Agent-Based Model of Vertical Tsunami
Evacuation Location, Seaside, Oregon

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Introduction:
Vertical-Evacuation-Structure (VES)

• Vertically vs. Horizontally

• Shelters Within the Inundation Area

• Typical VES: Parking garages, commercial buildings, school facilities etc.
Introduction: VES Capacity

Over-1000 Level

800 Level

Under-100 Level

Source form FEMA, 2009
**Introduction:** Study Area

**Seaside City Map**

- The city of Seaside, OR, has been identified as having a high exposure to the CSZ Tsunami (Wood, 2007).

- The city with 83% of its population, 89% of its employees and almost 100% of its critical facilities in the tsunami inundation zone (OSSPAC, 2013).
Introduction: Study Area
Methodology: Agent-based Model Interface
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Methodology: Agent-based Model Interface
**Result**: Total Mortality Rate
**Result**: Mortality rate vs. Walking speed

<table>
<thead>
<tr>
<th>VES_100%</th>
<th>3ft/s</th>
<th>4ft/s</th>
<th>5ft/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality Rate Range:</td>
<td>63.8% - 10.5%</td>
<td>30.8% - 1.6%</td>
<td>6.2% - 0.2%</td>
</tr>
</tbody>
</table>
**Result:** Mortality rate vs. Multiple-Evacuation Strategies
Result: Capacity of VES

Average VES Capacities

- 3ft/s
- 4ft/s
- 5ft/s

Graph showing the average VES capacities for different flow rates.
Conclusion

- Mortality Rate Decrease:
  1. Walking Speed Increase

- VES Capacity: 60% of Population

- Optimal Area

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Q & A
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Bibliography


