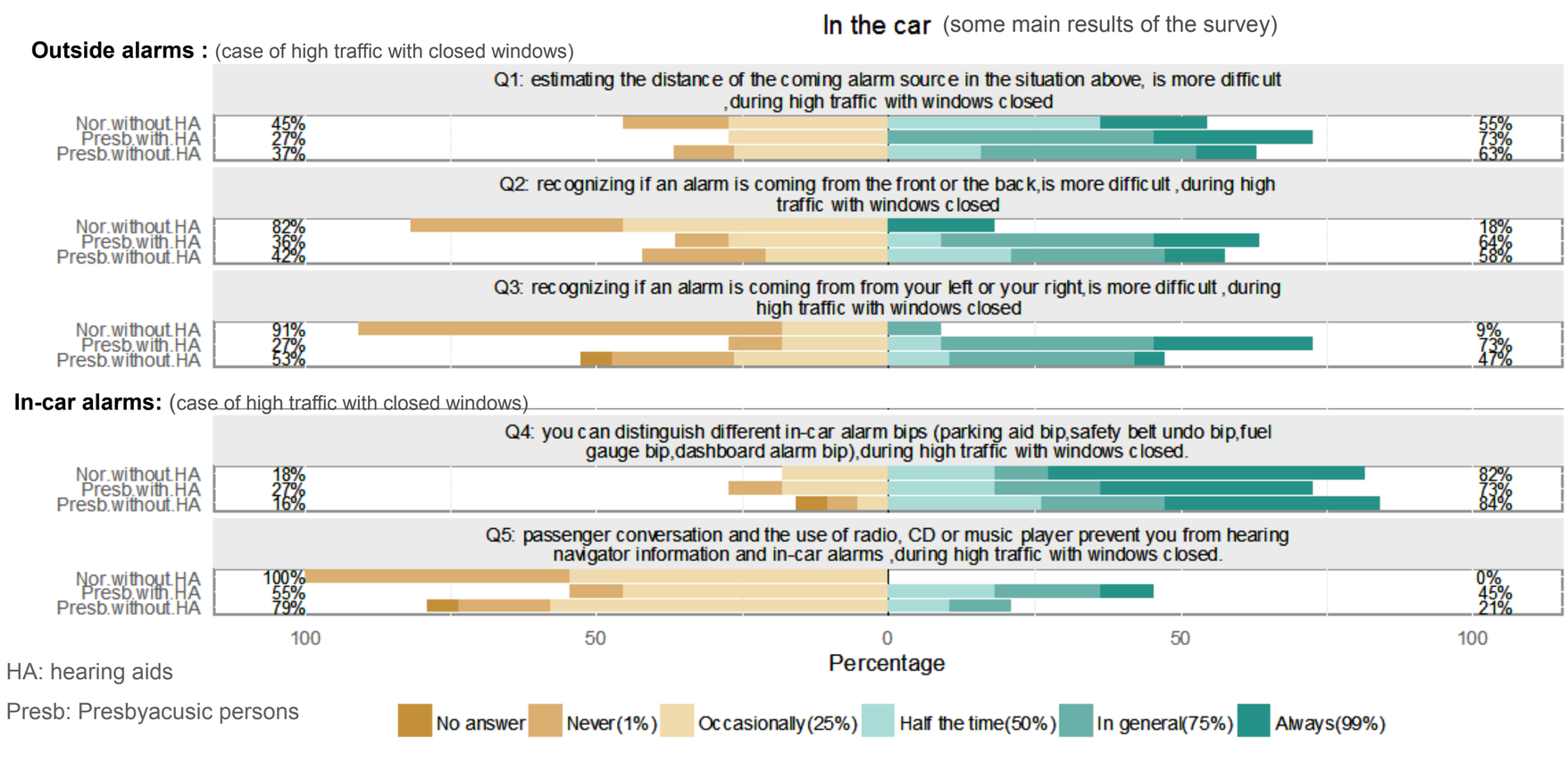


- Intelligibility **decreases** for **all Presb.** at **peak hours**
- **Jingles** help **paying attention** to the vocal announces **for all** persons.
- Feeling of **stress and discomfort** is **more** noticeable for **Normal hearing** persons
- Presb. are the **most hurt by loud sounds** and **noise**
- **Presb. with HA** are **more aware** about their problems **than without HA**



Mobility in the urban space

[I'CT–car] system embedded in vehicles for better localization of alarm sounds (e.g. ambulances, police cars) and an appropriate **enhancement of car signal alarms** (e.g. safety belt warning, lane change warning).



- **All** persons **have difficulties** to **estimate the distance** of the coming alarm, **with higher frequency** for **Presb. with HA**
- **Front/back and left/right confusion** is a common difficulty for **Presb.**
  For **left/right confusion, Presb-HA** have more difficulty to localize the alarm
- **All** persons have **few difficulties to** distinguish the different **in-car alarms**
- **Presb.** have **difficulties** to **hear in-car alarms** or on-board navigator in **noisy** environment, in particular Presb.**with HA**

Lack of intelligibility of vocal announces
The confusion in localizing alarm source
} concern both { **normal** **presbycusic**

→ **Need of "For all" solutions**

Results' validation

...based on inLab Ecologically Oriented tests