

User centred design: obtaining ergonomic criteria for accessibility to and accommodation of the vehicle for people with reduced mobility

Cecilia Ruspa¹, Cristina Zoldan¹, & Maurizio Cerrone²
Centro Ricerche Fiat, Orbassano (TO)
²Fiat Auto, Torino,
Italy

Abstract

The present study focuses on quantifying the way a vehicle can be optimally designed to offer an easy entry and a comfortable accommodation to people with mobility impairments. Goal was to identify the ergonomic vehicle specifications that are relevant for a comfortable access and driving position for people with reduced mobility. These guidelines should lead to an improvement of the comfort for all users. The paper deals with the methodological approach adopted in the study, based on the User-Centred Design approach. The users were involved in every stage of the research: disabled drivers and passengers participated in interviews, Focus Groups, questionnaires, and laboratory tests. Associations of disabled people, vehicle manufacturers and adaptations suppliers were also asked to participate to allow the mediation between constraints and requirements. As a result, a ranking of the vehicle features on the basis of the relevance they have for disabled people was obtained. Furthermore, accessibility and driving position ergonomic criteria expressed as numerical ranges for each relevant vehicle dimension were identified and can be applied in the design of new vehicles.

Introduction

Forecasts show that the number of elderly people in EU is steadily increasing and in 2010 some 70 millions will be over 65 years of age (plus 15% compared to 2000). Forty-three million people with disabilities are foreseen (Eurostat data).

At present the car remains an essential means of transportation for Europeans (Eurobarometer, 2005): traveling by private vehicle, in fact, offers self competence, itinerary flexibility and independence with respect to public transport. To suit the requirements of the increasing number of people with reduced mobility (PRM), cars have to be designed according to ergonomic criteria for high accessibility and habitability. These requirements will become more and more a priority for the users. Furthermore, to meet the needs of PRM users when designing new cars, means advantages for all the users, also those without mobility impairments (*Design for All* approach). The interest that the FIAT AUTO demonstrated in this work shows that

In D. de Waard, K.A. Brookhuis, and A. Toffetti (Eds.) (2006), *Developments in Human Factors in Transportation, Design, and Evaluation* (pp. 119 - 126). Maastricht, the Netherlands: Shaker Publishing.