Center for Assistive Technology & Environmental Access

RERC Research:
Needs and Barriers to Universal Design as a Workplace Accommodation

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Universal Design

The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.

- Equitable Use
- Flexibility in Use
- Simple and Intuitive Use
- Perceptible Information
- Tolerance for Error
- Low Physical Effort
- Size and Space for Approach and Use

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Background

- Few published studies have described types of accommodations or examined their effectiveness.
- The degree to which a common set of accommodations is used to address similar problems across individuals is dependent on the expertise and experience of individuals in the field.
- As a result, field has been driven by practice-based evidence, rather than the other way around.
- Leads to an unnecessary amount of “reinventing the wheel” or one-of-a-kind accommodations that may not meet all of users’ needs.

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User Needs Studies

1. Describe types of accommodations made and for whom.
2. Understand use of and effectiveness of accommodations.

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Study 1. National Survey of Employees with Disabilities

- Demographics - age, gender, income, education;
- Functional limitations – impact on employment;
- Types of Accommodations received or not received by functional limitation – impact on employment.

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Sample (N = 510)

	Age	18-54	55-64	65+
Motor Limitations				
Maintaining Body Position - Sitting		45%	35%	45%
Maintaining Body Position - Standing		37%	38%	45%
Changing Position		39%	47%	33%
Moving Around (the Environment)		39%	37%	29%
Manipulating Objects		28%	28%	16%
Coordinating Movements		26%	20%	6%
Mental Limitations				
Perceiving Space and Time		*20%	15%	8%
Attending to Task		22%	19%	18%
Remembering		19%	14%	12%
Processing Information		9%	10%	6%
Sensory Limitations				
Visual Impairment		35%	46%	**57%
Hearing Impairment		7%	11%	14%

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Mobility Accommodations: Basic Access

Groups	Accessible Transportation	Accessible Parking	Modification to Restroom	Flexible Schedule	Ramps
18 - 54	15%	10%	11%	8%	9%
55 - 64	13%	10%	9%	13%	6%
65+	11%	14%	7%	2%	11%

Other identified accommodations: elevator, automatic door, emergency call button, handrails, stair lift

Principles: Equitable Use, Low Physical Effort, Size and Space for Approach and Use

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Positioning Accommodations: Workstations

Groups	Modify Workstation	Ergonomic Chairs	Steps or Lifts	None Provided
18 - 54	24%	20%	13%	43%
55 - 64	25%	25%	5%	45%
65+	14%	29%	21%	36%

Principles: Flexibility in Use, Low Physical Effort, Size and Space for Approach and Use

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Vision Accommodations: Visual Technologies

Groups	Accessible Documents (OCR)	Reading Guides / Aids	Brialle Display	None Provided
18 - 54	10%	14%	7%	12%
55 - 64	7%	7%	4%	17%
65+	0%	0%	0%	50%

Other Accommodations: electronic media, magnifier, enlarged print, Braille, CCTV, anti-glare devices, new display

