

INDUSTRY PROFILE ON

Wheeled

Mobility

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Acknowledgment

The Industry Profile on Wheeled Mobility

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Abstract

Purpose: The *Industry Profile on Wheeled Mobility* is a very broad and accessible compilation of knowledge pertaining to the wheeled mobility industry and marketplace. The *Industry Profile* is relevant to the development and refinement of public policy, legislation, grants, products, clinical practice, service delivery, third-party payment, standards, product delivery, and research programs. Anticipating that industries and markets constantly evolve, the *Industry Profile* includes many recommendations across all topics.

Method: The *Industry Profile* includes primary research, secondary research and invited chapters. Primary research is based on expert interviews and consumer focus groups. Purposive sampling was used to identify and recruit all interview and focus group participants, broadening and deepening knowledge representation. Focus group participants were expert users of manual wheelchairs and power wheelchairs. Interview participants include expert manufacturers, clinicians, researchers and suppliers. All focus groups and interviews were structured, scripted and moderated in a manner that helps to ensure full coverage of issues, facilitates data analysis and encourages free and open dialogue. Secondary research includes identification, review, compilation and analysis of data obtained from public sources. Secondary sources included government publications, studies and databases, trade journals, research publications, industry and manufacturer websites and product literature. Experts on wheeled mobility were drawn from academe, industry, product suppliers and service delivery. These experts contributed chapters and perspectives in nine topic areas.

Results: The *Industry Profile* has five expert chapters on: funding and legislation, standards, accessible public transportation, wheelchair transportation safety, along with an interpretive overview. There are four stakeholder perspectives chapters on: research related to mobility and seating/positioning, the role of clinicians in service delivery, mobility product supply and parent's perspective on mobility. The *Industry Profile* includes two additional chapters on: market demographics and a comparative analysis of consumer and expert perspectives focused on the strengths and weaknesses of current products and direction of and need for technology and product development. Finally, the *Industry Profile* includes compilations of manufacturers, their contact information and products; conferences and trade shows, and national organizations.

Conclusion: This *Industry Profile* fills an important need for critical stakeholders of the wheeled mobility industry and market. However, this *Industry Profile* cannot be regarded as fully complete or fully up to date. Many important topics are not covered in depth. As a consequence, this *Industry Profile* should be regarded as a foundation for future studies of an important and evolving industry and market.

KEYWORDS

Wheeled Mobility, Wheelchairs, Scooters, Seating, Positioning, Legislation, Medicaid, Medicare Modernization Act, American's with Disabilities Act, Reimbursement, Wheelchair Transportation, Standards, International Classification of Functioning Disability and Health, Service Delivery, Rehabilitation Engineering, RESNA, Assistive Technology Professional, Occupational Therapist, Physical Therapist, NRRTS

Chapter 5

Wheelchair Transportation Safety

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5.1. Need for Wheelchair Transportation Safety

In 1990, the U.S. Congress enacted the Americans with Disabilities Act (ADA) prohibiting discrimination against people with disabilities in employment, public accommodations and telecommunication services. [1] Under the public accommodations title, public and private transportation service providers must accommodate persons who wish to travel while seated in their wheelchairs.

More recently, the 2001 New Freedom Initiative cited integration of persons with disabilities in the workforce and the community as a priority, specifically noting “transportation” as a critical factor in meeting this priority. In support of the initiative, the director of Easter Seals Project Action reinforced this need, given that one-third of the 25 million transit-dependent people with disabilities reported inadequate transportation as a significant barrier to community integration.[2] Such governmental priorities are expected to continue supporting improved access for wheelchair users who seek transportation.

In addition to those who rely on public transportation (i.e., fixed-route, paratransit, over-the-road coach and school buses), many Americans seek the convenience and customization of personally owned adapted vehicles. For individuals who live in rural communities or away from transportation networks, a personally owned vehicle may be the only option for travel outside the home.

Wheelchair-seated travelers, who are unable to transfer to a crash-tested vehicle seat in public or private transportation, may be at increased risk for injury in the case of a motor vehicle crash. Industry standards aimed at creating an equivalent wheelchair transportation safety environment have been developed over the past decade. This chapter focuses on describing the

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key elements in providing safe wheelchair transport. It also reviews the industry standards that have influenced wheelchair transportation and will continue to do so in the near future.

5.2. Key Elements in Occupant Protection

Motor vehicle accidents are the leading cause of death for Americans ages 3 through 33. [3] Research shows that using pelvic-shoulder safety belts reduces by 45% the risk of fatal injury to front-seat occupants of passenger cars (ages 5 and older); using safety belts reduces by 50% the risk of moderate-to-critical injury; and safety belts make an even more significant safety impact in light-duty trucks. [4]

Limiting the risk of death or injury in motor vehicle accidents requires a systems approach that takes into account the characteristics of the vehicle, the vehicle seat and its securement to the vehicle, occupant restraints (i.e., pelvic and shoulder belt, air bags) and occupant characteristics (i.e., size, weight, posture, position). The Federal Motor Vehicle Safety Standards (FMVSS) regulate the vehicle seat, its anchorage to the vehicle and occupant restraints for typical (non-wheelchair-seated) passengers. [5] However, no federally mandated FMVSS regulations apply to wheelchairs when they're used as seats in vehicles. In fact, the features that make a wheelchair a good mobility aid may make it a poor vehicle seat. A vehicle seat must provide a stable support surface for an occupant in case of a crash. This means that the vehicle seat must be securely anchored to the vehicle, and the seat structure must maintain its integrity. Maintaining the occupant's seated position via a stable support surface in a crash will allow properly positioned occupant restraints, like lap and shoulder belt restraints, to provide effective protection. In cases when the seat support surface fails, injury may occur through a phenomenon known as submarining. Submarining occurs when seat failure allows the pelvis to drop downward and the lap belt to ride upward over the iliac crests causing lap-belt restraint to load