Teleoperated driving is known as a transient technology toward full autonomous driving in urban areas. However, this mobility concept suffers mainly from the communication time delay, which may result in safety hazards as well as stop-and-go driving behavior in crowded inner-city areas. This paper presents a novel active safety concept to assist the human operator of the teleoperated vehicle considering the communication time delay. The proposed system reacts not only to the actual driving hazards, but also to the upcoming hazards the human operator is not aware of because of time delay. For this purpose, it predicts the future trajectories of dynamic objects in the vehicle surroundings using a stereo vision based track-before-detect approach and reacts autonomously to the predicted hazards through speed control. After each intervention, the human operator is informed about the autonomous intervention of the vehicle by a Human-Machine-Interface (HMI), having the ability to override this intervention. Results of the test drives show an overall increase of the safety by reduction of Time-To-Collision as well as an improvement of the acceptance of teleoperated driving through the reduction of the overall triggered deceleration during driving in urban areas.