

Vehicle Occupant Anthropometry, Posture, and Motion Study

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Purpose: The purpose of this research study is to gather data on how drivers and passengers sit and move in passenger cars and light trucks. These data will be used to improve vehicle designs and in particular to improve systems that protect people in crashes. The data may be used to improve the human surrogates used to assess vehicle safety, such as crash test dummies.

Who: University of Michigan Transportation Research Institute (UMTRI)

Where: 2901 Baxter Rd. Ann Arbor, MI 48109 - free visitor parking

What: 1 lab appointment (~2 hrs) and possibly 1 vehicle drive appointment (~2 hrs)

What will happen in this study?**Lab Appointment:**

If you agree to participate, we will measure your body dimensions and record your body weight and your body composition. We will ask you to change into tight-fitting clothing provided by the investigators. This laboratory clothing is necessary for us to measure your body shape accurately. We will use water-soluble face paint to put dots on your body at several locations. We will use camera-based systems to record the three-dimensional shape of your whole body, including your head and face. We will also use manual instruments, like tape measures, to record your body dimensions. You will need to hold still in specified postures for up to 15 seconds during these measurements.

During most of the study, you will sit in a mockup of a vehicle interior and assume either a driver or passenger posture. We will record your body posture using a camera-based system and using a mechanical coordinate measurement device. The investigator will touch parts of your body to locate body landmarks, such as the top of your sternum, and then touch the measurement device to these locations to record their position. You will need to hold still for about a minute for each of these measurements. You will be asked to get in and out of the mockup multiple times as the investigators change the seats and other test conditions. We will take photographs of you to document your posture in each condition.

Vehicle Appointment:

If you agree to participate, we will ask you to sit in a research vehicle, adjust the seat to obtain a comfortable posture, and put on the seat belt. We will record your posture and belt fit using a coordinate measurement device. We will show you the instrumentation in the vehicle, which includes cameras designed to record your posture and motion. We will ask you to drive the vehicle over a 7-to-10-day period as you would normally with your personal vehicle. If government budget appropriations limit data collection we will instead ask you to drive the vehicle over a local road route, following instructions from a navigation system. During the drive, the cameras and other instrumentation will record your posture and motions as well as

the movements and location of the vehicle. When you return to UMTRI, we will measure your posture again with the coordinate measurement device.

Contact Information

We will email or call you to send more information or to schedule a time.

1. First Name *
2. Last Name *
3. Email *
4. Phone Number *
5. Would you like to be contacted about future studies at UMTRI Biosciences? * ☐ Yes ☐ No

Who can take part in this study?

6. Are you able to read and speak English? * ☐ Yes ☐ No
7. Do you hold a current, unrestricted U.S. driver's license? * ☐ Yes ☐ No
8. Are you able to drive for 2 hours continuously? * ☐ Yes ☐ No
9. On average, do you drive 15 minutes or more per day? ☐ Yes ☐ No
10. Are you comfortable driving on both highways and local roads? ☐ Yes ☐ No
11. Do you have any musculoskeletal ailments that impede your ability to walk or sit comfortably?
☐ Yes ☐ No ☐ Other _____
12. Do you have any musculoskeletal deformities such as scoliosis or amputations? ☐ Yes ☐ No
☐ Other _____

About you

13. Age in years (Must be 18 years or older to participate) *
14. Gender * ☐ Female ☐ Male
15. What is your race and/or ethnicity? Select all that apply
 - € American Indian or Alaska Native
 - € Asian
 - € Black or African American
 - € Hispanic or Latino
 - € Middle Eastern or North African
 - € Native Hawaiian or Pacific Islander
 - € White
16. What is your stature? *
17. What is your weight in pounds ?*

Clothing Sizes

To ensure we have the right sizes available for you when you arrive, please answer the following.

18. What size shirt do you prefer?
19. What size shorts do you prefer?

Your Availability

We typically schedule appointments that start between 7:30 AM and 4 PM. You will have 2 appointments that will last about 2 hour each.

20. Please select ALL appointment START TIMES you MIGHT be available for. You may select more than one time window for each day.

Check all that apply.

	Mondays	Tuesdays	Wednesdays	Thursdays	Fridays	Saturdays
7:30 AM	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mornings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Early Afternoon	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Latte Afternoon/Evening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anytime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
None on this day	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21. What is your preferred starting time and day?

22. Do you have any questions? Or contact us at carsafety@umich.edu

The study will begin soon and continue through the XXX of 202X-2X. Therefore, if you qualify, the next contact you receive may be a few weeks away regarding scheduling.

Thank you for answering our questions!