

## Activity, participation and assistive technology



Anne Marie Carew and Anne Doyle

With thanks to the NPSDDC MAP subgroup:

*Ms Sarah Craig, Dr Pamela Gallagher, Dr Timothy Jackson, Dr Donal McAnaney,*

*Mr Michael Shemeld*

*The document was also peer reviewed externally.*

### Background

The National Physical and Sensory Disability Database Committee (NPSDDC) was set up in 1998 by the Department of Health (DoH) with the task of developing a national database that would collect information on the specialised health and social service needs of people with physical and/or sensory disability. Implementation of the NPSDD on a nationwide basis began in 2002.

As signatories to the International Classification of Functioning, Disability and Health (ICF), the DoH recognised the value of expanding data collection efforts to include indicators of participation based on the ICF, and established the Measure of Activity and Participation (MAP) subgroup to oversee the piloting of new survey questions in 2003. The MAP consists of three sections (barriers, participation, WHODAS II) and was introduced in 2004.

This is Issue 6 in the MAP Bulletin series. Previous bulletins can be found on the Health Research Board (HRB) website [www.hrb.ie](http://www.hrb.ie).

### CONTACT DETAILS

Health Research Board  
An Bord Taighde Sláinte  
Knockmaun House  
Lower Mount Street  
Dublin 2, Ireland

t +353 1 2345 000

f +353 1 6611 856

e [disability@hrb.ie](mailto:disability@hrb.ie)

w [www.hrb.ie](http://www.hrb.ie)

ISSN: 2009-1303

### CONTENTS

Background	1
Introduction	2
Profile	5
Physical disability	6
Neurological disability	10
Hearing loss/deafness	14
Visual	18
Multiple disabilities	23
Conclusion	28
Appendix	29
References	31

## Introduction

This bulletin (1) examines the types of assistive technology (AT) used and required by people with a physical and/or sensory disability in Ireland, and (2) evaluates the relationships between AT use and levels of participation in areas of life activities, social-environmental participation and difficulties with daily activities.

### Assistive technology in Ireland

The field of AT concerns the practical tools that can support functional needs of people who experience difficulties linked to disability or ageing (WRC, 2012). 'Assistive products' are defined by the International Standards Organisation (ISO, 2011) as "any product (including devices, equipment, instruments and software), especially produced or generally available, used by or for persons with disability: for participation; to protect, support, train, measure or substitute for body functions/structures and activities; or to prevent impairments, activity limitations or participation restrictions".

AT includes a broad range of technologies ranging from items such as magnifying lenses and standing frames to powered wheelchairs and computer-based communication aids.

The main groupings in the International Standards Organisation classification system indicates the broad scope of AT:

- Assistive products for personal medical treatment
- Assistive products for training in skills
- Orthoses and prostheses
- Assistive products for personal care and protection
- Assistive products for personal mobility
- Assistive products for housekeeping
- Furnishings and adaptations to homes and other premises
- Assistive products for communication and information
- Assistive products for handling objects and devices
- Assistive products for environmental improvement and assessment
- Assistive products for employment and vocational training
- Assistive products for recreation.

AT's play a key role in enabling independent living by aiding people to:

- accomplish daily activities (for example moving around freely, caring for oneself),
- participate in life activities (for example interacting with others, education, employment and civic life) and
- overcome social-environmental barriers (buildings, transport, services and supports, attitudes, income, climate/weather).

### Disability and assistive technology

In 2007, Ireland became a signatory to the UN Convention on the Rights of Persons with Disabilities (UNCRPD), under which access to AT is a right;

- Under Article 4 of the Convention, Member States have a general obligation to "undertake or promote research and development of, and to promote the availability and use of new technologies, including information and communications technologies, mobility aids, devices and assistive technologies, suitable for persons with disabilities, giving priority to technologies at an affordable cost".
- Article 20 requires Member States to facilitate "access by persons with disabilities to quality mobility aids, devices,

assistive technologies” at affordable cost and encouraging those who “produce mobility aids, devices and assistive technologies to take into account all aspects of mobility for persons with disabilities” and encourage “entities that produce mobility aids, devices and assistive technologies to take into account all aspects of mobility for persons with disabilities.”

- Article 26 states that Member States “shall promote the availability, knowledge and use of assistive devices and technologies, designed for persons with disabilities, as they relate to habilitation and rehabilitation”.

Ireland is also a signatory to the World Health Organisation’s International Classification of Functioning, Disability and Health (ICF, 2001), in which AT is recognised as a key environmental facilitator. A recent report for the National Disability Authority (WRC, 2012) examined approaches to provision of AT in Ireland and studied provision of AT to meet the needs of people with disabilities and older people across three core settings – home, community, everyday life, employment and education. The report concluded the need for:

- greater recognition of the importance of AT and the value for money it represents
- strengthening the AT provision systems in the areas of health, employment and education.
- more coordinated approaches to the provision of AT.

## Methods

NPSDD data are collected on an on-going basis and reviewed regularly with current protocols recommending an annual review of each individual’s information. To be eligible to register on the NPSDD a person must:

- Have a persistent physical, sensory or speech and/or language disability;
- In the case of dual disability, the predominant disability must be physical, sensory or speech and/or language;
- Use or need in the next five years of a specialised personal health and social service;
- Have consented to be registered on the Database;
- Be aged less than 66 years of age.

Six disability categories are recorded on the NPSDD;

- Physical
- Neurological
- Hearing loss/deafness
- Visual
- Speech and language
- Multiple disabilities (combination of categories).

The Measure of Activity and Participation (MAP), is an ICF based set of measures which was introduced onto the NPSDD in 2004. The MAP includes the World Health Organisation Disability Assessment Schedule 2.0 (WHODAS 2.0) (WHO, 2010) which is a standard measure of difficulty with daily activities developed and validated by the WHO. In addition there are questions on barriers to participation and extent of restriction experienced in participating in particular life areas developed specifically for the NPSDD and based on the ICF. Other information recorded includes profile data, detailed service use and service need data, type of disability and diagnostic information.

The MAP section of the form is completed by those aged 16 years and over. The data from the NPSDD presented in this bulletin are based on the official extract of data taken at the end of 2011 and includes only those on the NPSDD who completed the MAP section of the data form up to that date (10,552 people).

The MAP section of the NPSDD data form consists of 3 main elements:

- The **participation** section identifies the extent that the individual's participation has been restricted in the past 12 months (from date of data form completion) in the life areas: education and training, employment or job seeking, community life (e.g. civic/political activity, volunteering, neighborhood watch), family life, socialising, shopping, living with dignity, leisure/cultural activities, sports or physical recreation, religion and general health services (hospital, mental health and community based services such as general practitioners, nurses, dentists).
- The **barriers and challenges** section highlights social and environmental factors that potentially contribute to the participation restrictions of people with disabilities in society. These barriers and challenges include: physical environment (e.g. access to buildings, public footpaths, personal accommodation), services and supports (e.g. personal assistant, home help, physiotherapy), access to information (e.g. entitlements, services, nature of condition), people's attitudes, transport (accessible transport), laws, official regulations and entitlements (e.g. legal services, systems and policies), income and climate/weather. Respondents are asked to indicate the factors representing a barrier to participation over a period of twelve months (from date of data form completion).
- The WHODAS 2.0 measures the difficulty experienced performing **daily activities** due to disability within the past 30 days (from date of data form completion). Daily activities include: concentrating on doing something for ten minutes, learning a new task (e.g. learning how to get to a new place), standing for long periods such as 30 minutes, walking a long distance such as a kilometre or equivalent, washing your whole body, getting dressed, dealing with people you do not know (e.g. shop-keeper, service personnel), maintaining a friendship, taking care of your household responsibilities, your day-to-day work/school, joining in community activities (e.g. festivals, religious or other activities).

In Ireland there is wide diversity within assistive technologies. Devices and aids were grouped into the following categories:

- Aids to mobility (e.g. wheelchairs, pushchairs, ramps, rollators, walkers, sticks/canes/crutches)
- Orthotics and prosthetics (e.g. cervical lumbar supports, upper/lower orthoses, upper/lower prostheses, orthopedic footwear)
- Vision aids (e.g. magnifiers, telescopes, braille equipment, special computer equipment, screen reader and voice synthesizer)
- Aids to hearing (e.g. hearing aid, personal listening device, alerting device)
- Incontinence aids (e.g. catheters, bags/pads)
- Special furniture and other aids to personal care (e.g. hoists, lifts, special bed or bedding, walking sticks/frames/crutches, shower aids and bathroom grab rails and bars)
- Respiratory aids (e.g. inhaler, nebuliser, ventilator)

The six disability categories captured on the NPSDD were analysed using the MAP data and are presented separately because the use of and need for AT varies significantly across groups. Throughout the bulletin we use the term AT status to distinguish three categories of people: 1) those who are using AT and have no further requirements 2) those who are using AT and have further AT requirements and 3) those that have no AT but who require it. The interactions between these categories and an individual's level of participation restriction and difficulty with daily activities were then examined using other profile data such as gender, age, HSE area of residence, living arrangements and whether someone had a primary carer (mainly a parent, spouse or extended family).

Missing responses for participation in areas of life activities, social-environmental and daily activities were excluded from the analysis. When questions relating to participation in life activities or day-to-day work/school were not applicable they were also excluded. Participation is measured on a scale of 'mild', 'moderate', 'severe', 'complete'. Participation levels were combined into categories 'mild/moderate' and 'severely/completely'. AT group characteristics were analysed using descriptive statistics. Associations between AT status and the perceived limitations/restrictions were investigated using

the Kruskal-Wallis statistical test. Results of the Kruskal-Wallis test were used to inform the multiple logistic regression analysis. The independent contribution of AT status along with other variables (age, gender, presence of primary carer and HSE area of residence) to perceived limitations/restrictions was explored by constructing a multiple logistic regression analysis for different domains of participation. Only the significant variables (p-value < 0.05) were entered into the regression analyses. Tables A1, A2 and A3 in the Appendix present significant participation, barriers\challenges and daily activity factors related to AT status for each of the disability groups. The findings for each disability group are presented in sequence below.

## Profile

This bulletin is based on 10,552 people who completed the MAP section of the NPSDD by end 2011. The main disability categories are shown in Table 1. Sixteen people with a primary diagnosis of a speech and language disorder completed the MAP section of the NPSDD by end 2011 but have been excluded from the analysis because of small numbers.

**Table 1: Disability types of those who had completed the MAP section**

<b>Disability type</b>	<b>Number of people (%)</b>
Physical disability	2645 (25.1)
Neurological	4084 (38.7)
Hearing loss/deafness	634 (6.0)
Visual	753 (7.1)
Speech and/or language disability	16 (0.2)
Multiple disabilities	2420 (22.9)
<b>Total</b>	<b>10552 (100.0)</b>

## Physical disability

A total of 2,645 people with a physical disability completed the MAP section of the NPSDD by end 2011. The top four primary diagnostic categories are rheumatoid arthritis, diabetes, absence or loss of extremity including double amputation and cystic fibrosis. Within this group:

- 1,814 people used assistive technology with no further requirements
- 698 people used assistive technology and had further requirements
- 133 people had no assistive technology but required it in the future.

The main assistive technology types used and requested are shown in Figure 1. The “Other” category includes incontinence aids, aids to hearing and other aids.

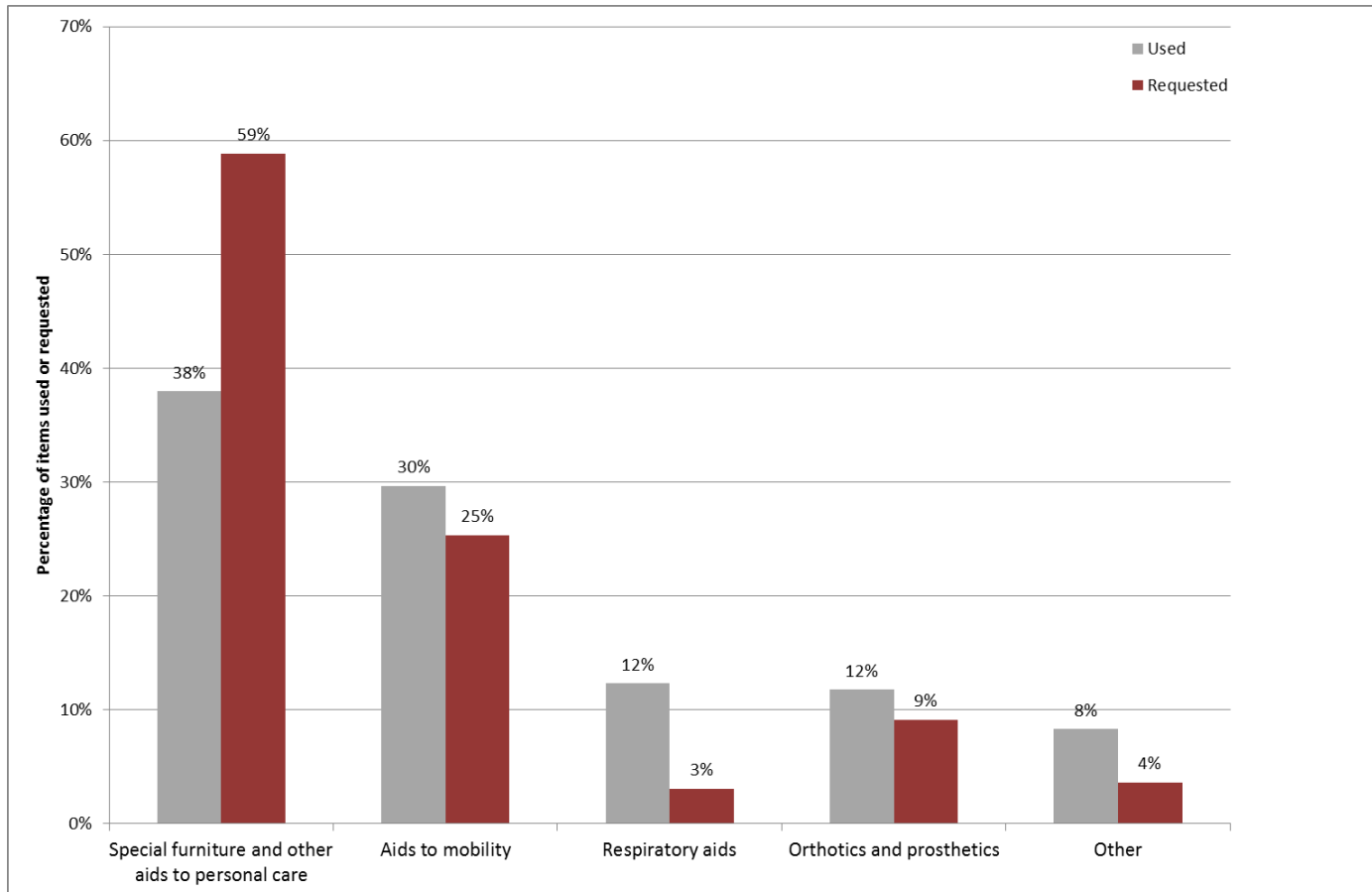


Figure 1 Physical disability: main assistive technology types used and requested

Due to the number and variety of conditions recorded in the physical disability category, only one category; those with a disability of the musculoskeletal system was selected for further analysis as this category represented the majority 56.2% (n=1,486) of the physical disability group.