Principles: Perceptible Information

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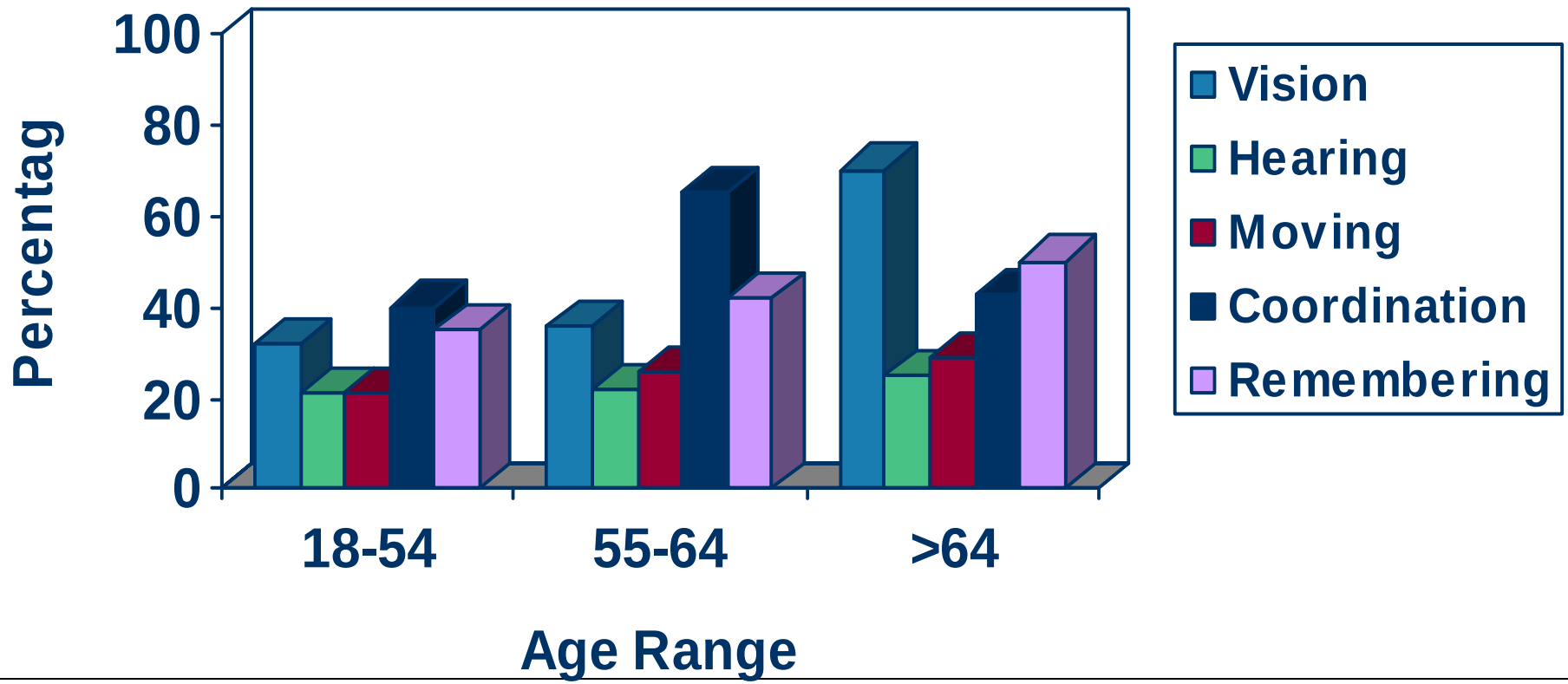
No Accommodations



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Implications for Universal Design

- Mobility (Moving, Positioning, Coordinating)
  - Basic access to common areas and workstations
  - Equitable Use, Low Effort, Size and Space
- Dexterity (Manipulating Objects)
  - Adapted workstations and computer hardware
  - Flexibility in Use, Tolerance for Error, Low Effort
- Sensory (Visual and Auditory)
  - Adapted computer hardware
  - Perceptible Information, Tolerance for Error
- Cognition (Perception, Attention, Memory)
  - Memory aids
  - Simple/Intuitive, Tol. for Error

Study 2. Follow-up Telephone Survey with GA VR Clients (N = 54)

- Satisfaction with Accommodations
- Longevity of Accommodation Use
- Utility of Accommodations in new jobs

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Sample

- Age: mean = 38.48 years (range 19 - 57 years)
- Gender: 60.4% female, 39.6% male
- Race: 74.4% white, 25.6% black
- Education level
  - Some high school or graduated: 45.2%
  - Some college or graduated with Bachelors: 45.2%
  - Education beyond 4 year college: 9.5%
- Most frequently reported primary conditions
  - Spinal cord injury: 21.2%
  - Visual impairment: 21.2%
  - Traumatic brain injury: 13.5%
  - Cerebral Palsy: 7.7%

