This paper introduces an advanced mixed logit model to capture heterogeneous preferences in urban travel mode choice, with an emphasis on incorporating unobserved factors that influence commuter behavior. The model extends conventional logit frameworks by allowing for random taste variations and flexible substitution patterns among alternatives. Estimation is carried out using simulated maximum likelihood methods, applied to a comprehensive dataset collected from metropolitan travel surveys. Empirical results reveal significant variabilities in sensitivity to travel time and cost across demographic segments, providing deeper insights into modal shifts in response to policy interventions. These findings have direct implications for targeted investments in public transit and non-motorized transportation infrastructure.