## Musculoskeletal system

Almost 1,500 people (1,486) with a disability of the musculoskeletal system completed the MAP section of the NPSDD by end 2011. The top four primary diagnostic categories are rheumatoid arthritis, absence or loss of extremity including double amputation, osteoarthritis and back problems. Within this group:

- 933 people currently used assistive technology with no further requirements
- 470 people currently used assistive technology and had further requirements
- 83 people had no assistive technology but required it in the future.

The main assistive technology types used and requested by those with a disability of the musculoskeletal system are shown in Figure 2.

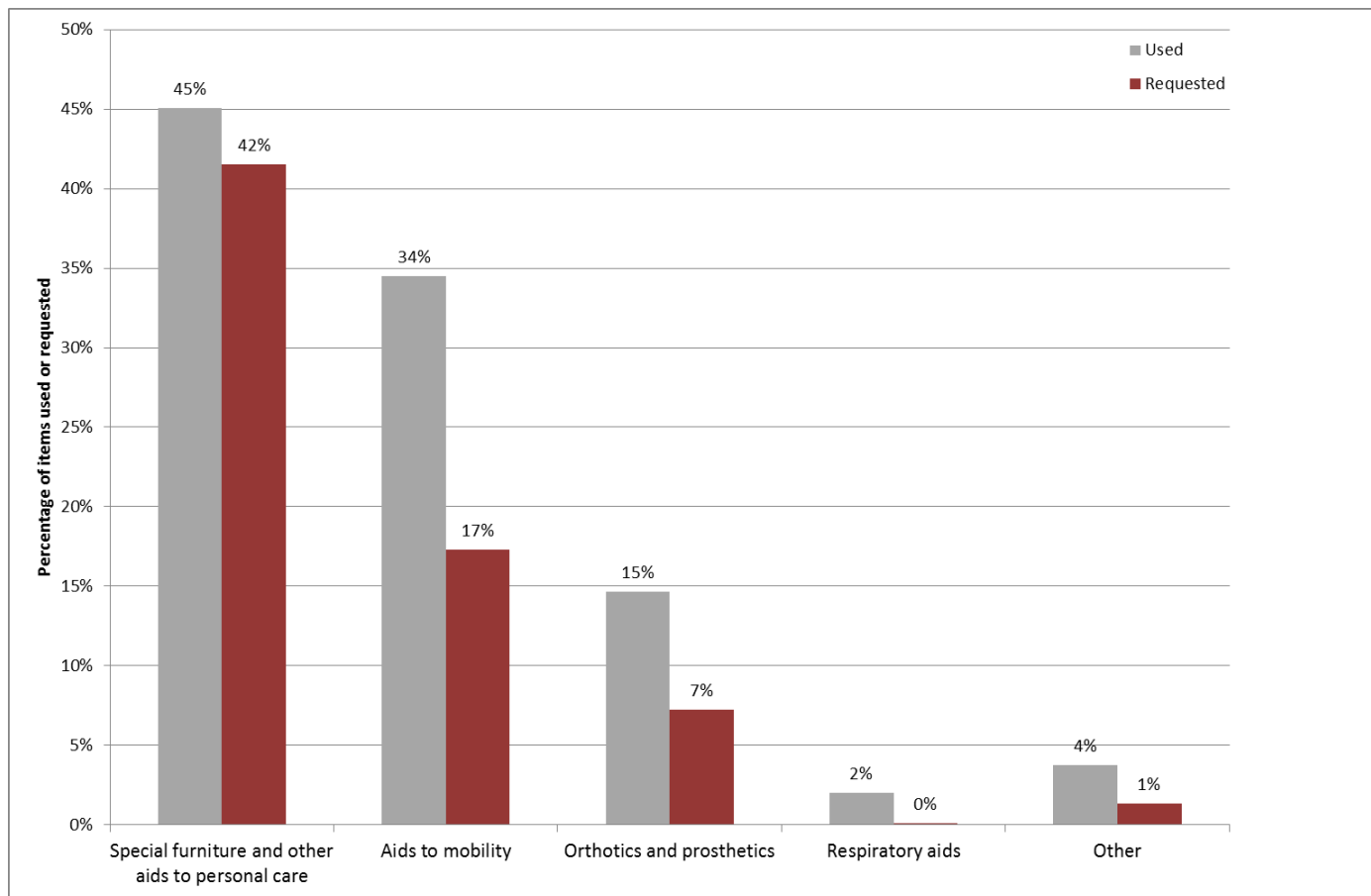


Figure 2 Musculoskeletal system: main assistive technology types used and requested

Only significant results are presented below.

### Participation restriction

The degree of participation restriction in employment, dignity and leisure/cultural activities differed by AT status and on whether someone had a primary carer (Figure 3). The presence of a primary carer may not necessarily improve one's participation as people with a primary carer may have lower levels of functioning than those with no primary carer. People with no AT and a primary carer experienced the highest level of participation restriction in employment (83%). People with further AT requirements experienced higher levels of restriction living with dignity (26% for those with a primary carer and 19% without a primary carer). People with a primary carer experienced a higher level of participation restriction in leisure and cultural activities than those without a primary carer.

People with a primary carer were more likely to be restricted in the areas of community life, education, family life, sports, socialising and religion and experienced higher levels of participation restriction in leisure and cultural activities than those without a primary carer. Restrictions in these areas were not related to AT status.

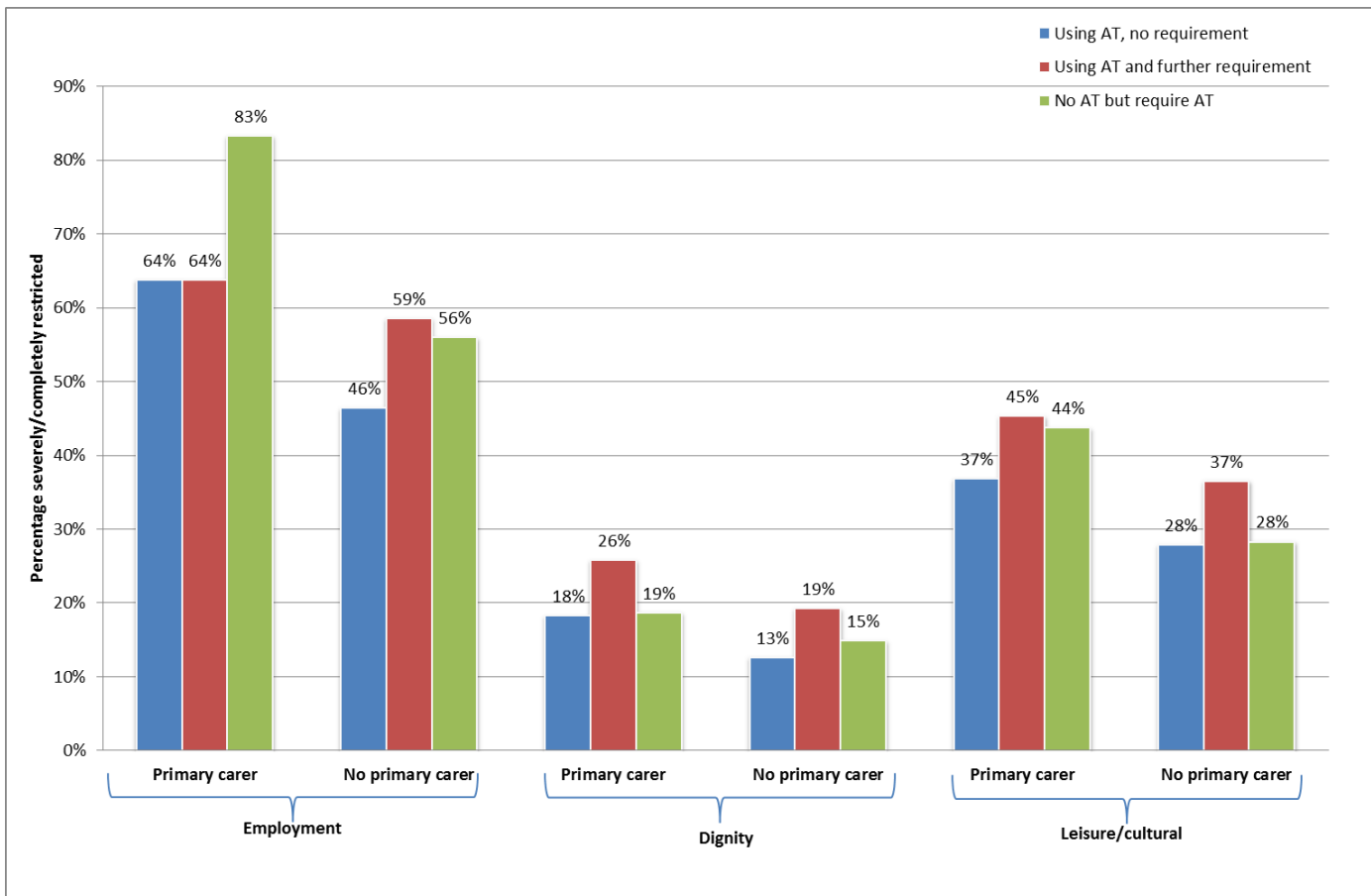


Figure 3 Participation restriction: percentage of people with musculoskeletal system disabilities who were severely or completely restricted by AT status

### Barriers and challenges

Key barriers and challenges relating to AT status were experienced in the areas of income, laws, attitudes, climate and services and supports (Figure 4). People with further AT requirements experienced the highest level of restriction with income (57%) while those with no AT experienced the highest level of restriction with laws (43%). Experiences with attitudes, climate and services differed by AT status and gender; while the patterns for AT status was similar among males and females, females experienced higher restrictions with attitudes, climates and services than their male counterparts.

Barriers and challenges accessing transport differed by gender but were not related to AT status; females experienced higher levels of restriction than males (41% versus 33%). Barriers due to physical environment were also substantial, however experiences differed by gender and presence of a primary carer. Those with a primary carer (females 77%, males 71%) were more likely to experience barriers than those without a primary carer (females 67%, males 70%).



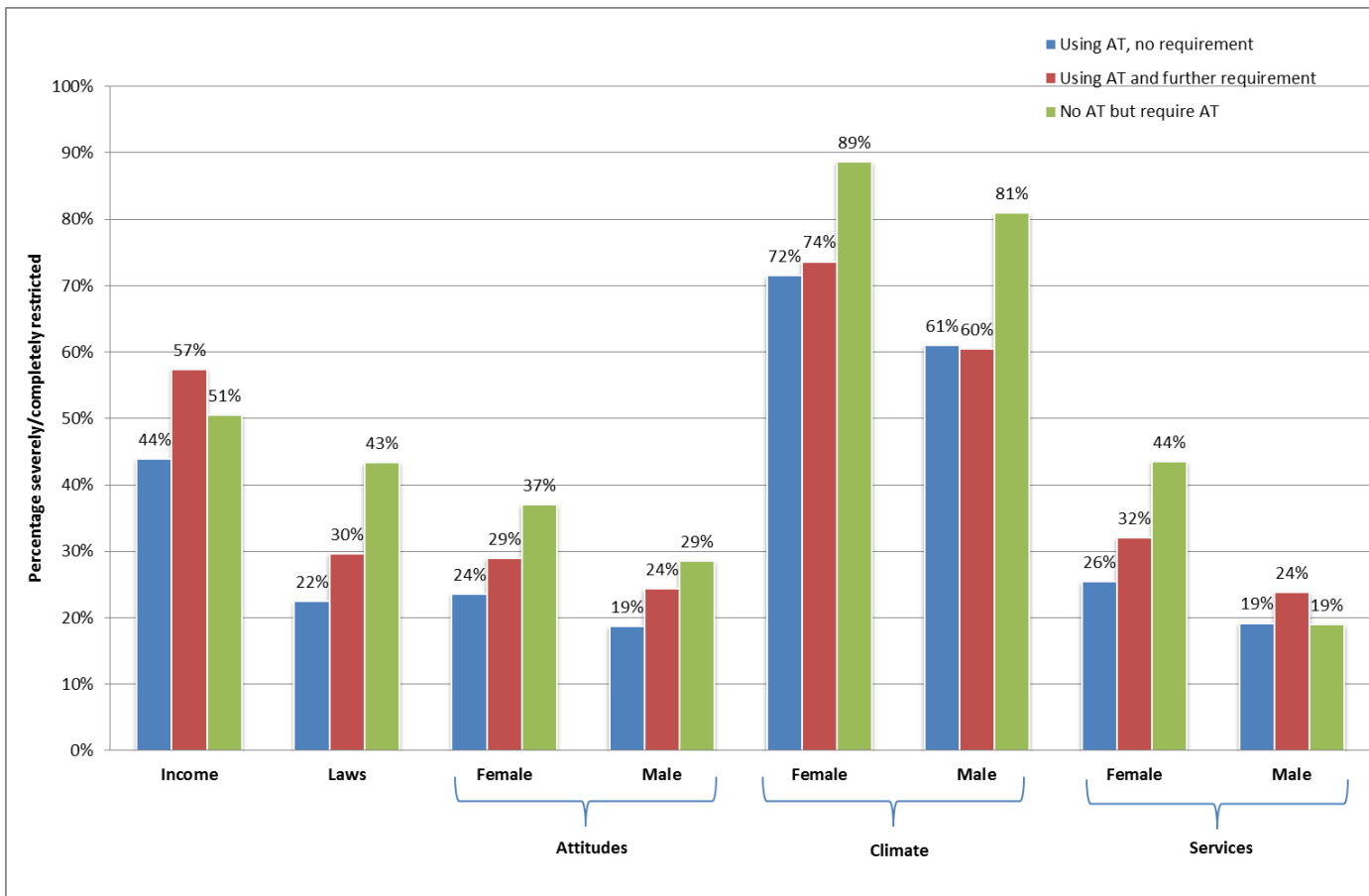


Figure 4 Barriers and challenges: percentage of people with musculoskeletal system disabilities who were severely or completely restricted by AT status

### Difficulties with daily activities

AT status was not related to difficulties carrying out daily activities for people with a disability of the musculoskeletal system. There was an interaction between having a primary carer and difficulties carrying out daily activities. People with a primary carer were more likely to experience difficulties in community life, dressing and washing. Experiences standing for long periods differed by gender and presence of a primary carer; with females reporting higher levels of difficulty than males.

## Neurological disability

Of those registered on the NPSDD, 4,084 people with neurological disabilities completed the MAP section of the NPSDD by end 2011. The top four diagnostic categories are multiple sclerosis, cerebral palsy, stroke hemoplegia and spinal injury. Within this group:

- 2,786 people used assistive technology with no further requirements
- 1,149 people used assistive technology and had further requirements
- 149 people had no assistive technology but required it in the future.