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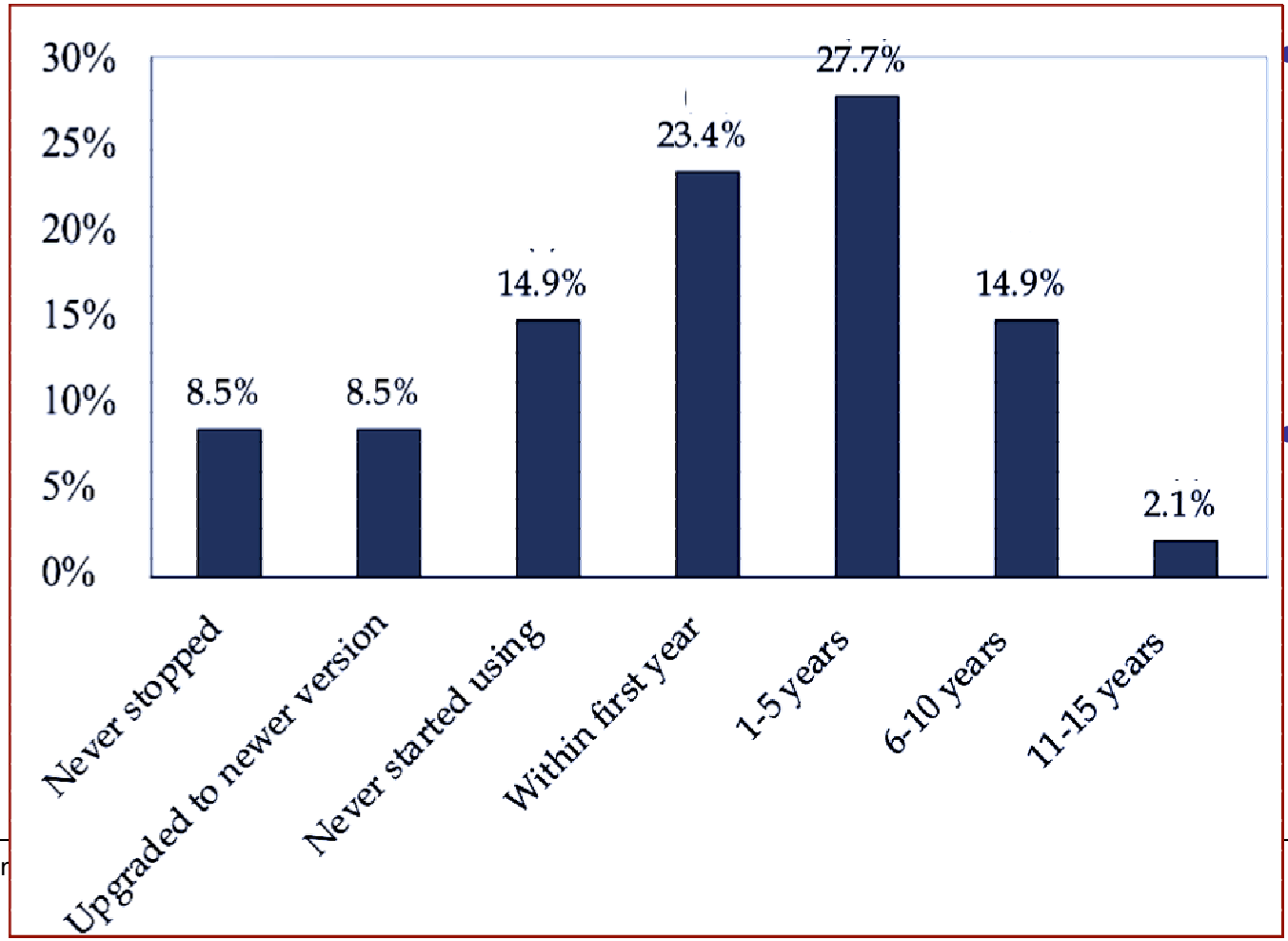
Longevity of Use



- 38% never used or discontin-ued use within 1 yr
- 66% discontin-ued use within 5 yrs

