

## A Cross-City Survey on Personal Protective Equipment Use in Vulnerable Road Users

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### Abstract

**Vulnerable road users (VRUs)**, such as cyclists, motorcyclists, and e-scooter riders, face disproportionately high risks in road traffic due to limited physical protection. Despite the availability of personal protective equipment (PPE), adoption remains low across Europe, driven by behavioral, perceptual, and contextual barriers.

This study aims to **investigate PPE usage patterns among VRUs** and identify behavioral and contextual factors that influence their adoption, to support future road safety interventions and policy development.

A **multifaceted survey was designed and disseminated across five major European cities**, Copenhagen, Rome, Barcelona, Athens, and London, in five respective languages, targeting a wide range of VRUs. The survey examined demographics, risk perceptions, experiences with PPE, and willingness to adopt new safety technologies.

Preliminary findings suggest **significant variation in PPE use across user groups and settings**, influenced by enforcement levels, social norms, comfort, and perceived risk. Helmet use, for example, was common among motorcyclists but far less among cyclists and e-scooter riders.

Understanding the social and psychological drivers behind PPE adoption is essential for designing targeted interventions. The results of this survey will contribute to **EU-wide recommendations** to foster safer behaviors among VRUs.

**Keywords:** road safety, cross-city survey, vulnerable road users, personal protective equipment