Switzerland - Bus-Ergonomics Matrix

Irina Guseva Canu

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Identification

SURVEY ID NUMBER
10.16909-dataset-60

TITLE
Bus-Ergonomics Matrix

SUBTITLE
A tool to access the ergonomics of the bus cabin

ABBREVIATION OR ACRONYM
BERM

TRANSLATED TITLE
Matrice de bus-ergonomie

COUNTRY

Name	Country code
Switzerland	CH

ABSTRACT
Bus drivers are key players in sustainability, especially in transport. Their continued employment is therefore important. One of the most common health problems among drivers is musculoskeletal disorders. However, little data exists on the ergonomics of their workstations, making cause-effect studies impossible. To remedy this shortcoming, we have created a Bus Ergonomics Matrix (BERM). The BERM was created in 3 stages:
1) Creation of the measurement protocol based on literature and standards, and creation of ergonomic scores with the help of experts (ergonomists). Ergonomic scores are divided according to body regions: global, visual, biomechanical, shoulder girdles, upper body, back, and lower body.
2) Measurement of 10 buses representative of the evolution of the Swiss bus fleet (November 2021 and May 2023).
3) Modeling and extension of ergonomic scores to the entire Swiss bus fleet using INLA (Integrated Nested Laplace Approximation). Predictors are technical characteristics of the buses.
The BERM is an original tool containing 110 bus models and their corresponding ergonomic scores (mean and standard deviation).

KIND OF DATA
Observation data/ratings [obs]

UNIT OF ANALYSIS
Bus model

Version

VERSION DESCRIPTION
version 2.1
The BERM contains the ergonomic scores (mean and stadard deviation) (global, visual, biomechanical, shoulder girdles, upper body, back, lower body) for 710 bus models (Brand and model).

VERSION DATE
2025-04-07

Scope

NOTES
Ergonomic constraints of the bus cabin

Coverage

GEOGRAPHIC COVERAGE
National coverage

UNIVERSE
Bus drivers

Producers and sponsors

PRIMARY INVESTIGATORS

Name	Affiliation
Irina Guseva Canu	Unisanté, Center for Primary Care and Public Health & University of Lausanne, Lausanne, Switzerland

PRODUCERS

Name	Abbreviation	Affiliation	Role
Viviane Remy	REV	Unisanté, Center for Primary Care and Public Health & University of Lausanne, Lausanne, Switzerland	Researcher, co-author
Baptiste Antoine	ANB	Unisanté, Center for Primary Care and Public Health & University of Lausanne, Lausanne, Switzerland	co-author
Thomas Charreau	TCR	Unisanté, Center for Primary Care and Public Health & University of Lausanne, Lausanne, Switzerland	Data manager

FUNDING AGENCY/SPONSOR

Name	Abbreviation	Role
Federal Office of Transport	FOT	Financing
Federal Office of Environment	FOEN	Financing

Data collection

DATES OF DATA COLLECTION

Start	End
2021/11/17	2023/05/30

DATA COLLECTION MODE
Other [oth]

SUPERVISION
Irina Guseva Canu
Baptiste Antoine (Ergonomic assessment)

DATA COLLECTION NOTES
The measurement campaigns took place in French-speaking Switzerland between November 17, 2021, and May 30, 2023. A total of ten bus models were measured.
Ergonomic scores were modeled between June 2023 and April 2025

DATA COLLECTORS

Name	Abbreviation	Affiliation

Viviane Remy	REV	Unisanté, Center for Primary Care and Public Health & University of Lausanne, Lausanne, Switzerland

Data Processing

DATA EDITING

We collected the measured data and then calculated ergonomic scores.
Then, for each ergonomic scores, we created mathematical models to extend these ergonomic scores to the entire Swiss bus fleet. We used INLA (integrated Laplace approximation) to model the data. The modeled values were then checked to ensure that they were feasible (no negative scores).
Data analysis and modeling with the free software R, version 4.2.3

Access policy

CONTACTS

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CONFIDENTIALITY

ACCESS CONDITIONS

The dataset is available on request for research purpose only.
To get access to data, the following procedure must be followed:
· Create an account (Login → Register)
· Go to the Data Catalog and click on the study of interest (https://doi.org/10.16909/dataset/60)
· Once on the study page, click on the tab Data Access
· Fill in the application form and submit
Important: Before submitting a request, please check whether the data is at all useful for your project. The codebooks with the corresponding information are filed under Documentation and do not require registration.

CITATION REQUIREMENTS

Remy, V.F.M., Antoine B., and Guseva Canu, I. Bus-Ergonomics Matrix. Center for Primary Care and Public Health (Unisanté), University of Lausanne, Switzerland. Version 1.0 of the licensed dataset (04/2025), provided by the Unisanté Research Data Repository. DOI:10.16909/DATASET/60

ACCESS AUTHORITY

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LOCATION OF DATA COLLECTION
Unisanté Data repository

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Data Dictionary

Data file	Cases	Variables
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