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news

Transit Security Study Comes Against Backdrop of London and Madrid Bombings

By Mark Fitzgerald

A few months before terrorists set off a series of bombs in London's public transport system—a coordinated attack on July 7 during the morning rush hours that claimed 56 lives and left 700 injured as a result of explosions at three locations in the subway system and a bus explosion in Tavistock Square—a research team made up of faculty members from the University of California at Los Angeles (UCLA) and the University of California at Berkeley released a report, “Designing and Operating Safe and Secure Transit Systems: Assessing Current Practices in the U.S. and Abroad,” summarizing the findings of a two-year study of security in mass transit systems.

The team studied terrorist attacks on rail and subway systems around the world (including the train bombings in Madrid last year, which killed 191 people and wounded 1,460), conducted in-depth interviews with mass transit officials and other key stakeholders, and visited various transit systems and sites of terrorist attacks. Team members also conducted a survey to learn how 113 of the largest mass transit operators in the United States employ policing, technology, hardware, public education, public outreach efforts, and design to make their systems secure.

“Britain proved very capable of coping with the July 7 bombing in London,” observes Anastasia Loukaitou-Sideris, Ph.D., a professor of urban planning at UCLA's

School of Public Affairs and the leader of the research team. “But because of the large volume of passengers who use mass transit, it’s virtually impossible for transit operators to ensure complete security to prevent an attack. There are no security lines like the ones you have in airports, so it’s impossible to check everyone.”

According to Martin Wachs, Ph.D., M.ASCE, a professor of civil and environmental engineering and city and regional planning at the University of California at Berkeley and a member of the team, creating new technologies and designing “smarter” facilities can go only so far in reducing the risk of terrorist attacks and mitigating their effects. “What happened in Madrid and in London was tragic and exposed very serious vulnerabilities,” acknowledges Wachs. “But I honestly think both incidents were not all that different in kind from many other bombings that have occurred in the past. In Madrid and London, the strategy that was used was so similar to what had been used in other places. However, I think that one really important conclusion overall is that via design and engineering we can build in a concern for appropriate responses if an incident occurs, and we can lessen the negative consequences if an incident occurs.”

Wachs went on to point out that the forensic evidence obtained at the sites of various terrorist incidents, although useful, was not as important as obtaining intelligence that could help to thwart an attack. “Every time there’s a blast, people look at the effect on the materials; they look at the strength of different components of rail cars and so forth. That’s all very important, but the most effective strategy is to try and avoid these incidents entirely by infiltration and information in advance. So while there are lots of lessons about materials and isolating potential receptacles and so forth that are engineering and architectural in nature and can make an important contribution to security, I just think that these systems are inherently so large and so complex and so in need of access by large numbers of people that a determined individual or group can probably wreak havoc no matter what precautions we take.”

Funded with a grant from UCLA and San José State University’s Mineta Transportation Institute, the report is expected to be a valuable resource for transit agency managers and operators, as well as for architects, engineers, and planners, as they develop, refine, and implement measures to make mass transit systems more secure.