Evidence Based Standards

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Introduction

- Knowledge translation – bringing the results of research to application in development activities, e.g. design, management, policy
- Evidence based practice gaining importance in professional fields
- Has received little attention in the field of universal design
- EBP could improve adoption of universal design

Objectives

- Use a case study to demonstrate the value of knowledge translation activities
- Identify lessons that can be learned from the case study

Context of the Case Study

- Revision of national consensus standard on accessible design (ICC/ANSI A117.1)
- Focus on the clear floor space required for wheeled mobility devices (WMD) – a key “building block” of the standard
- Based on research from the 1970’s – probably out of date
  - Changes in wheelchair technology
  - Improved medical technology and rehabilitation
  - Increasing size of the U.S. population
  - More diverse WMD population

Research Study

- “Anthropometry of Wheeled Mobility Project”
- Funded by two federal agencies – NIDRR and the U.S. Access Board from 1999-2010
- Large sample (N=500)
- Sophisticated research methods
  - 3D data collection
  - Portable collection methods
  - Tested thoroughly for accuracy and reliability
  - Methods endorsed by other experts and participants
  - Interactive data base to “mine” the findings
- Published in peer review journals and presented at conferences

Methods

Structural measurements

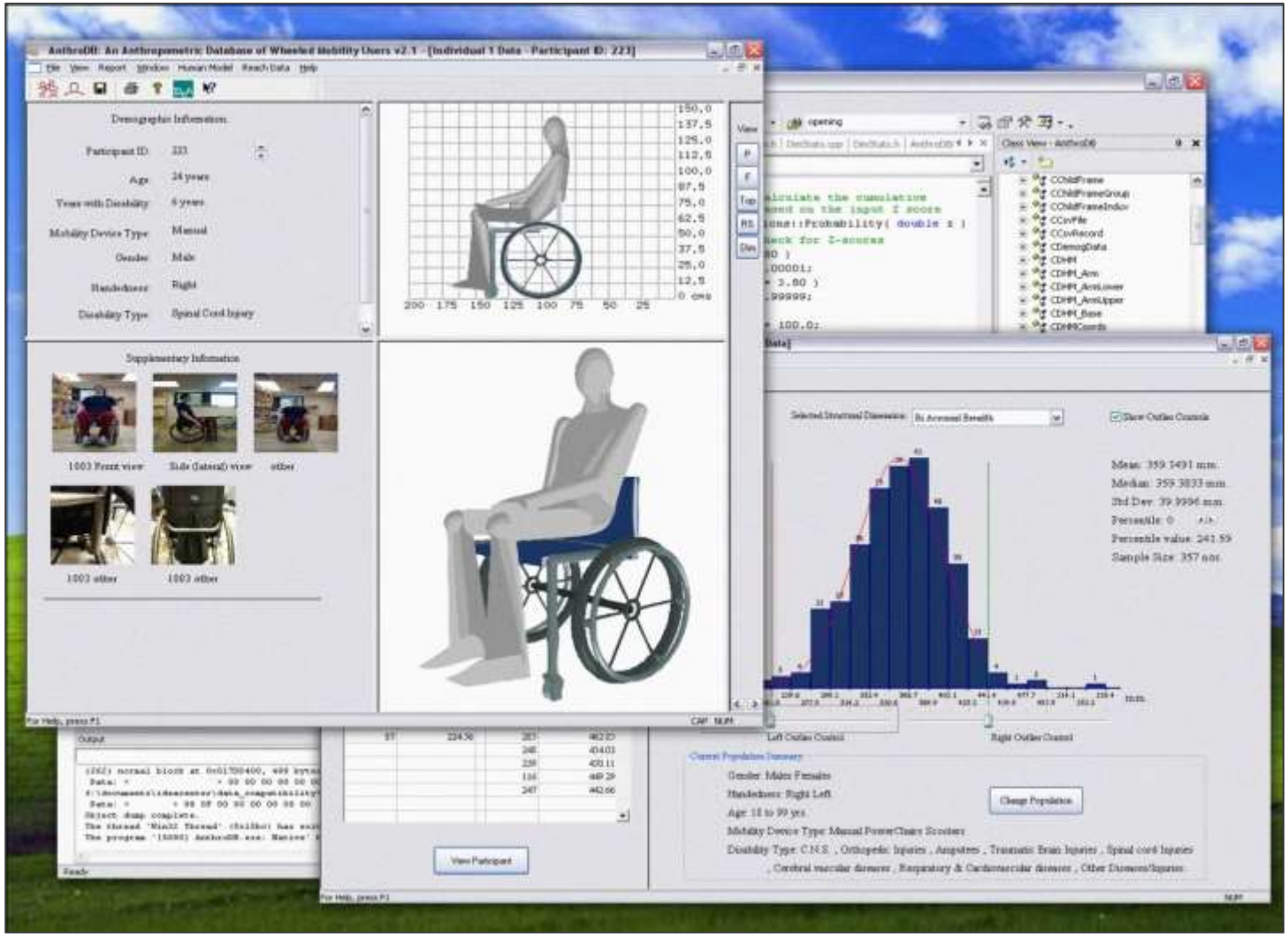
Reach measurements

Methods

L-turn maneuver

180 degree maneuver

Interactive Database



Initial Interaction with the Committee

- Sent report to all members
- Provided links to our website on the project
- Invited to lecture on the findings
- Compared results to international standards
- Problems with acceptance
  - Didn't understand research, e.g. sampling, statistics, reliability
  - Few read the report or chose to ignore it
  - Could not translate metric dimensions into Imperial units
  - Complained we were not being "inclusive" by talking in scientific terms

Revised Strategy

- Membership on the committee
- Forged alliances
- Submitted formal proposals according to set procedures
- “Task forces” for “off line” discussion and recommendations
- Q&A in small groups
  - In depth analyses for each proposal
  - Graphic presentation in form similar to the standards
  - Imperial as well as metric dimensions
  - Presented findings as an “accommodation model” – percent included/excluded by any criteria
- Gained acceptance and support for our proposals
- Eventually accepted the CFS proposals with modifications

Graphic Presentation of Findings

Clear Floor Space

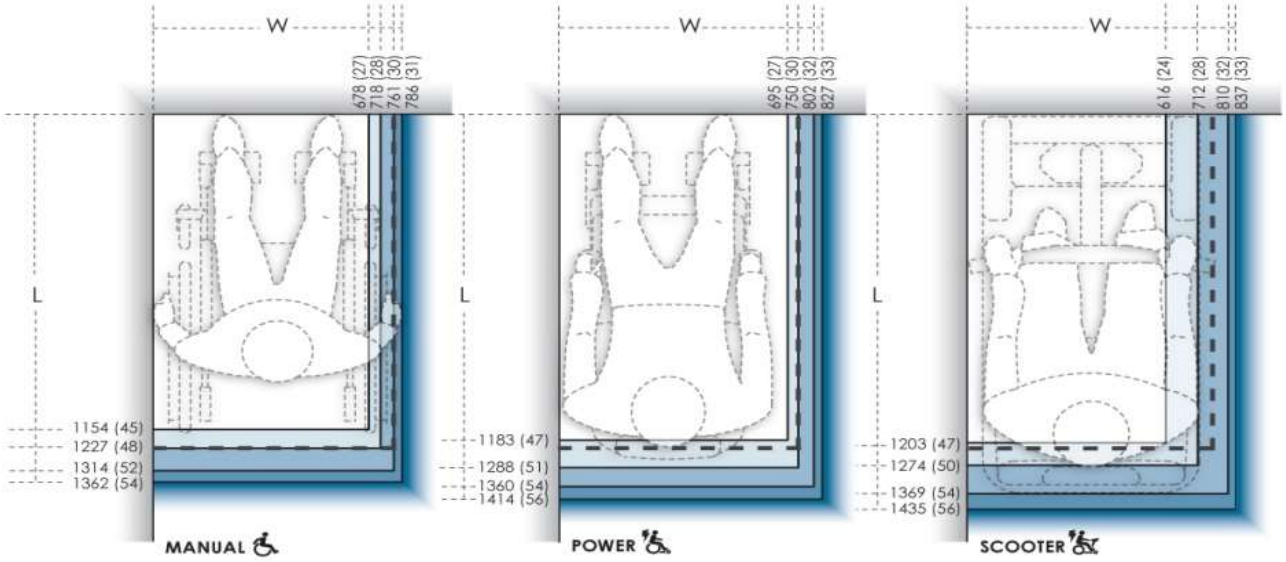
Design Guidelines for People Using Wheeled Mobility Devices

