Large Events are categorized as those with 10,000 or more individuals gathering for a known affair. These events take considerable amounts of security personnel and resources to keep patrons safe. Large Events create higher than average amounts of population density, making these areas adapt for attacks on pedestrians and gatherers.

The goal of this research to determine whether causality rates in vehicle ramming incidents can be lowered by expanding the event perimeter.

**Pros**
- Lesser Traffic Flow
- Reduction in Population Density
- Lesser Entry Points

**Cons**
- Inconvenience to Patrons
- Outer roads more heavily trafficked
- More Law Enforcement Officers and Resources required

**Results:**
- Roads population density is unequally distributed
- Key indicators for pedestrian flow are parking spaces and convenient travel to the venue.
- Creating partial or complete road barricades assist in equally dispersing pedestrians and reducing vehicles in high population areas.

**Methodology:**
- Map local road ways, attractions, parking spaces, and other areas of interest
- Assess population density of area and find key roads for blocking traffic
- Compare traffic flow from attractions to not impede the event
- Create recommendations

**Historical Incidents in 2017:**
- Jerusalem truck attack (4 casualties)
- Westminster attack (5+ casualties)
- Stockholm attack (5 casualties)
- London Bridge attack (8 casualties)
- Paris mosque attack (failed attack)
- Levallois-Perret attack (failed attack)

**Recommendations:**
- City planning may install long term equipment such as permanent bollards or other traffic control measures.
- Interim and low-cost options include using temporary bollards, barricades, garbage trucks, and other large obstacles.
- Considerations for parking and patron satisfaction should be included so that patrons yield to instructed barricades.

**Notes:**
1. The above model does not represent any specific venue or area of concern and is used to demonstrate the graphing of population density.
2. Historical incidents have been observed through media (citations available) and have been selected for their availability of information.