The main assistive technology types used and requested are shown in Figure 5. The main types of AT were shower aids, walking sticks/canes/crutches, bathroom grab rails and bars, and wheelchairs (manual and powered). "Other" includes respiratory aids, vision aids and other aids.

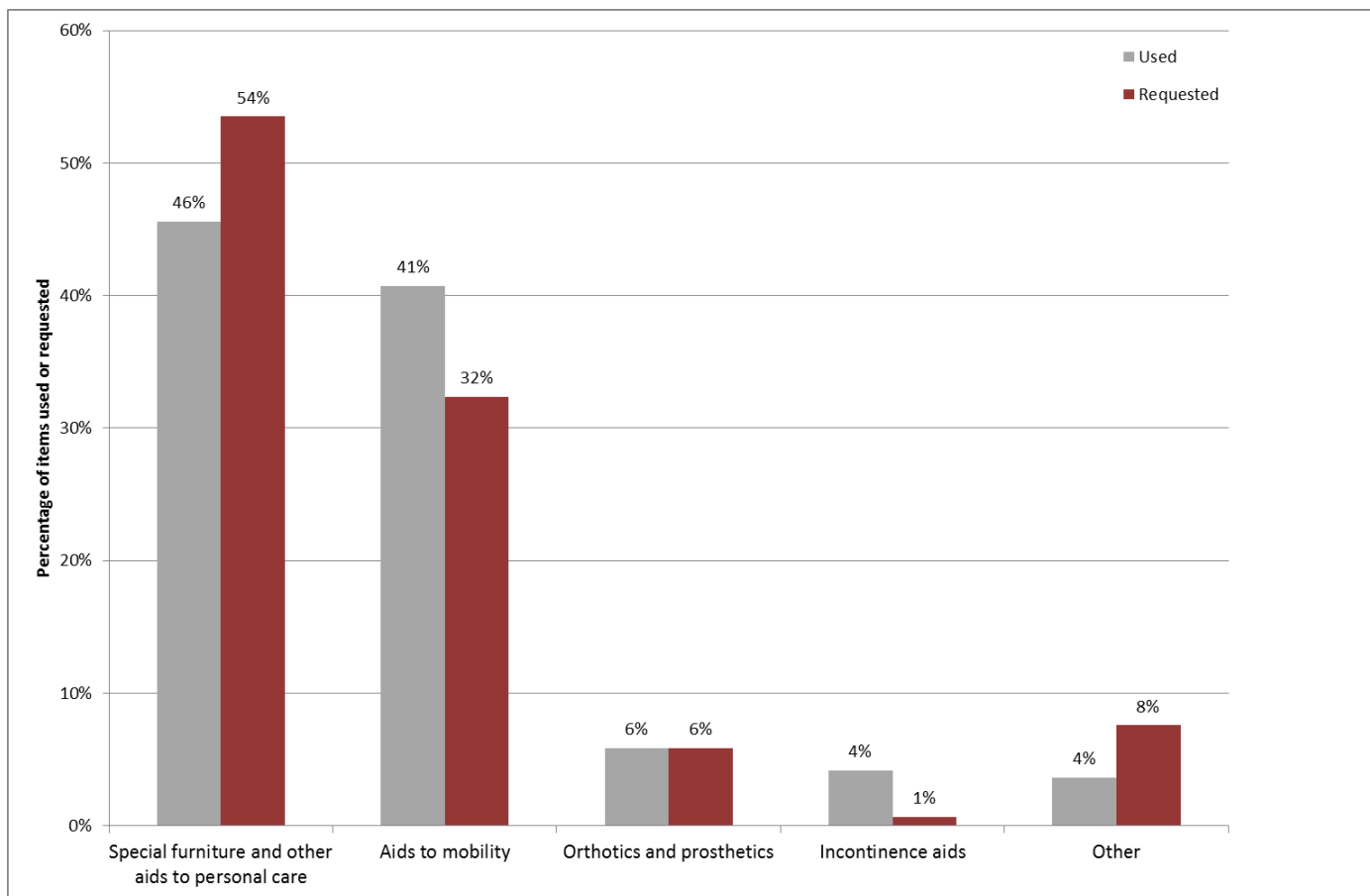


Figure 5 Neurological disability: main assistive technology types used and requested

Due to the number and variety of conditions recorded in the neurological disability group, only one category; those with cerebral palsy as a primary diagnosis was selected for further analysis. This is for two reasons 1) although those with a primary diagnosis of multiple sclerosis represented the largest group 32.9% (n=1,342), multiple sclerosis is a progressive condition with varying levels of AT requirements and 2) cerebral palsy represented the second largest category 13.1% (n=535) of the neurological disability group and was a uniform population.

## Cerebral palsy

In total, 535 people with cerebral palsy completed the MAP section of the NPSDD by end 2011. Within this group:

- 382 people used assistive technology with no further requirements
- 143 people used assistive technology and had further requirements
- 10 people had no assistive technology but required it in the future.

The main assistive technology types used and requested are shown in Figure 6. The “other” category includes aids such as communication aids, vision aids and other aids.

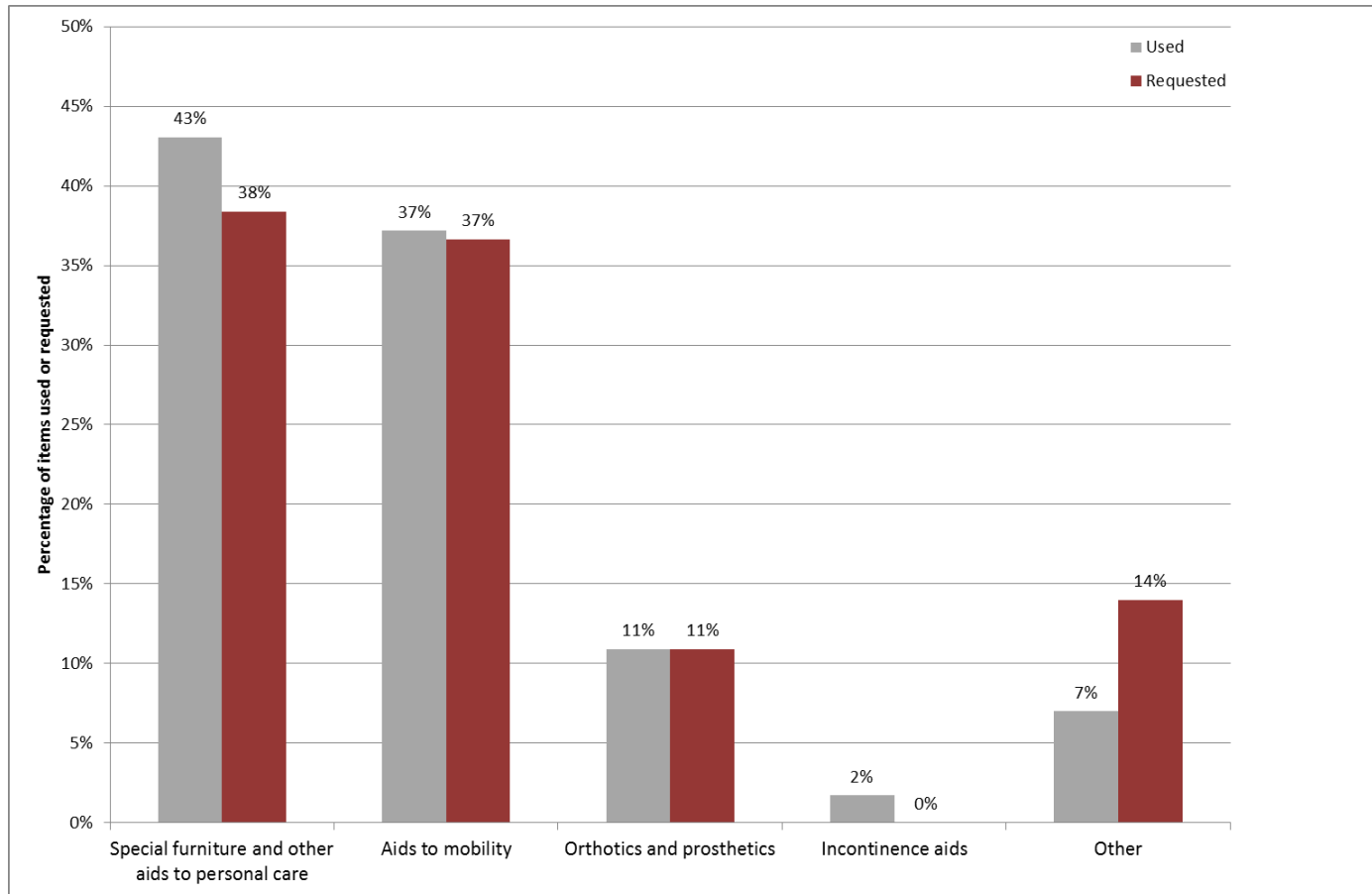


Figure 6 Cerebral palsy: main assistive technology types used and requested

Only significant results are presented below.

### Participation restriction

Participation restriction in employment was the only factor related to AT status; restrictions differed by AT status and gender (Figure 7). Overall females reported higher levels of restriction than males. Females with further AT requirements experienced the highest level of restriction (55%) followed by males with further AT requirements (44%).

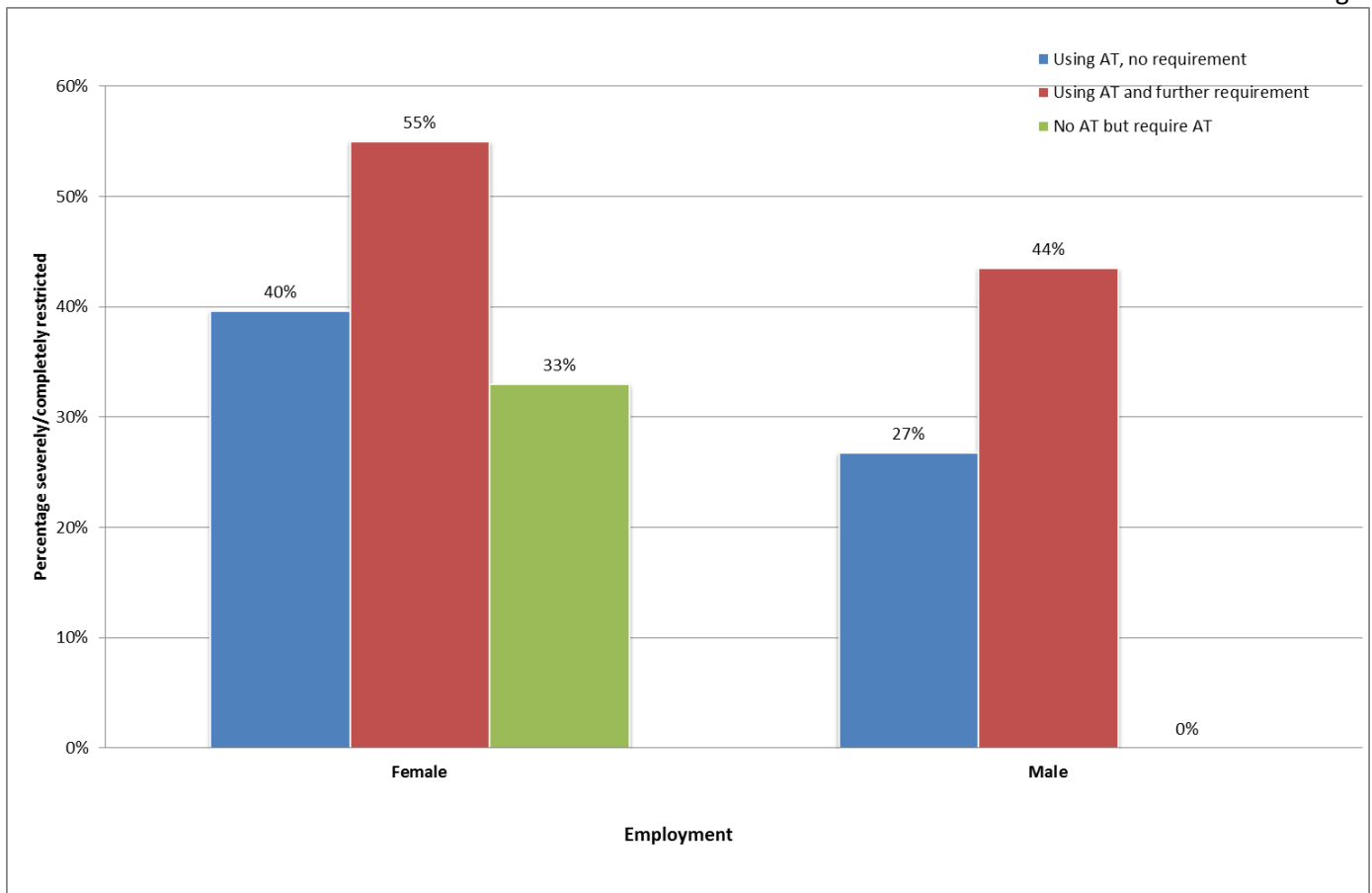


Figure 7 Participation restriction: percentage of people with cerebral palsy who were severely or completely restricted by AT status

### Barriers and challenges

Access to information was the only barrier to participation solely related to AT status (Figure 8). People with further AT requirements experienced the highest level of restriction (31%) followed by those with no AT requirements (18%). Transport was a barrier; however the experience differed in the presence of a primary carer. Overall, people with a primary carer reported higher levels of restriction than those without a primary carer.

