

Traffic Impact Analysis of On-Street Parking Near Signalized Intersections

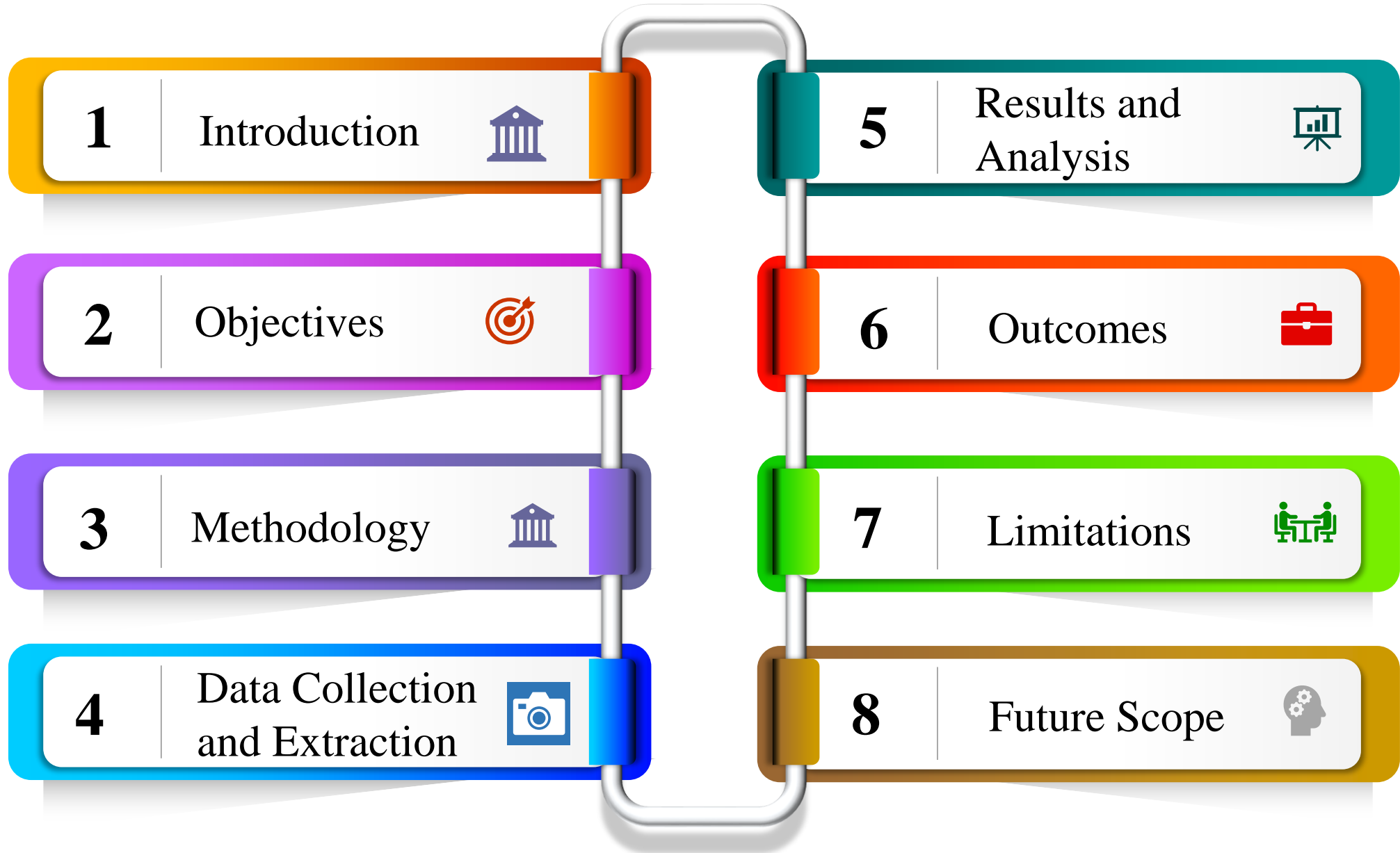
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