

DWELL Analysis

(updated 24th August 2006)

Keywords: DWELL time, Pedestrian Evacuation, simulations, simulating crowds, simulating behaviour, simulating people

"Economic and space restraints must receive due consideration. It is unrealistic to insist upon the highest service standards if the available physical space or financial resources are not sufficient to accommodate the design. A much better approach is to recognize the difficulties enforced by such restraints, and to seek alternative design solutions or operating procedures that will alleviate them. The one overriding consideration that precludes acceptance of economic or space restraints is pedestrian safety." Fruin. Pedestrian Planning and design.

Our agent analysis tools allow the user to zoom (dynamically) into the models. Clicking on the screen changes the display from agents to density, speed, space utilisation and position maps.

The agent models show density, speeds, space utilisation and agent location. The information is stored as a file so the data can be displayed in 3D CAD tools (such as 3D Studio Max). The displays below are selected by the user - user can alter numbers on/off and standing along with behavioural choices.

Position Display



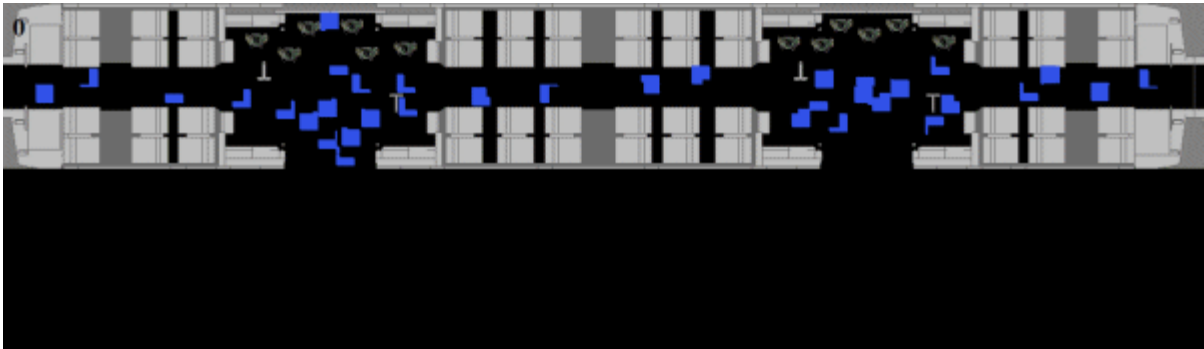
Speed Display



Density Display



Spatial Utilisation



Below - levels of service keyed to the agent locations - users can observe the dynamics of crowd density during the simulation

Fruin	Space	Density	Flow Rate
Level of Service	(m ² /ped)	(ped/m ²)	(ped/min/m)
LoS A	≥ 3.24	≤ 0.27	≤ 23
LoS B	2.32 to 3.24	0.43 to 0.31	23 to 33
LoS C	1.39 to 2.32	0.72 to 0.43	33 to 49
LoS D	0.93 to 1.39	1.08 to 0.72	49 to 66
LoS E	0.46 to 0.93	2.17 to 1.08	66 to 82
LoS F	≤ 0.46	> 2.17	variable

This modelling tool is provided with validation from field data.

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