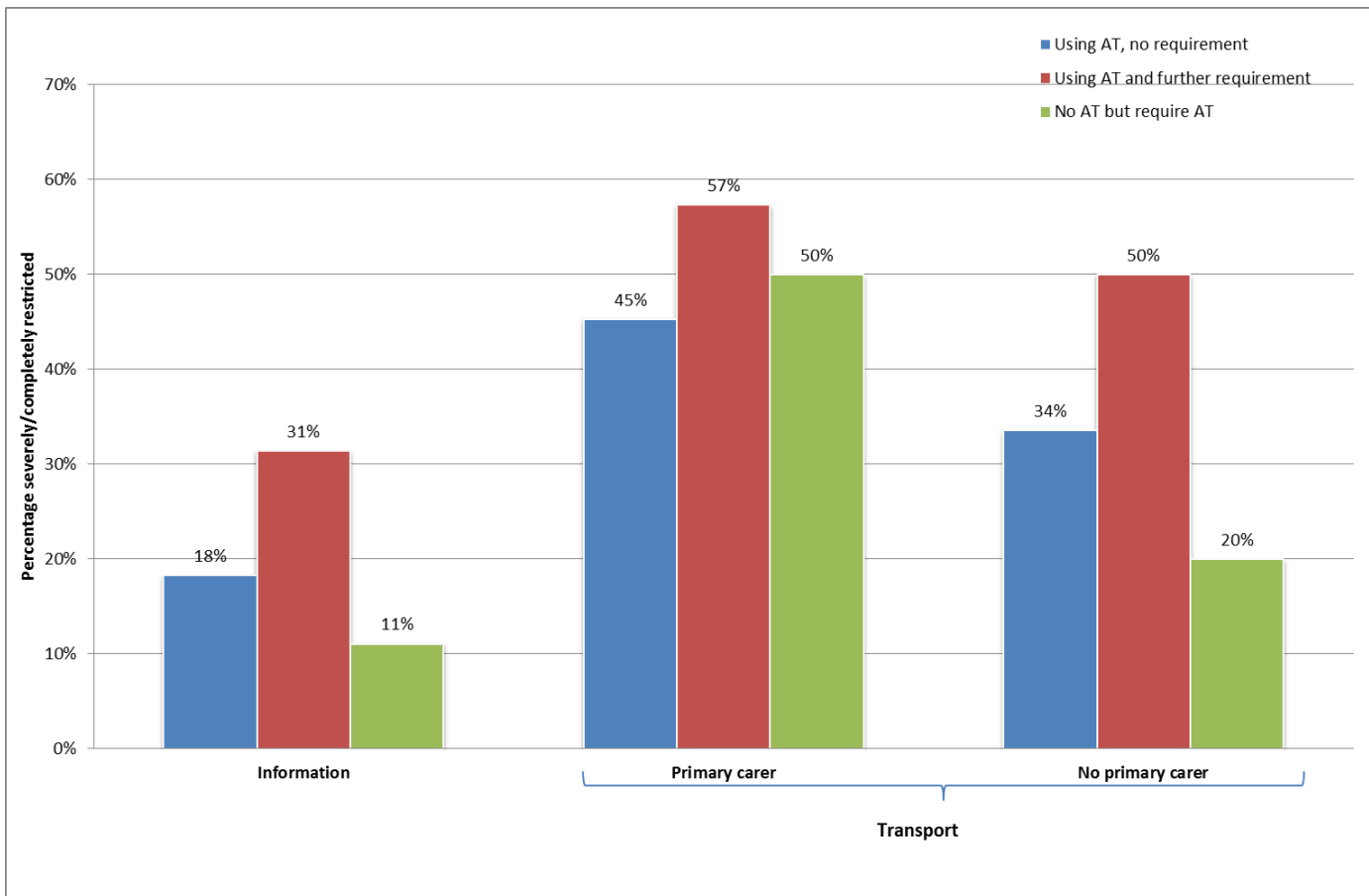


Figure 8 Barriers and challenges: percentage of people with cerebral palsy who were severely or completely restricted by AT status

### Difficulties with daily activities

AT status was not related to difficulties carrying out daily activities for people with cerebral palsy. Difficulties standing, walking and participating in community activities differed for males and females. Females reported more difficulty than males (difficulty standing: 71.8% of females versus 51.6% of males; difficulty walking: 70.8% of females versus 60.2% of males; difficulty participating in community activities: 32.4% of females versus 21.1% of males)

Difficulty maintaining a friendship due to disability was significant, however experiences differed by gender and having a primary carer. People with a primary carer were more likely to experience difficulties maintaining a friendship than those without a primary carer (10.9% versus 4.4%); with females reporting higher levels of difficulty than males.

## Hearing loss/deafness

In total, 634 people with a primary diagnosis of a hearing loss or deafness completed the MAP section of the NPSDD by end 2011. The top four diagnostic categories are congenital deafness, conductive deafness, sensorineural deafness and deafness not specified. Within this group:

- 402 people used assistive technology with no further requirements
- 203 people used assistive technology and had further requirements
- 29 people had no assistive technology but required it in the future.

As one would expect, 88.1% of all AT required by this group was hearing related. The main types of AT used and requested are shown in Figure 9. The “other” category includes aids such as special furniture and other aids to personal care, respiratory aids, mobility aids etc.

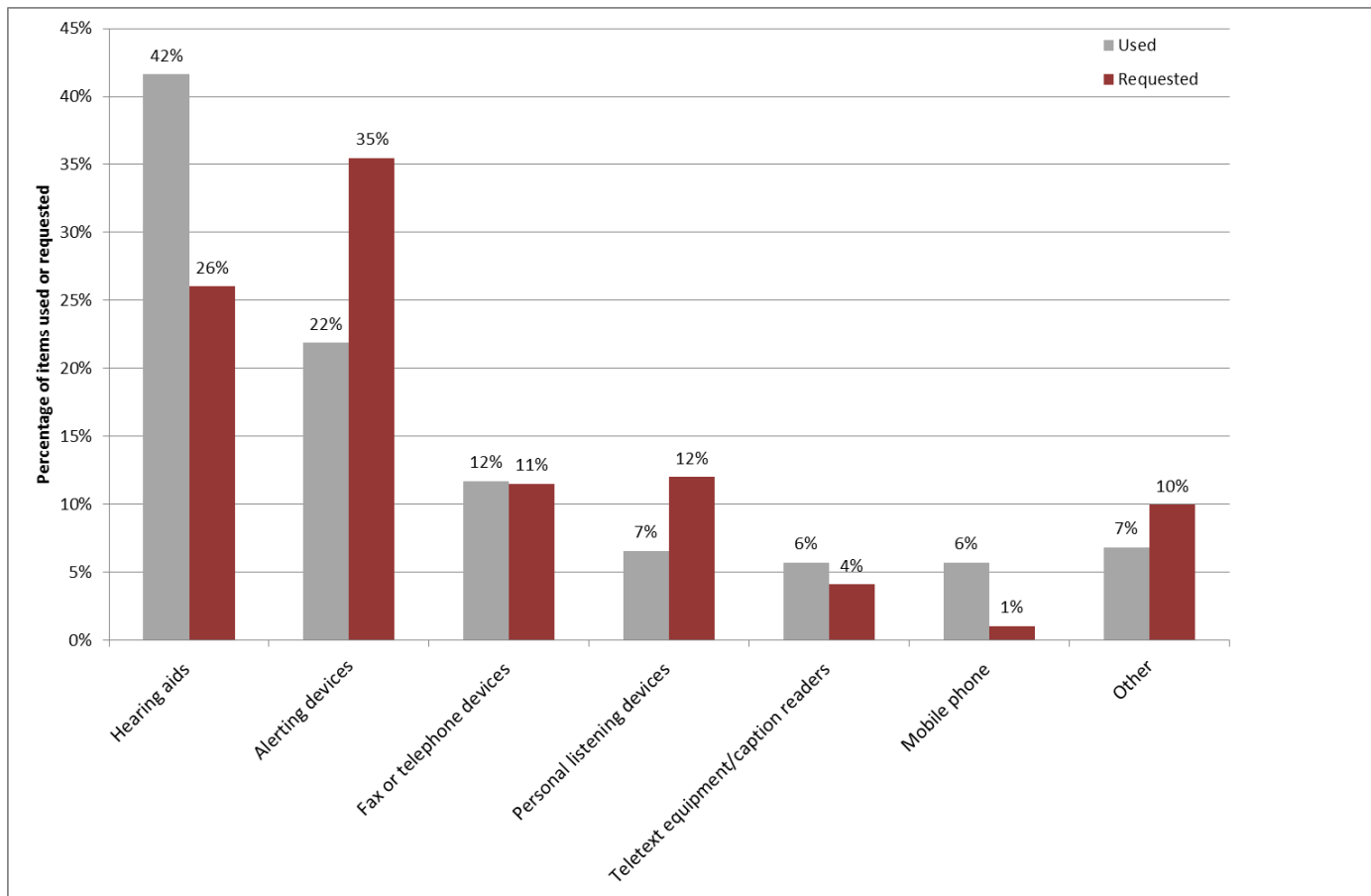


Figure 9 Hearing loss/deafness: main assistive technology types used and requested

Only significant results are presented below.

## Participation restriction

The extent of participation restriction in community life, education and training, leisure/cultural activities, shopping and sport differed by AT status (Figure 10). The proportion severely or completely restricted was lowest among those with no AT requirements. People using AT with additional requirements experienced higher levels of restriction in education and training. People with no AT experienced higher levels of restriction participating in community life and sport.

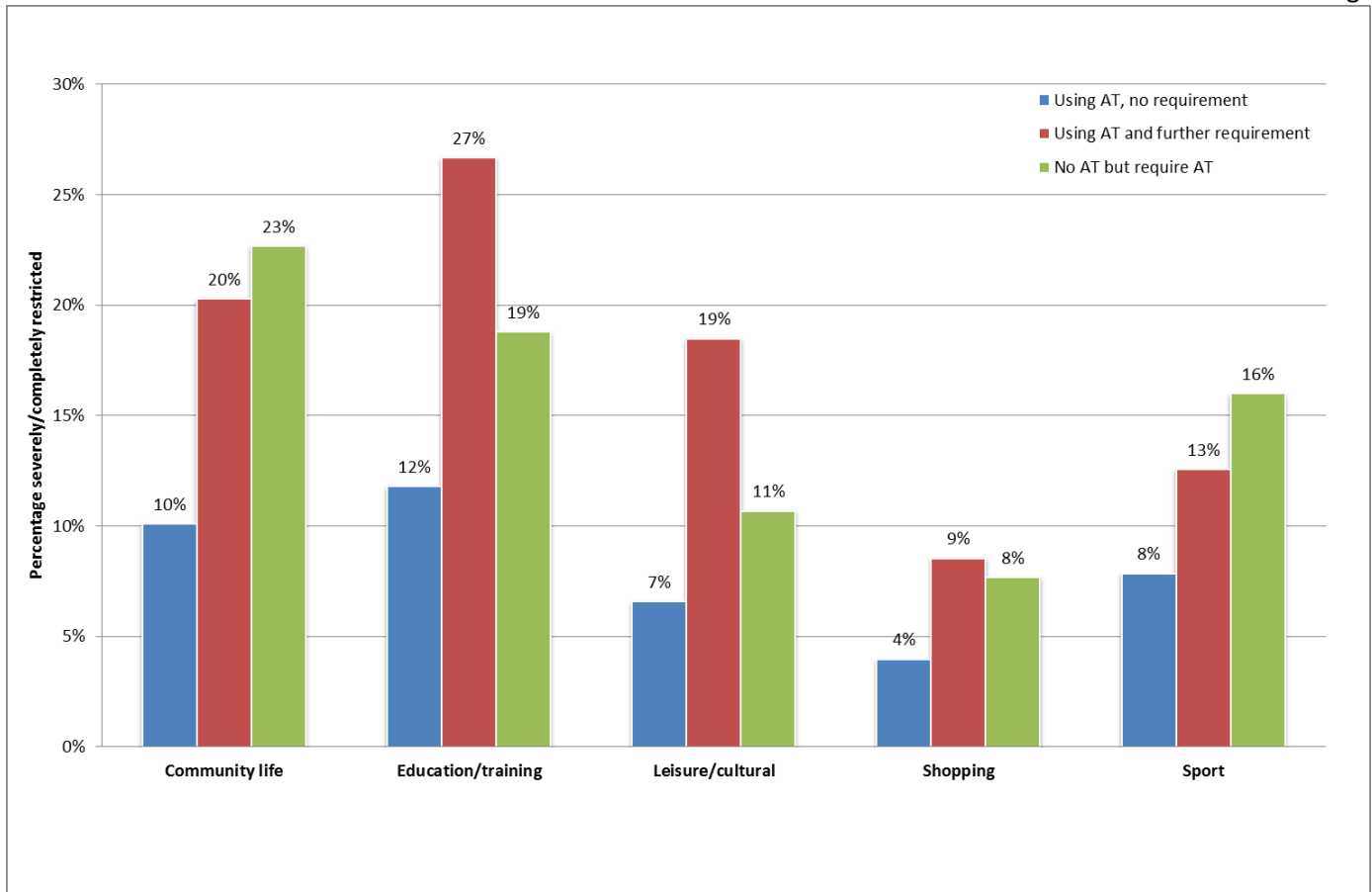


Figure 10 Participation restriction: percentage of people with hearing loss/deafness who were severely or completely restricted by AT status

### Barriers and challenges

Challenges relating to AT status were experienced in relation to laws, official regulations and entitlements (Figure 11). Those with no AT requirements experienced the lowest levels of restriction. People's attitudes and accessing information were also perceived as barriers; however the experience differed in the presence of a primary carer. Those with a primary carer were less likely to experience barriers than those without a primary carer.

There was no interaction between income and AT status but there was an interaction between having a primary carer and income as a barrier. Those with a primary carer were less likely to experience income as a barrier when compared to those with no primary carer (17.9% versus 37.3%).

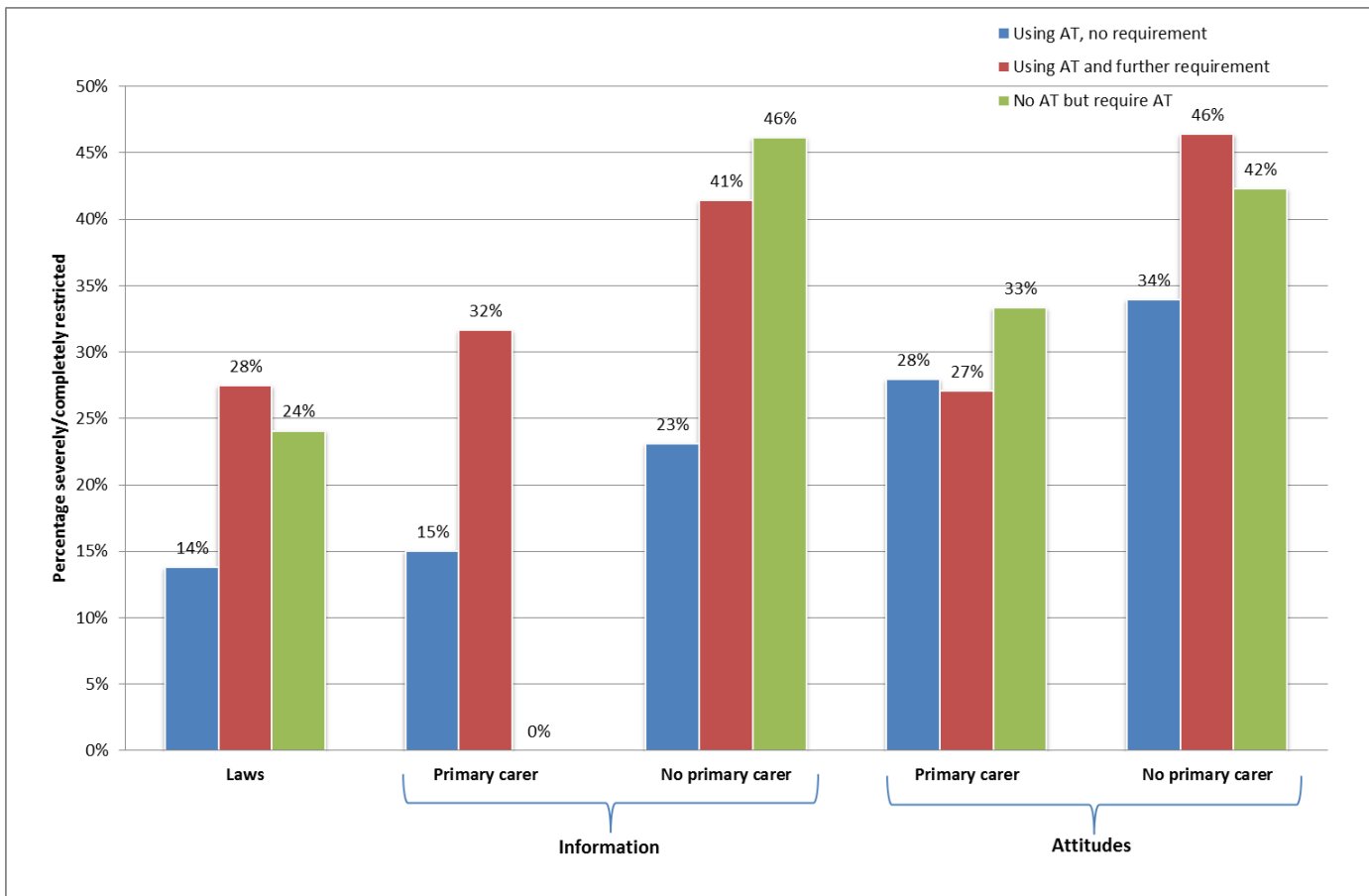


Figure 11 Barriers and challenges: percentage of people with hearing loss/deafness who were severely or completely restricted by AT status

### Difficulties with daily activities

Those with hearing loss or deafness experienced difficulties in learning new tasks and dealing with strangers (Figure 12). People with no AT requirements experienced the lowest levels of difficulty. Those with no AT experienced the highest levels of difficulty dealing with strangers. Those using AT but who have additional requirements experienced high levels of difficulty learning new tasks.