MINIMUM CLEAR FLOOR SPACE REQUIRED

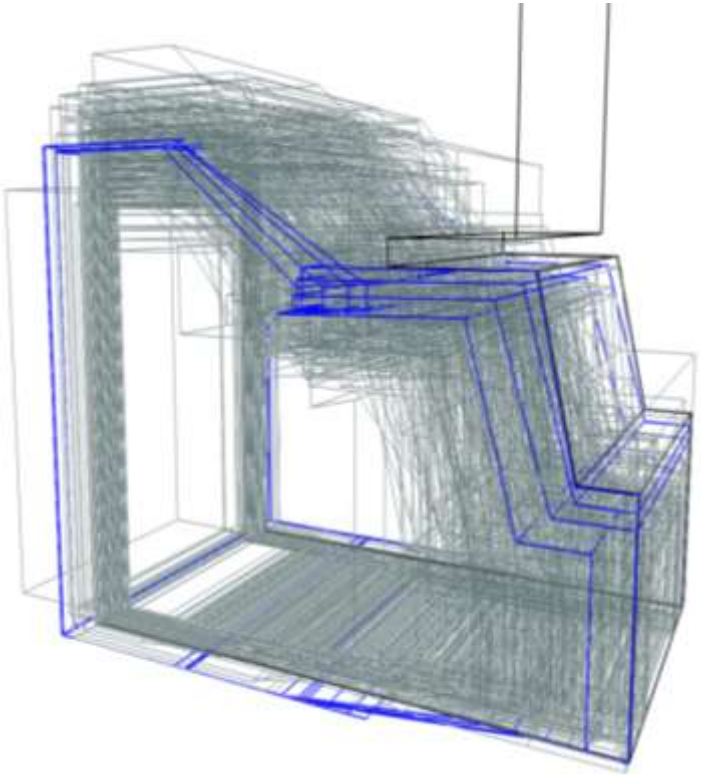
MANUAL, POWER, & SCOOTER

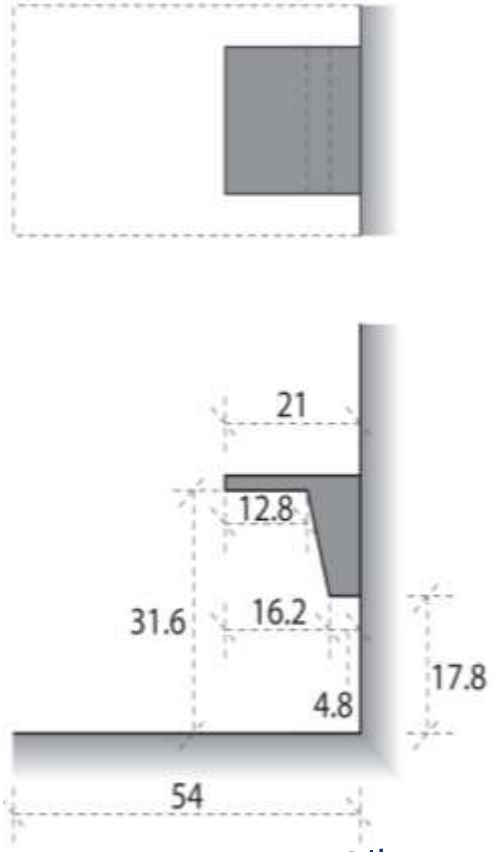
W = floor space width, units: mm (in.), L = floor space length, units: mm (in.)

percent accommodated		MANUAL	POWER	SCOOTER
		276 participants	189 participants	30 participants
< 50%	50%	W: 678 (27) | L: 1154 (45)	W: 695 (27) | L: 1183 (47)	W: 616 (24) | L: 1203 (47)
≥ 50% & < 75%	75%	W: 718 (28) | L: 1227 (48)	W: 750 (30) | L: 1288 (51)	W: 712 (28) | L: 1274 (50)
≥ 75% & < 90%	90%	W: 761 (30) | L: 1314 (52)	W: 802 (32) | L: 1360 (54)	W: 810 (32) | L: 1369 (54)
≥ 90% & < 95%	95%	W: 786 (31) | L: 1362 (54)	W: 827 (33) | L: 1414 (56)	W: 837 (33) | L: 1435 (56)
≥ 95%			= ADA-ABA requirement of 1220 (48) x 760 (30)	



In Depth Analysis





Maximum bounding envelopes for power wheelchair users at the 50th, 75th, 90th, and 95th percentile (left) and dimensions in inches for the 95th percentile envelope (right)

Lessons Learned

- Present research results to decision makers in a form that is familiar to them, e.g. 2D illustrations for US Standards, formal proposals
- Use graphic presentations that illustrate the impact of alternative decisions, e.g. accommodation models
- Engage the stakeholder community – “feel their pain” and become part of the community
- Be prepared to address cost implications of proposals

Conclusions

- By learning the perspectives of the stakeholders we will be more effective in the future
- We identified additional research and development needs by being directly involved in the standards development process
- Need to demonstrate better models for standards – research on knowledge utilization
- Need to get more researchers involved, e.g. our professional association (RESNA)
- Manufacturers and developers are now approaching us because they realize we have the knowledge they need

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