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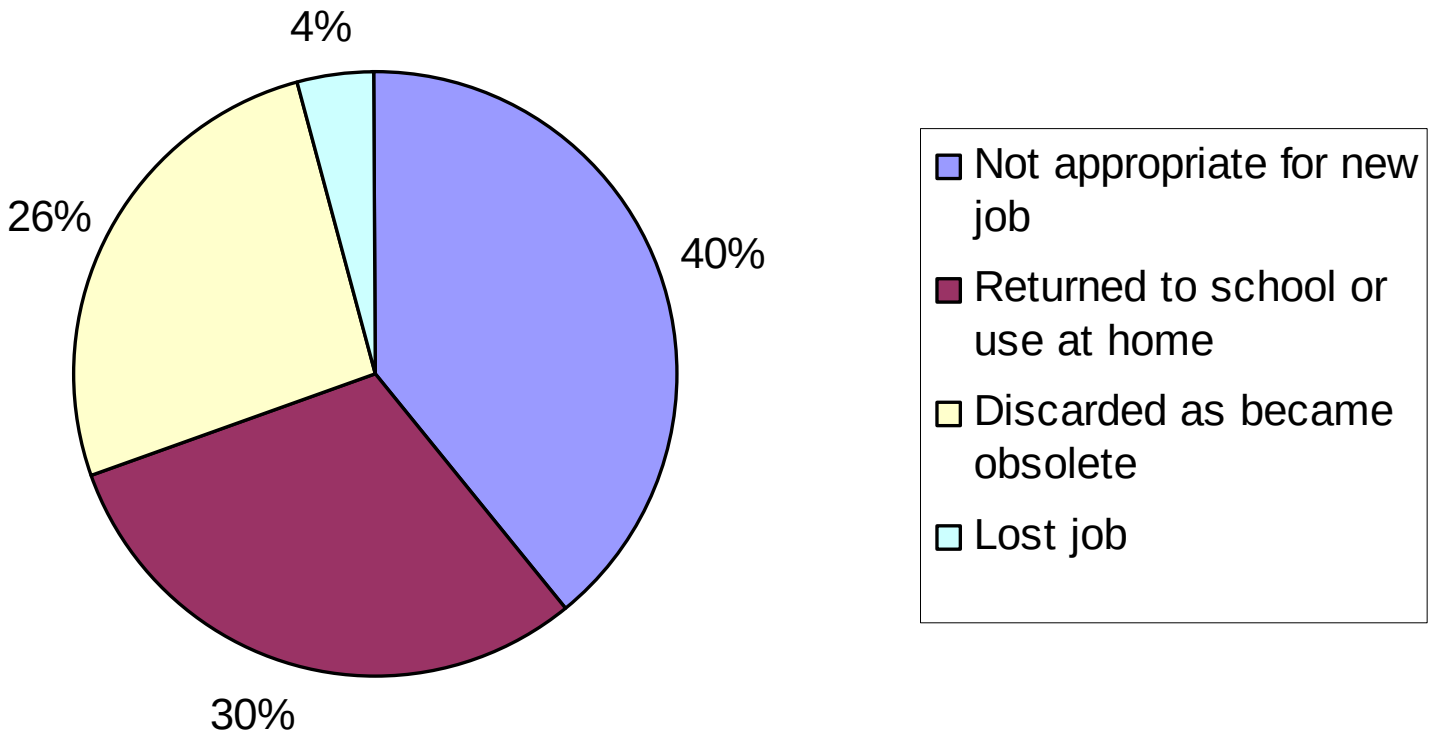
Utility of Accommodations Across Jobs

44% of accommodations not taken to subsequent jobs



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Conclusions

- Despite 80% being satisfied with accommodations, often did not work well
- Over half of these people moved on to subsequent jobs, but took only part of their accommodations with them.
- Most common reasons for disuse was obsolete technology, failure or incompatibility of accommodations, lack of training, and left job

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Key Practice Issues: Benefits of UD as an Accommodation

- Can reduce need/$ for individualized accommodations
- Can reduce amount of time to start or return to work (i.e., minimal individualization)
- Less need to go with individual across jobs
- Can facilitate group work & social inclusion (linked to positive impacts on work satisfaction and productivity)

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- Has benefits to multiple workers w/ and w/o disabilities

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Key Barriers to UD as an Accommodation

- Accommodations based on an individual employee performing essential functions of a job as determined by employer (i.e., inclusion is not an essential job task)
- Benefit to multiple employees
  - May not qualify as an accommodation
  - Can > initial cost, even though < life cycle cost

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Key Policy Questions

- What are the paradigm and metrics of positive employment outcomes?
  - Performance of work tasks (i.e., activity) (ADA notion that inclusion follows function)
  - Performance of Activity and Participation in the Workplace (ICF* constructs that inclusion and function are equal and independent)

* *International Classification of Functioning, Disability and Health, World Health Organization, 2001.*

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Thank you

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