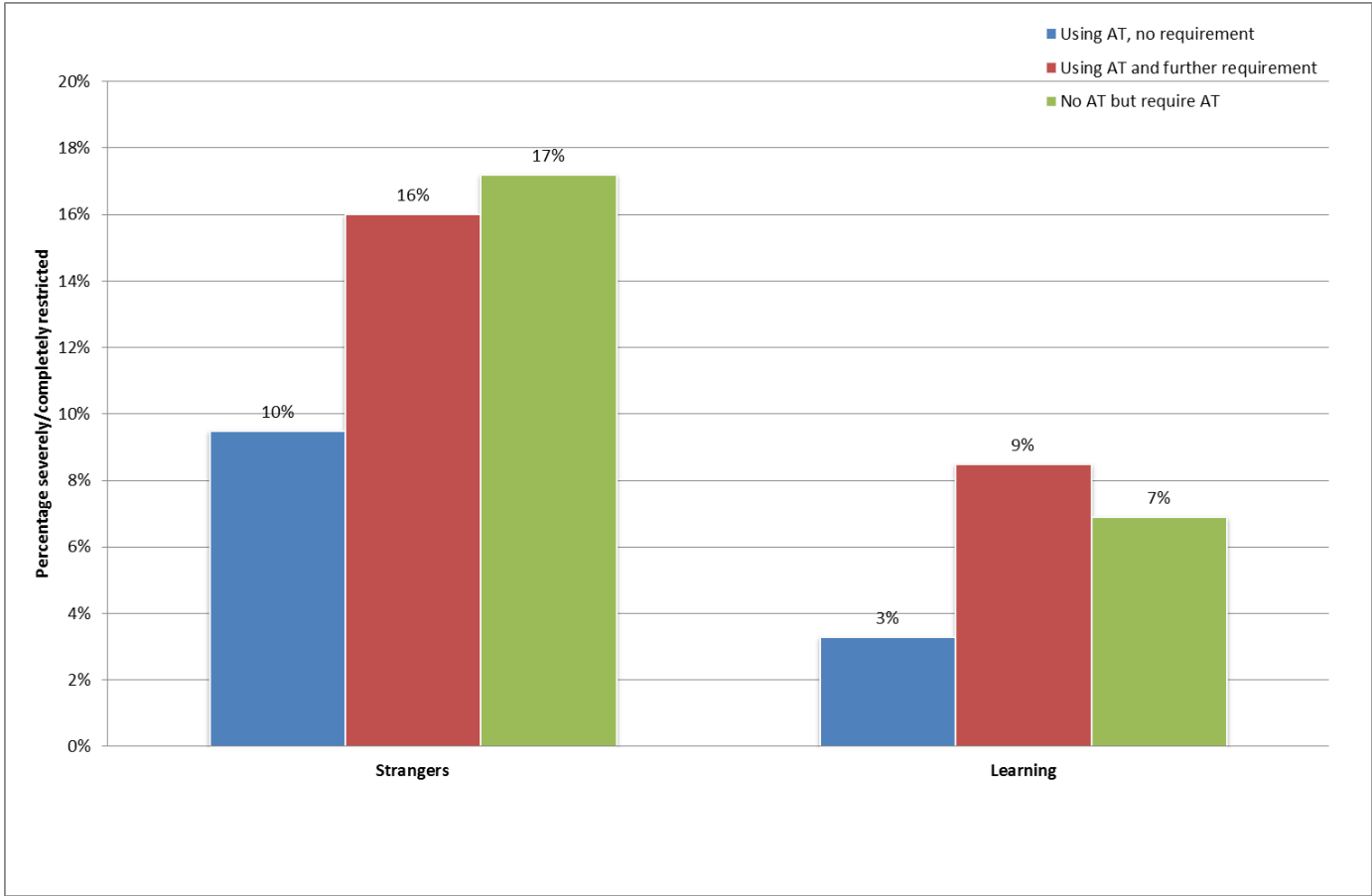


Figure 12 Daily activities: percentage of people with hearing loss/deafness who were severely or completely restricted by AT status

## Visual

Over 750 people (753) with a primary visual diagnosis completed the MAP section of the NPSDD by end 2011. The top four diagnostic categories are blindness/low vision not specified, retinitis pigmentosa, congenital blindness and congenital anomalies of the eye. Within this group:

- 538 people used assistive technology with no further requirements
- 183 people used assistive technology and had further requirements
- 32 people had no assistive technology but required it in the future.

The main assistive technology types used and requested are shown in Figure 13. As anticipated, 83.6% of all AT required by this group was vision related. The “other” category includes aids such as mobility aids and special furniture and other aids to personal care etc.

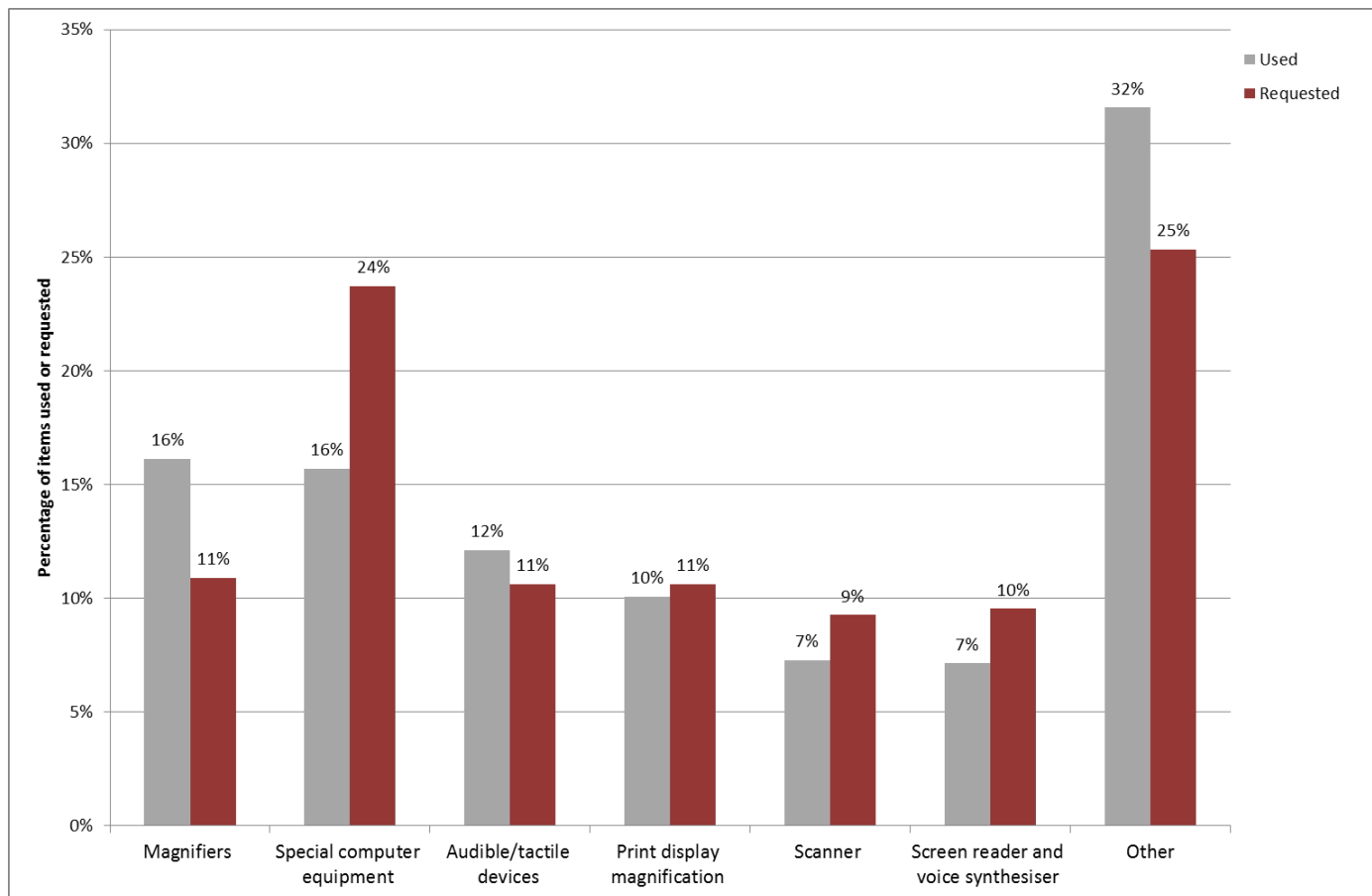


Figure 13 Visual disability: main assistive technology types used and requested

Only significant factors related to AT status are presented below.

### Participation restriction

Participation restriction in employment was the only factor related to AT status; there was an interaction between AT status and the presence of a primary carer (Figure 14). Figure 14 shows that those with a primary carer are more likely to have received some AT and are also more likely to experience participation restriction in employment.

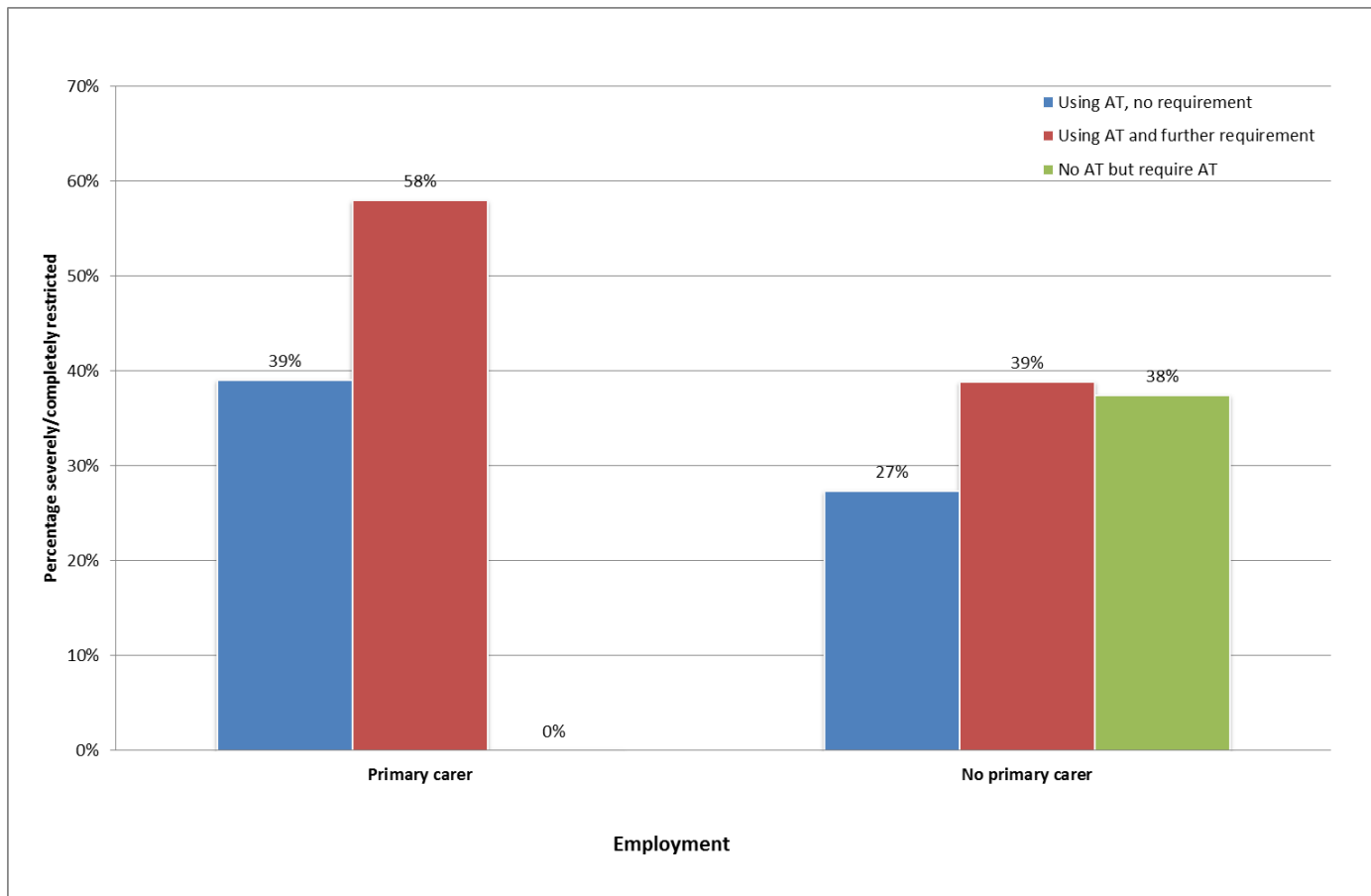


Figure 14 Participation restriction: percentage of people with a visual disability who were severely or completely restricted by AT status

### Barriers and challenges

Barriers and challenges to participation related to AT status were: people's attitudes, climate, accessing information (about entitlements / services or nature of condition), laws, official regulations and entitlements, access to services and income (Figure 15 and Figure 16).

