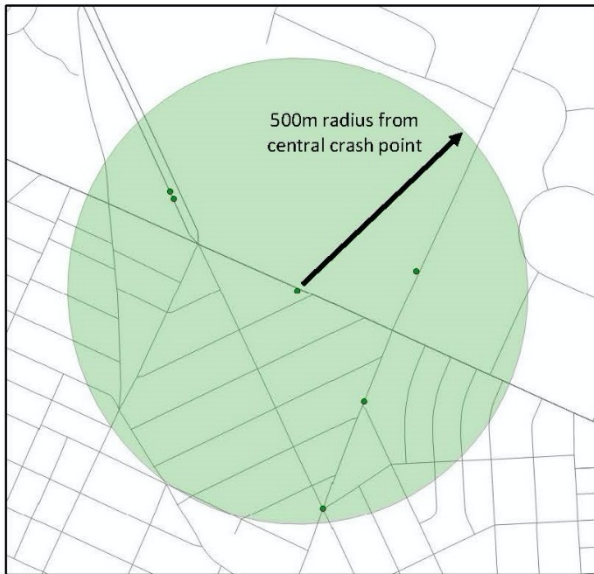


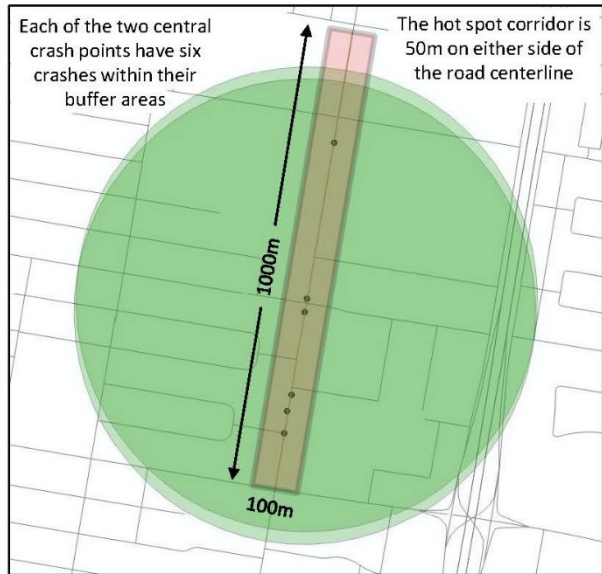
Appendix A: Hot spot identification method

We defined fatal pedestrian crash hot spot corridors as 1000m-long segments of roadway with six or more fatal pedestrian crashes during at least one eight-year analysis period (Figure A.1). We considered any fatal crash within 50m of the roadway centerline to be a part of the corridor. The steps in the hot spot identification process are listed below.

- Create 500m-radius buffers around all fatal crash points.
- Count the total number of 2001-2008 fatal pedestrian crashes within the 500m-radius buffer of each 2001-2008 fatal crash. Do the same for the 2009-2016 fatal crashes.
- Select all 2001-2008 fatal crashes and 2009-2016 fatal crashes that have at least five other fatal crashes within their buffer (at least six total, including the crash itself). 496 (1.7%) of the 29,939 2001-2008 fatal crashes and 450 (1.4%) of the 32,397 2009-2016 fatal crashes meet this criterion. This screening step captures all locations that may have the potential to meet the definition of a fatal pedestrian crash hot spot corridor. Some of the buffers that met this initial screening criterion contained hot spot corridors, but others did not because the crashes did not occur along the same roadway. This screening step eliminates vast sections of the national roadway network that do not have the potential to be hot spot corridors, saving significant processing time.
- Identify all unique counties that have at least one 500m-radius buffer that contains at least five other crashes. Counties are the largest geographic area for which US Census TIGER files include all roadway centerlines (US Census Bureau, 2019). In all, the potential hot spots were located within 58 counties (39 counties for 2001-2008 and 39 counties for 2009-2016, with 20 in both periods).
- Zoom in to each 500m-radius buffer area that meets the minimum fatal crash threshold and inspect where the fatal crash points are located. Geocode a 1000m segment along any roadway that has the potential to contain at least six fatal pedestrian crashes within 50m of either side of the roadway during 2001-2008 or during 2009-2016. A GIS tool was used to ensure that the total length of the segment was 1000m, even if the segment curved (i.e., was made up of multiple lines). This step is not automated, so it took the most time. Hand geocoding helped overcome problems with inconsistent segmentation and two different centerlines being used to represent some (but not all) roadways with medians in the TIGER files. In all, we geocoded 69 lines as potential hot spot corridors.
- Create 50m buffers on either side of the 69 potential hot spot corridor lines.
- Select the hot spot corridors that have six or more pedestrian fatalities in at least one of the two time periods. During the hand geocoding process it is difficult to tell if certain fatal crash points are within 50m of the road centerline, so this step provides a clean determination. Three of the 69 potential hot spot corridors only had five fatalities, so they were removed.
- Remove any hot spot corridors that overlap by more than 25% with another hot spot corridor. Keep the corridor with a larger number of total fatalities or higher density of fatalities in a particular time period. For example, there could be eight pedestrian fatalities within a 1,200m section of roadway. Shifting the 1,000m window by 200m in either direction could identify one group of seven fatalities or one group of six fatalities. We chose to report the group of seven fatalities but not the group of six fatalities to focus on unique corridors. This removed six more corridors, leaving 60 unique hot spot corridors.



No hot spot corridor identified: Six fatal crashes occurred within this buffer area, but there was not a single roadway with six or more fatal crashes within 1000m.



Hot spot corridor identified: There is a single roadway with six or more fatal crashes within 1000m. The corridor could be shifted north by 100m or south 200m, but it was selected to start at an intuitive roadway intersection.

Figure A.1: Hot spot corridor illustration