Step 1: - Downloaded data of traffic signals from the following link :-

→ http://data.vicroads.vic.gov.au/metadata/traffic_lights.html

Step 2: - Fetched metadata and identified signals for crossing as listed below and got count signals under each category below

SITE_TYPE	Count	Full Form
AMBU SIG	2	→ Signals at ambulance station
BUS SIG	2	→ Signals at bus stop
FIRE SIG	17	→ Signals at fire station
FIRE W/W	16	→ Fire station wig wag
FLASH PX	222	→ Flashing pedestrian crossing
INT	2953	→ Intersection
OH LANE	286	→ Overhead Lane signals
POS	1249	→ Pedestrian operated signals
RAMP MTR	82	→ Ramp Metering Signals on freeway ramps
RBT MTR	23	→ Metering signals on roundabouts

Step 3: - Identified crossing signals. Below are the categories

1) **non-signalized crossing** - Flashing pedestrian crossing
2) **signalized crossing**: - Intersection, Pedestrian operated signals, Metering signals on roundabouts
3) **Non- crossing signals**
   a) Signals at bus stop can be a non-signalized symbol to stop or could be signalized to stop busses only. It has nothing to do with crossing
   b) Fire station wig wag are signals are mostly near fire stations to allow safe passage of fire vehicles during emergency etc. These signals are used at level crossing like railways crossing.
   c) Signals at ambulance station, Signals at fire station are used for passage during emergency
   d) Overhead lane signals are used to control speed at highways and inform about closed or open lanes
   e) Ramp Metering Signals on freeway ramps

Step 4: - Extracted only the crossing signals i.e., Flashing pedestrian crossing, Intersection, Pedestrian operated signals, Metering signals on roundabouts.

Step 5: - Created a buffer of 20m on filtered road segments data and then used "Joined attributes by location: to join traffic signals to each segment.

Step 6: - Filtered segments on column highway = 'cycleway' for cycle crossing facilities and another filter on highway in ('pedestrian', 'footway') using the DBlight Plugin in QGIS

Step 7: - Loaded each layer separately and used the below query to get the count of signals around each segment.

```
select ogc_fid, count(*) as cros_cnt from pedestrian_footway
group by ogc_fid
```

Step 8: - Created ratio column for both **cycleway** and **pedestrian_footway** in QGIS

Step 9 :- Joined attributes to original base layer using 'Join attributes by field value'

File Description

1) traffic_signals_joined_with_segments.shp → The file contains data having traffic signals attached to each segment
2) Traffic_Lights_Filtered.shp →Contains point only of crossing signals
3) seg_with_corssing_facility_20m_buffer.shp → Contains buffer of 20m of street segments
4) seg_with_corssing_facility.shp → contains segments all segments that has tag 'cycleway','pedestrian','footway' and 'residential'
5) pedestrian_footway.shp → contains segments that has tag 'pedestrian' and 'footway'
6) cycleway_facility_final_data.shp → final data with bike_cros_cnt and bike_cros_ratio
7) cycleway_facility.shp→ contains street segments with cycleway facility
8) cros_cnt.xlsx → Excel sheet with ogc_fid and count of 'pedestrian' and 'footway'
9) bike_cros_cnt.xlsx → Excel sheet ogc_fid and count of 'cycleway'
10) pedestrian_footway_final_data.shp→ Final data with cros_cnt and cross_cnt_ratio
11) final_data_crossing → Contains all data with all columns