AT status was directly related to barriers experienced in people's attitudes, accessing information (about entitlements/services or nature of condition) and laws. People with no AT requirements experienced the lowest levels of restriction in these areas. Those with no AT experienced the highest levels of restriction in accessing information.

Climate was also a barrier but experiences differed by AT status and by gender. Overall, females reported climate as a barrier more often than males. People with all the AT they need reported the least difficulty due to climate.

Income was a barrier; however the experience differed between HSE areas. Those living in the Southern region reported lower levels of restriction than other regions. The highest proportion reporting barriers due to income were in the "using AT but with further requirements" category and resided in the Dublin North-East region.

Although physical environment was not related to AT status, barriers due to physical environment were significantly related to gender and the presence of a primary carer. Females with a primary carer were more likely to experience barriers due to physical environment compared to females with no primary carer (74.8% versus 68.1%). Males with a primary carer were also more likely to experience barriers due to physical environment compared to males with no

primary carer (75.0% versus 53.8%).

Transport was not related to AT status, however barriers due to transport was related to HSE region and the presence of a primary carer. Those with a primary carer were less likely to experience barriers due to transport compared with those with no primary carer. The largest difference was reported in HSE South (18.8% versus 42.7%) and the smallest difference was in HSE West (46.3% versus 50.6%).

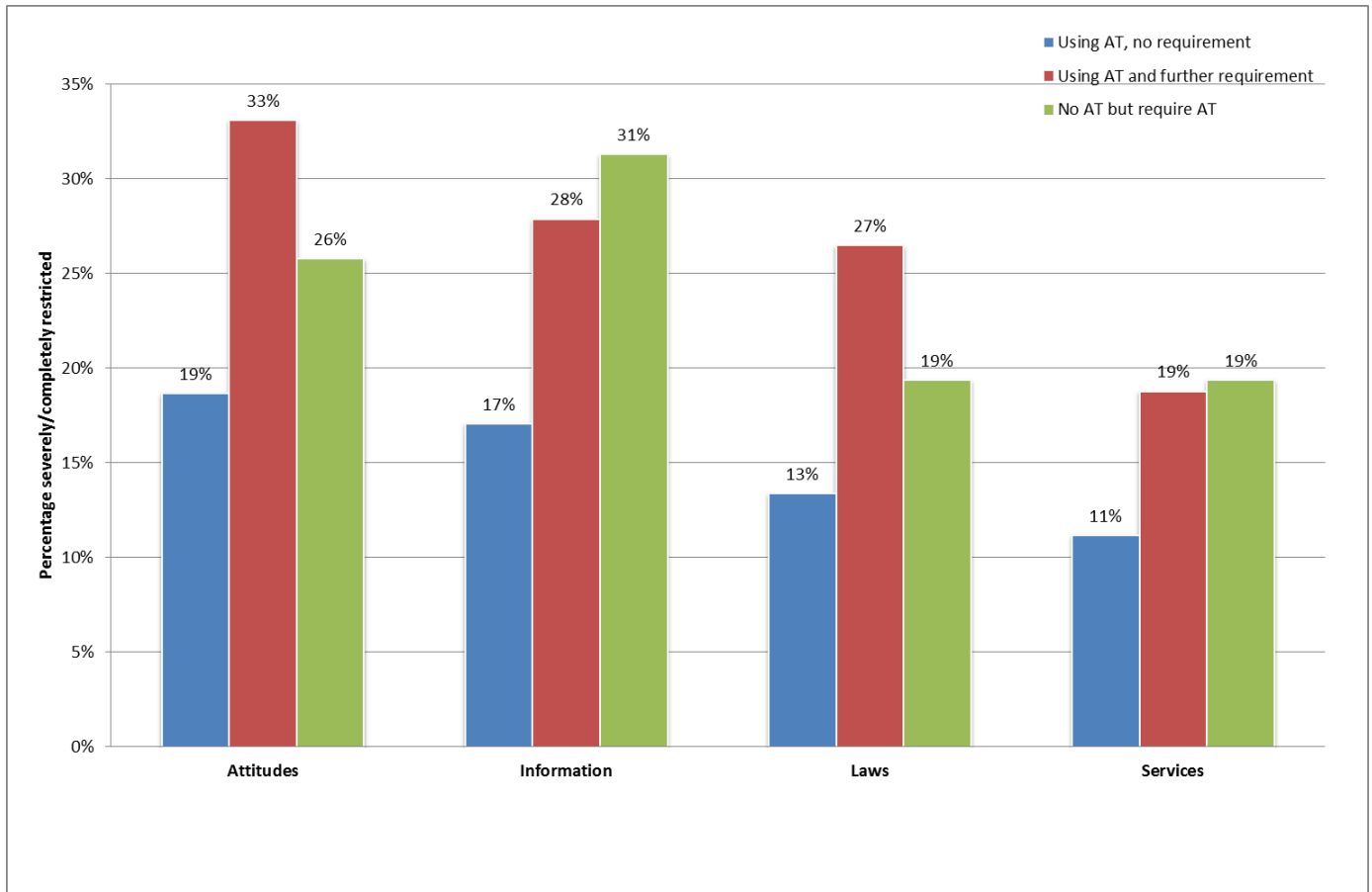


Figure 15 Barriers and challenges: percentage of people with a visual disability who were severely or completely restricted by AT status

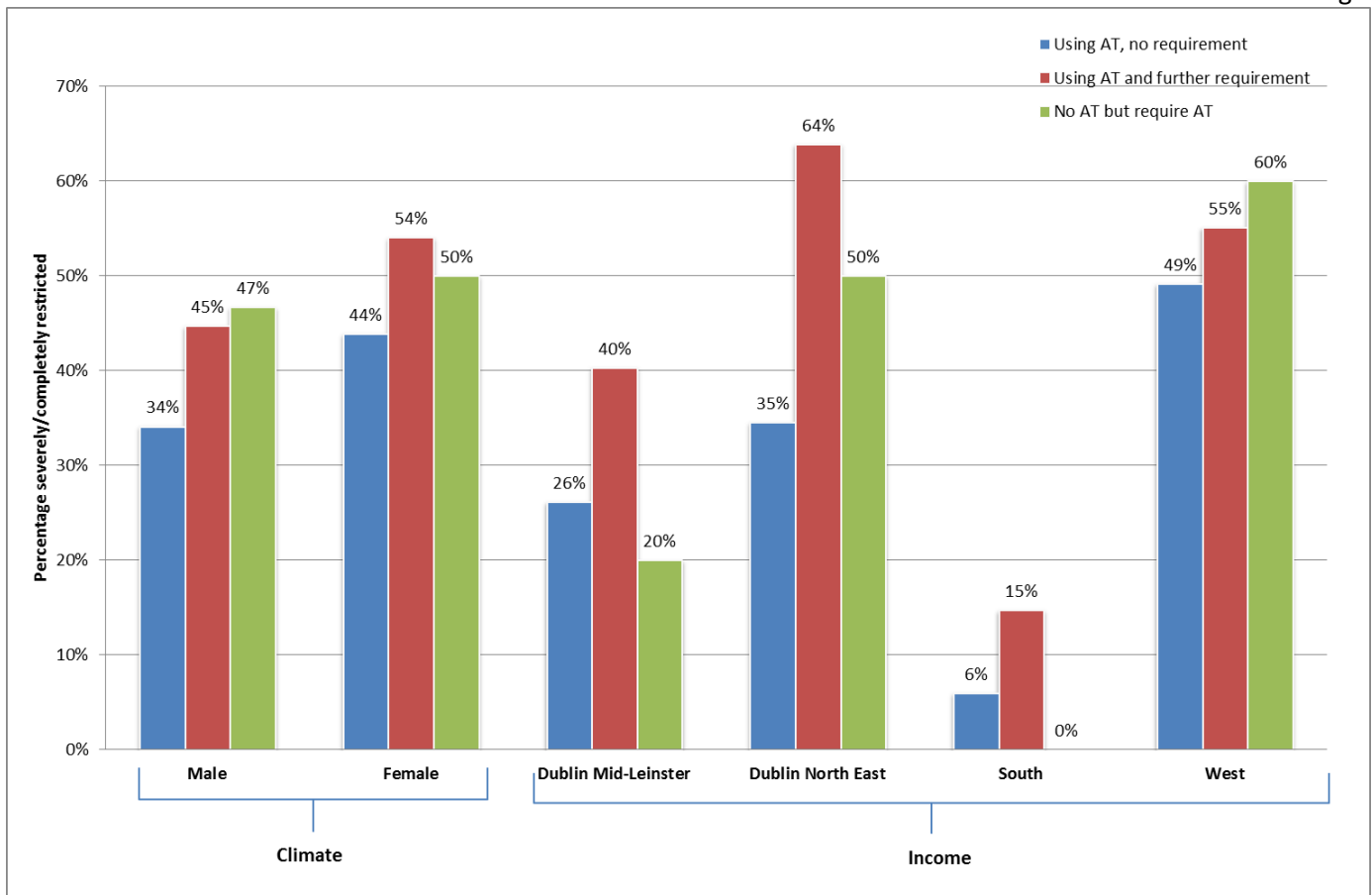


Figure 16 Barriers and challenges: percentage of people with a visual disability who were severely or completely restricted by AT status

### Difficulties with daily activities

Difficulties concentrating and learning new tasks due to visual impairments were noted (Figure 17). As expected, those with no AT experienced highest levels of difficulty followed by those using AT with additional requirements.

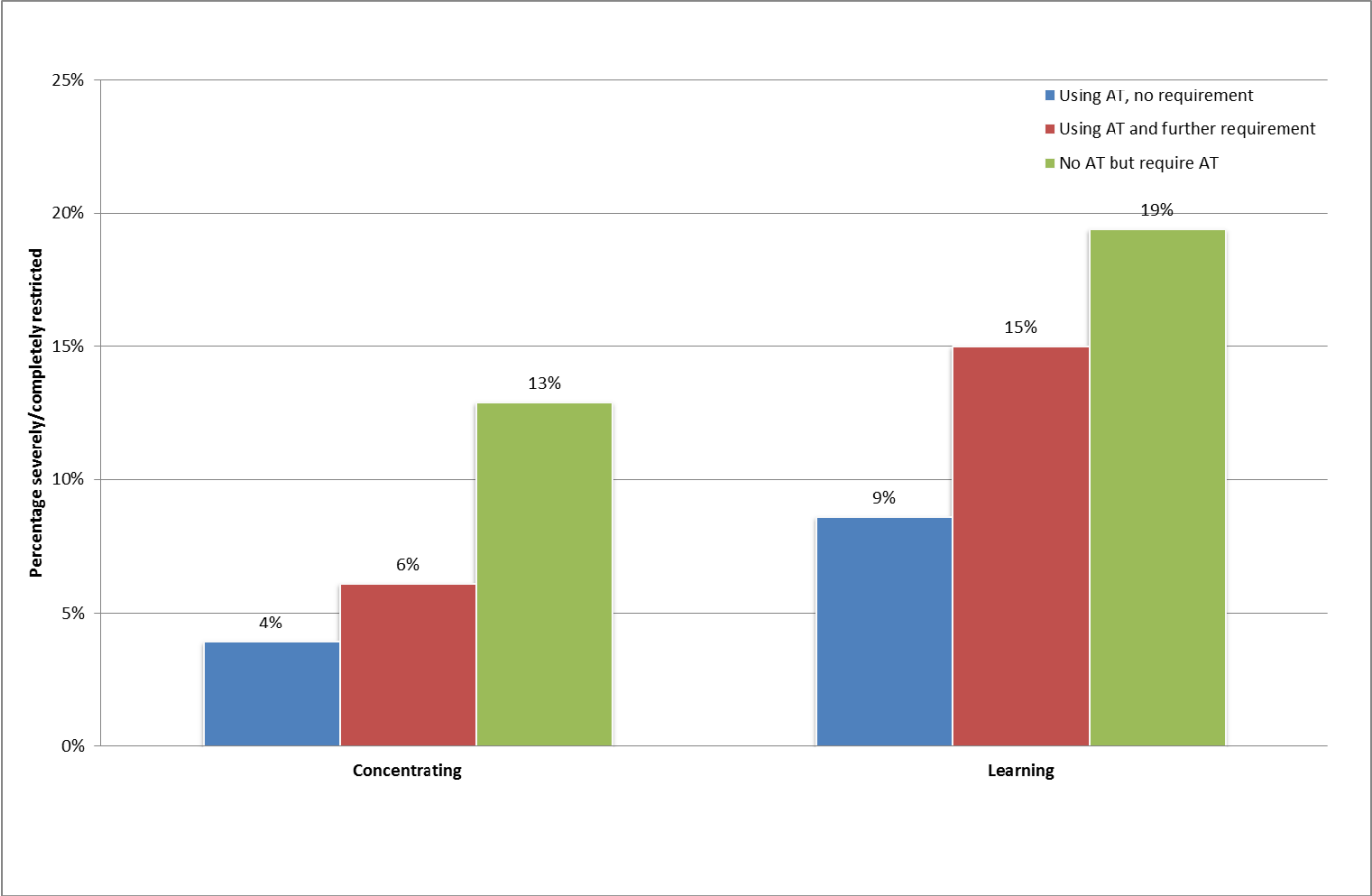


Figure 17 Daily activities: percentage of people with a visual disability who were severely or completely restricted by AT status

## Multiple disabilities

A total of 2,420 people with a multiple disabilities (any combination of physical, neurological, hearing loss/deafness, visual and speech and language categories) completed the MAP section of the NPSDD by end 2011. The top four primary diagnostic categories are multiple sclerosis, stroke hemiplegia, cerebral palsy and head injury. Within this group:

- 1,563 people used assistive technology with no further requirements
- 768 people used assistive technology and had further requirements
- 89 people had no assistive technology but required it in the future.

The top five combinations of physical, neurological, hearing loss/deafness, visual and speech and language categories which make up the multiple disability group are shown in Figure 18. “Other combinations” include other combinations of physical and sensory disabilities. Disability type combinations impact the type of AT required by an individual.