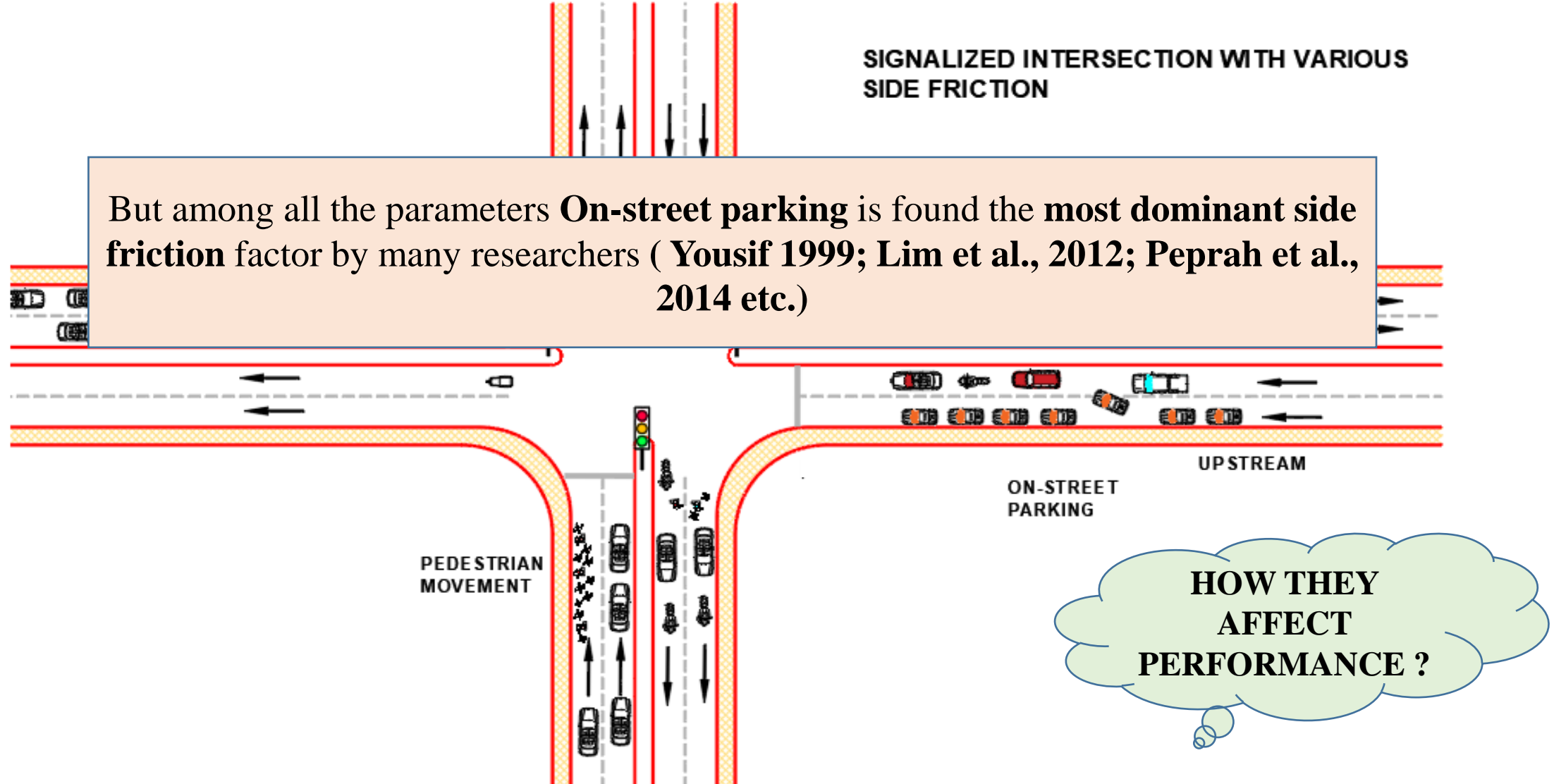


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राष्ट्रीय प्रौद्योगिकी संस्थान कालीकट
