Biosensors are effective tools to proactively collect user’s data and emerging trends for population activity status supervision. Unlike the questionnaire that takes time for people to write and requires people to recall what they did in a day, the objective of wearable sensor falling detection surveillance system is to obtain the real-time data of users and improve the data accuracy collected by public health institutions. The biosensor users, community health monitor, healthcare providers, and hospitals are the stakeholders of the system. The biosensor manufacturers and all the actors involving in the system must ensure the security of the data flow including data collections, data transfer, and analysis. Monitors will analyze the data and find suspicious activities regarding data anomalies indicating the risk of falling, and wearable users will be responsible to provide necessary responses if they truly tumbled. Data analysts at the backstage will visualize and compare the activity data and regional falling risk data to conclude some insights. Results and suggestions will be provided to the community public health department to support decisions like promoting regimen, healthy recipe, and exercises for the specific area. If people in cold regions demand indoor facilities for taking exercise, the public health organization could work on constructing more fitness rooms there. The falling prediction could be fallible by using the data like arms swing amplitude. The optimization of sensitivity will improve the prediction accuracy of falling recognition. The healthcare provider and physician will decide the most appropriate medication to improve the patient’s safety.