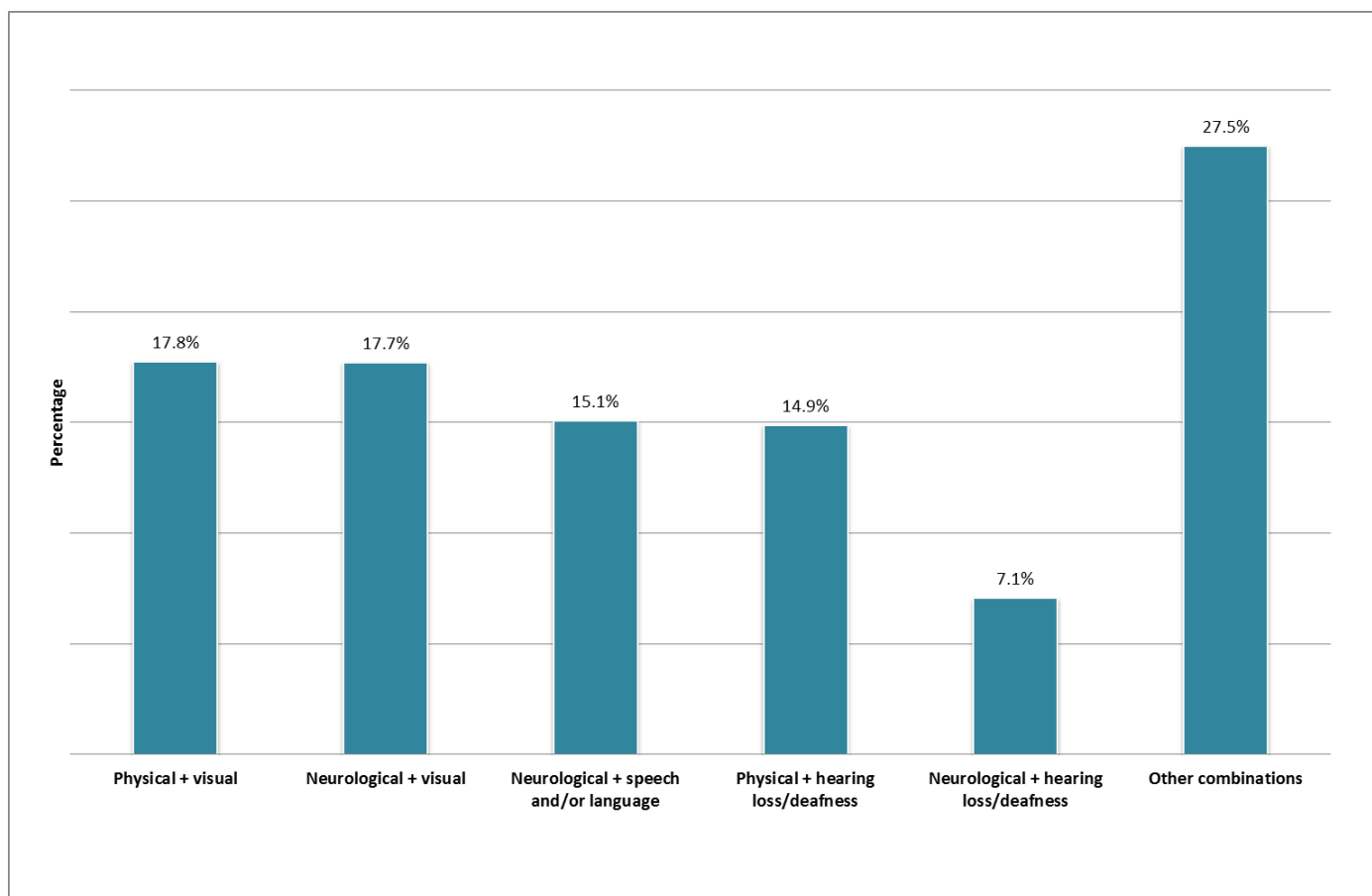


Figure 18 Multiple disabilities: percentage with disability type combination.

The main assistive technology types used and requested are shown in Figure 19. The “other” category includes such as incontinence aids, respiratory aids and other aids.

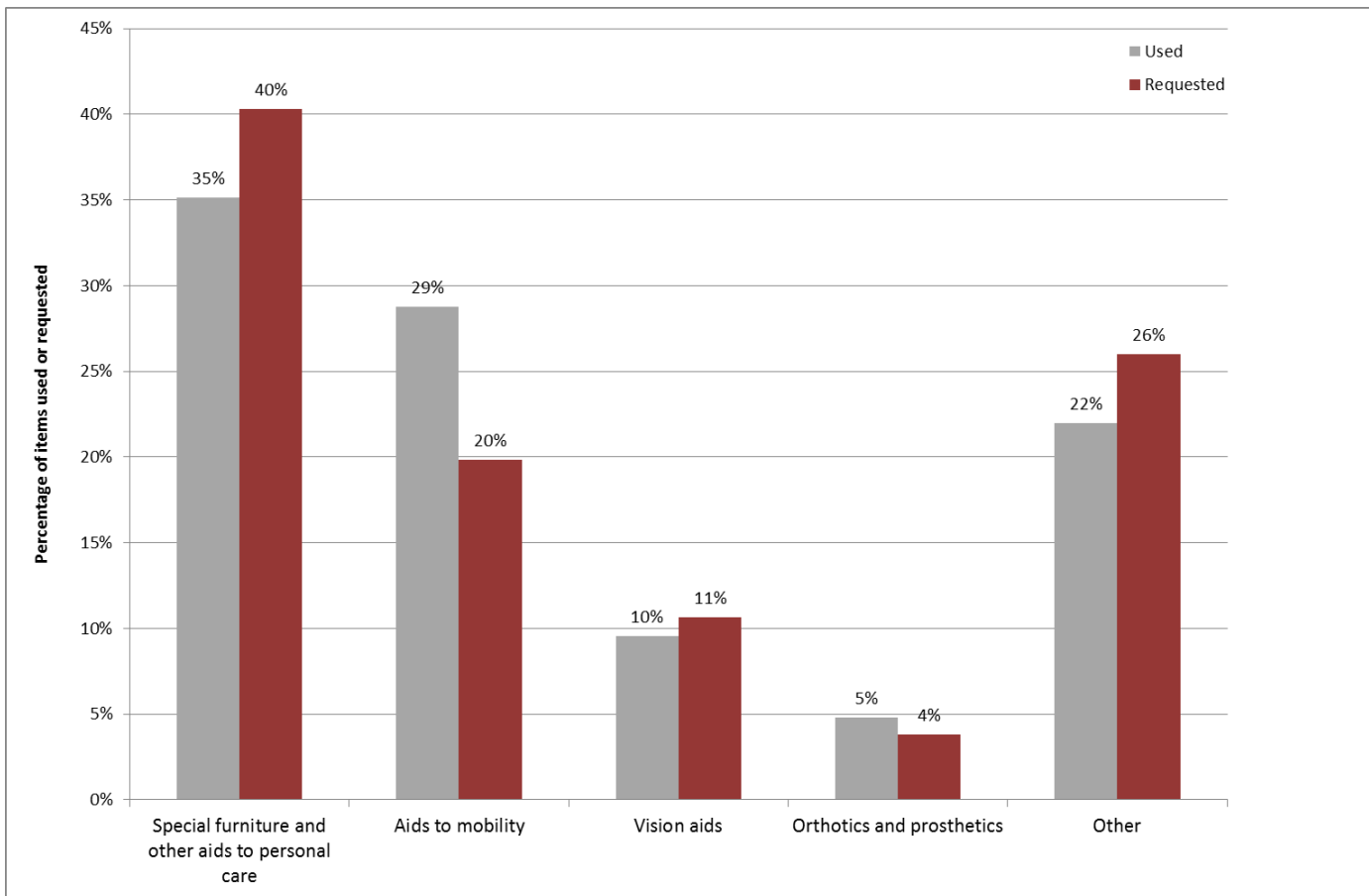


Figure 19 Multiple disabilities: main assistive technology types used and requested

### Participation restriction

Restriction in participation in family life was the only factor solely related to AT status; as expected, the proportion severely or completely restricted was lowest among those with no AT requirements (Figure 20).

The presence of a primary carer was an important factor in the areas of leisure/cultural activities, socialising, shopping, and sports (Figure 20). There was an interaction between AT status and the presence of a primary carer in these areas. Overall, the proportion severely or completely restricted was lowest among those with no AT requirements, with the exception of people with no primary carer for leisure/cultural and shopping.



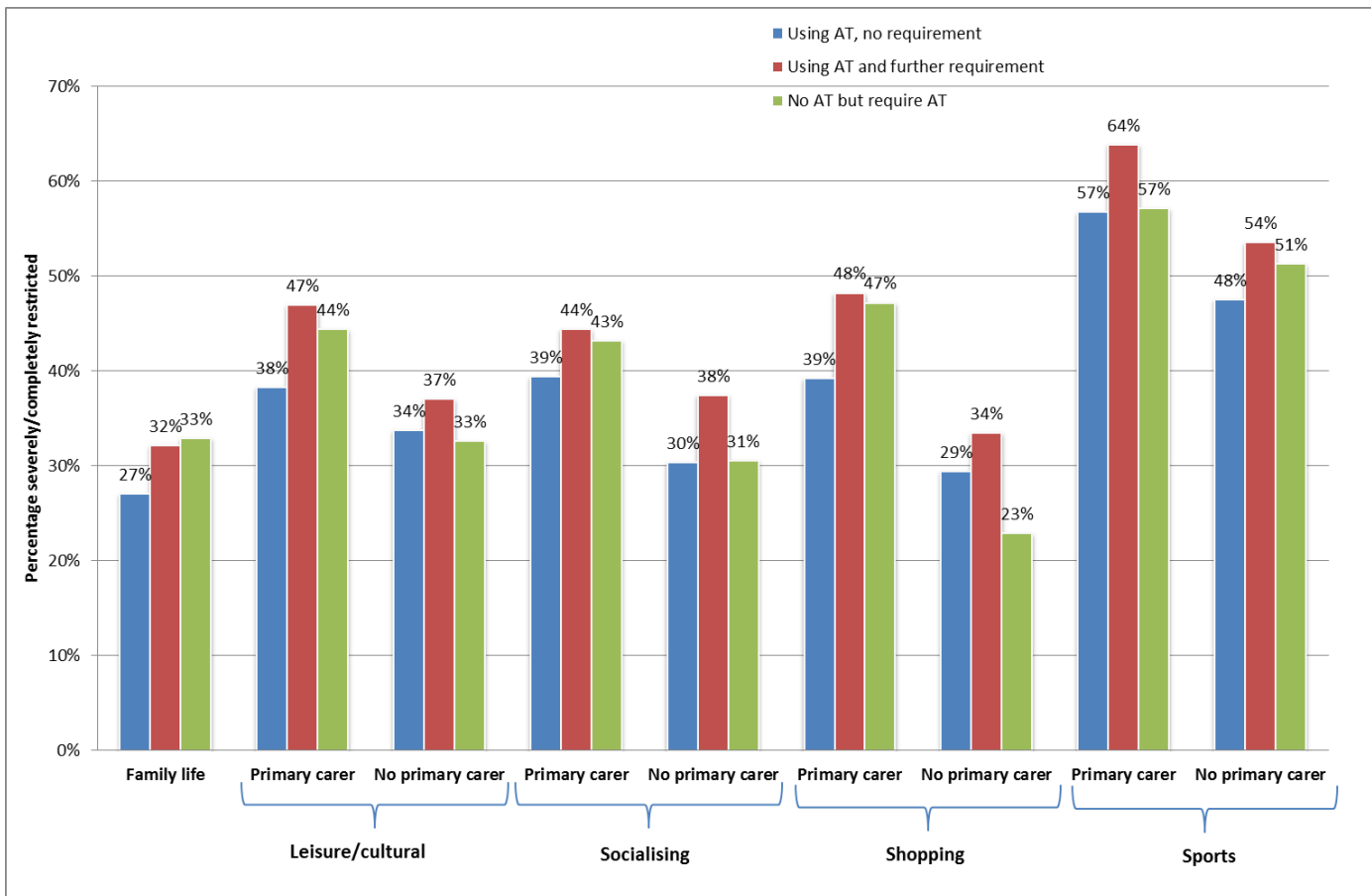


Figure 20 Participation restriction: percentage of people with multiple disabilities who were severely or completely restricted by AT status

Restrictions in participation in education and training were related to AT status and gender; males reported higher levels of restriction than females, females with no AT reported the lowest level of restriction (Figure 21).

Participation restriction in hospital services was related to AT status and HSE area of residence (Figure 21). Overall, people residing in the HSE West reported the highest level of restriction (18.2%) followed by HSE South (14.4%), HSE Dublin North-East (13.4%) and HSE Dublin Mid-Leinster (9.2%) this may be due to a number of factors such as availability of services or local service provision within regions.

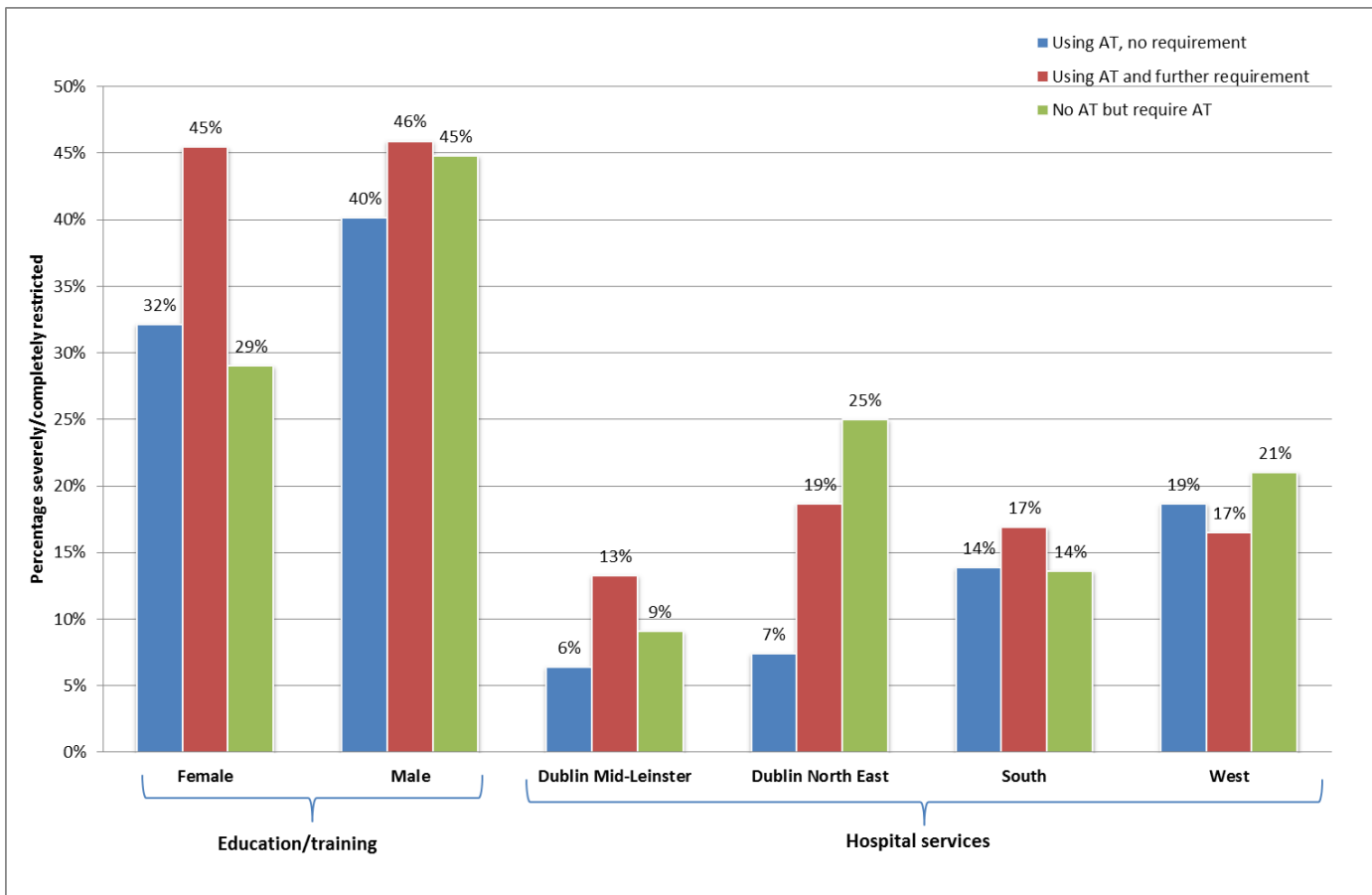


Figure 21 Participation restriction: percentage of people with multiple disabilities who were severely or completely restricted by AT status

### Barriers and challenges

Services and supports represented a barrier to participation and was the only factor solely related to AT status; as one would expect, the proportion severely or completely restricted was lowest among those with no AT requirements.

Challenges relating to AT status were experienced in relation to accessing information (about entitlements/services or nature of condition), laws and transport (Figure 22). AT status and the presence of a primary carer were related to both information and laws; people with a primary carer were less likely to experience barriers than those without a primary carer. People with no AT requirements experienced the lowest levels of restriction in these areas while those using AT with additional requirements experienced the highest participation restriction.

Transport represented a barrier to participation and was related to AT status and HSE area of residence. Overall, people residing in the HSE Dublin North-East reported the highest level of restriction (46.1%) followed by HSE West (43.3%), HSE Dublin Mid-Leinster (41.4%) and HSE South (16.6%). This may be due to a number of factors such as availability of transport services within regions.

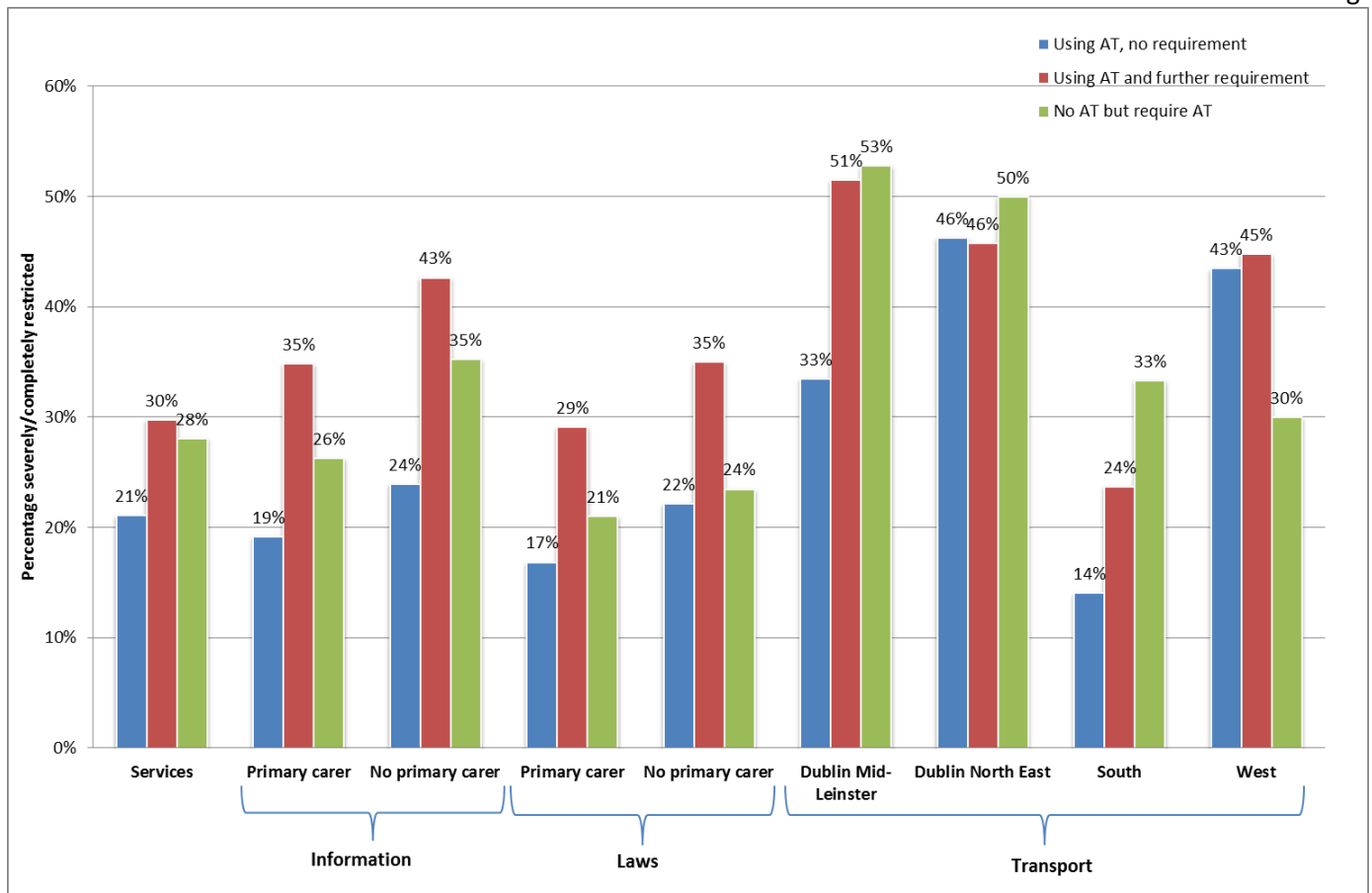


Figure 22 Barriers and challenges: percentage of people with multiple disabilities who were severely or completely restricted by AT status

### Difficulties with daily activities

AT status was not related to difficulties carrying out daily activities for people with multiple disabilities. Difficulties participating in community activities, day-to-day activities, taking care of household responsibilities, dealing with strangers, learning new tasks, standing, walking and overall interference with life were significant and differed in the presence of a primary carer. People with a primary carer reported more difficulty than those with no primary carer in each of these areas (community activities 34% versus 45%, day-to-day activities 31% versus 36%, taking care of household responsibilities 31% versus 46%, dealing with strangers 14% versus 17%, learning new tasks 19% versus 24%, standing 51% versus 60%, walking 48% versus 60% and overall interference with life 48% versus 59%).

Difficulties with concentrating were significant and experiences differed by gender; males reported more difficulty than females (19% versus 16%). Difficulties dressing and washing were also significant, however there was an interaction between gender and the presence of a primary carer. Males reported more difficulty than females and those with a primary carer reported more difficulty than those with no primary carer (difficulty dressing: 21% of females with a primary carer, 13% of females without a primary carer, 20% of males with a primary carer, 24% of males without a primary carer. Difficulty washing: 25% of females with a primary carer, 15% of females without a primary carer, 28% of males with a primary carer, 20% of males without a primary carer).

## Conclusion

This bulletin illustrates that people with a physical and/or sensory disability in Ireland encounter limitations and restrictions in areas of life activities, social-environmental participation and daily activities which are related to their AT status. The analysis presented in this bulletin was undertaken to inform policy making and service planning in relation to assistive technology and it shows the importance of AT in the lives of people with disability. Six disability categories are recorded on the NPSDD, however it was not possible to undertake an analysis of those with a speech and language disorder due to small numbers within this group. Overall, the analysis highlights that there is an interaction between someone's AT status and his or her barriers, participation restrictions and everyday living. Across each disability group there is a substantial number of people who still require additional AT and a further group who have received no AT yet at all. This reported unmet need warrants further investigation to determine why this is so.

The key findings are:

- AT used and required by people with a physical and/or sensory disability is diverse, ranging from items such as magnifying lenses and standing frames to powered wheelchairs and computer-based communication aids. AT requirements are specific to an individual's condition and level of functioning.
- In almost all cases people with all the AT they need experience better-quality daily life activities and social participation. The corollary is also true: people who do not have the AT that they need experienced the most difficulty.
- Although the types of AT used and required differ across the five disability types, many of the barriers and areas of restriction were similar.
- Access to information (e.g. about entitlements, services, or nature of the condition) was a major barrier to participation and was significant for all five disability types.
- Laws, official regulations and entitlements represented a barrier to participation for four of the five disability groups.
- Participation in employment and leisure/cultural activities was restricted for three of the five disability types.
- AT status contributed significantly to daily activity limitations for people with a visual or hearing impairment.
- In some analyses the impact of AT on participation was influenced by additional factors including a person's gender, whether or not he or she had a primary carer and geographical location. In some cases (disability of the musculoskeletal system, cerebral palsy, multiple disability) the presence of a primary carer did not result in improved participation, possibly due to lower levels of functioning among people with a primary carer. Improved participation in the presence of a primary carer among the hearing loss/deafness group may be due to the primary carer acting as an advocate.
- People who did not use AT but required it in the future differed greatly in their perceptions of participation restrictions even within a disability group. This variation may well be indicative of the wide range of conditions and levels of functioning within this group.

There has been increasing recognition of the importance and benefits of social inclusion and the full participation of people with a disability. Removing barriers to full participation will require the continuing development and provision of assistive technology. This bulletin provides a basis for understanding how this provision can impact upon life experiences of people with disability.

## Appendix

Table A1: Participation restriction: impact of AT status on participation restriction for each disability type

<b>Participation restriction</b>	<b>Musculoskeletal system</b>	<b>Cerebral palsy</b>	<b>Hearing loss/deafness</b>	<b>Visual</b>	<b>Multiple disabilities</b>
<b>Community life</b>	AT (P=0.003)				
<b>Community health services</b>					
<b>Education and training</b>	AT (P=0.027)				
AT*sex	AT (P=0.027), Sex (P=0.045), AT*Sex (P=0.005)				
<b>Employment</b>					
AT*primary carer	AT (P=0.012), PC (P<0.001), AT*PC (P=0.571)			AT (P=0.037), PC (P=0.006), AT*PC (P=0.004)	
AT*sex		AT (P=0.025), Sex (P=0.019), AT*Sex (P=0.852)			
<b>Family life</b>	AT P=0.012				
<b>Hospital services</b>					
AT*HSE area	AT (P=0.029), HSE (P=0.002), AT*HSE (P<0.001)				
<b>Leisure/cultural</b>	AT (P=0.001)				
AT*primary carer	AT (P=0.004), PC (P<0.001), AT*PC (P<0.001)				AT (P=0.034), PC (P<0.001), AT*PC (P<0.001)
<b>Living with dignity</b>					
AT*primary carer	AT (P=0.024), PC (P<0.004), AT*PC (P<0.001)				
<b>Mental health services</b>					
<b>Shopping</b>	AT (P=0.039)				
AT*primary carer	AT (P=0.036), PC (P<0.001), AT*PC (P<0.001)				
<b>Socialising</b>					
AT*primary carer	AT (P=0.035), PC (P<0.001), AT*PC (P<0.001)				
<b>Sports</b>	AT (P=0.048)				
AT*primary carer	AT (P=0.034), PC (P=0.002), AT*PC (P<0.001)				

\*denotes interaction between variables.

PC= primary carer.

HSE = HSE region of residence

Table A2: Barriers and challenges: impact of AT status on barriers and challenges for each disability type

**Barriers and challenges**

	Musculoskeletal system	Cerebral palsy	Hearing loss/deafness	Visual	Multiple disabilities
<b>Climate/weather</b>					
AT*sex	AT (P=0.005) Sex (P<0.000), AT*Sex (P=0.263)			AT (P=0.022), Sex (P=0.011), AT*Sex (P=0.795)	
<b>Income</b>					
AT*HSE area	AT (P<0.001)			AT (P=0.021), HSE (P<0.001), AT*HSE (P<=0.001)	
<b>Information</b>					
AT*primary carer		AT P=0.008		AT (P=< 0.001)	
AT*HSE area	AT (P<0.001) HSE (P=0.006), AT*HSE (P=0.549)		AT (P<0.001), PC (P=0.036), AT*PC (P=0.210)		AT (P<0.001), PC (P=0.001), AT*PC (P=0.721)
<b>Laws</b>	AT (P<0.001)		AT (P<0.001)	AT (P=0.001)	AT (P<0.001), PC (P=0.002), AT*PC (P=0.490)
<b>People's attitudes</b>					
AT*primary carer			AT (P=0.049), PC (P=0.019), AT*PC (P=0.348)	AT (P=0.001)	
AT*sex	AT (P=0.008) Sex(P=0.026), AT*Sex (P=0.375)				
<b>Physical environment</b>					
<b>Services and supports</b>					
AT*sex	AT (P<0.001) Sex (P=0.045), AT*Sex (P=0.997)			AT (P=0.008)	AT (P<0.001)
<b>Transport</b>					
AT*HSE area					AT (P<0.001), HSE (P=0.003), AT*HSE (P<0.001)
AT*primary carer		AT (P<0.029), PC (P=0.014), AT*PC (P=0.003)			

\*denotes interaction between variables

PC= primary carer

HSE = HSE region of residence

Table A3: Daily activities: impact of AT status on daily activities for each disability type

Daily activities	Musculoskeletal system	Cerebral palsy	Hearing loss/deafness	Visual	Multiple disabilities
Concentrating				AT P=0.023	
Community activities					
Day to day activities					
Dressing					
Emotional					
Friendship					
Household responsibilities					
Learning			AT (P=0.014)	AT (P=0.004)	
Standing					
Strangers			AT (P=0.018)		
Walking					
Washing					
Overall interference with life					

## References

ISO (2011) Assistive products for persons with disability - Classification and terminology (ISO 9999:2011). Accessed October 2012 at [www.iso.org/iso/iso\\_catalogue/catalogue\\_tc/catalogue\\_detail.htm?csnumber=50982](http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=50982).

United Nations (2006) UN Convention on the Rights of Persons with Disabilities (UNCPRD). Accessed October 2012 at [www.un.org/disabilities/convention/conventionfull.shtml](http://www.un.org/disabilities/convention/conventionfull.shtml)

World Health Organization (2001) International Classification of Functioning, Disability and Health. Geneva: World Health Organization.

World Health Organization (2010) Measuring Health and Disability: Manual for WHO Disability Assessment Schedule WHODAS 2.0. Geneva: World Health Organization

WRC (2012) Research on the provision of Assistive Technology in Ireland and other countries to support independent living across the life cycle. Dublin: Work Research Centre

#### CONTACT DETAILS

Health Research Board  
An Bord Taighde Sláinte  
Knockmaun House  
Lower Mount Street  
Dublin 2, Ireland

t. +353 1 2345 000

f. +353 1 6611 856

e. [disability@hrb.ie](mailto:disability@hrb.ie)

w. [www.hrb.ie](http://www.hrb.ie)

ISSN: 2009-1303