NATIONAL INSTITUTE OF TECHNOLOGY CALICUT



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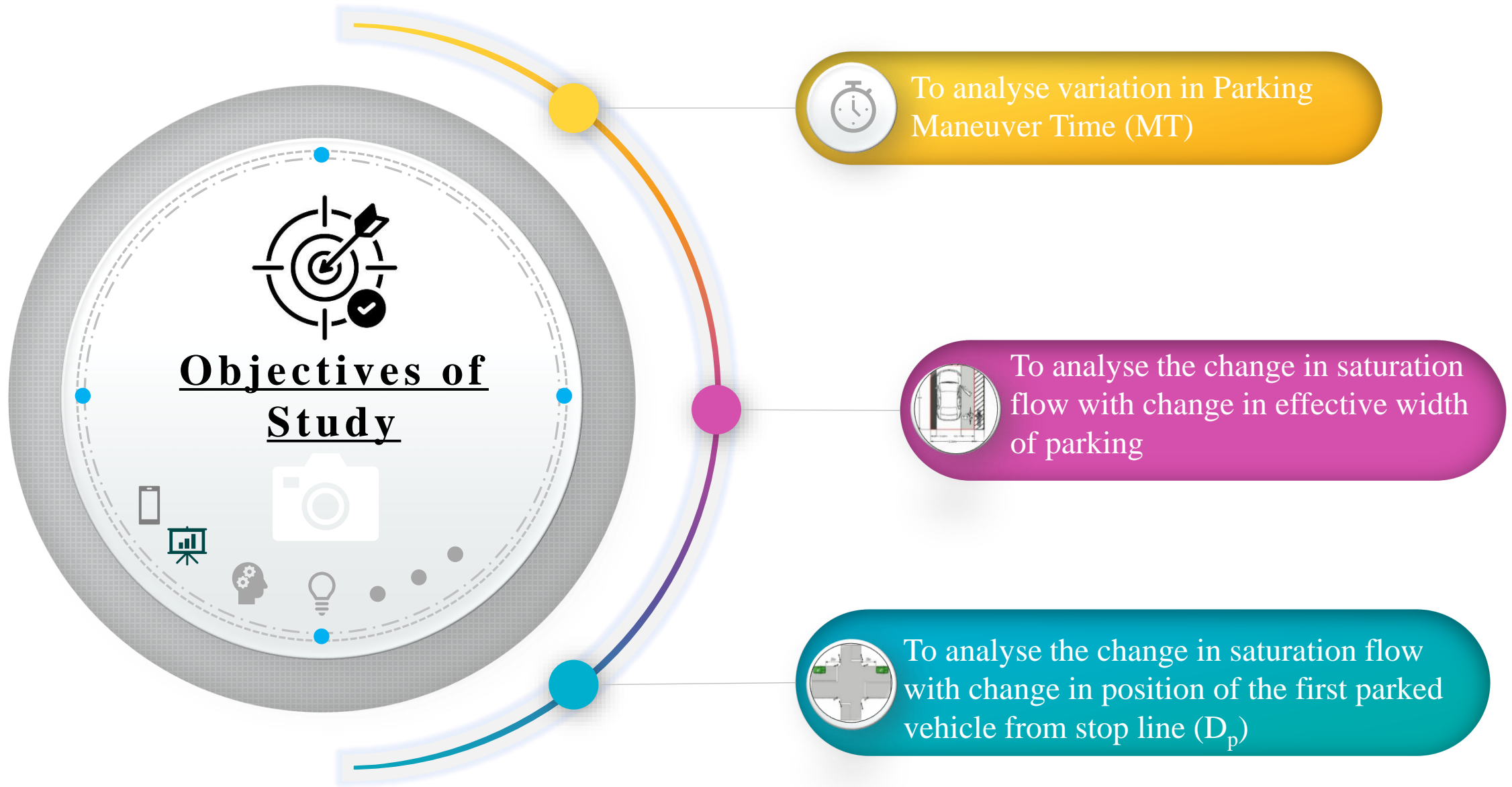
INTRODUCTION

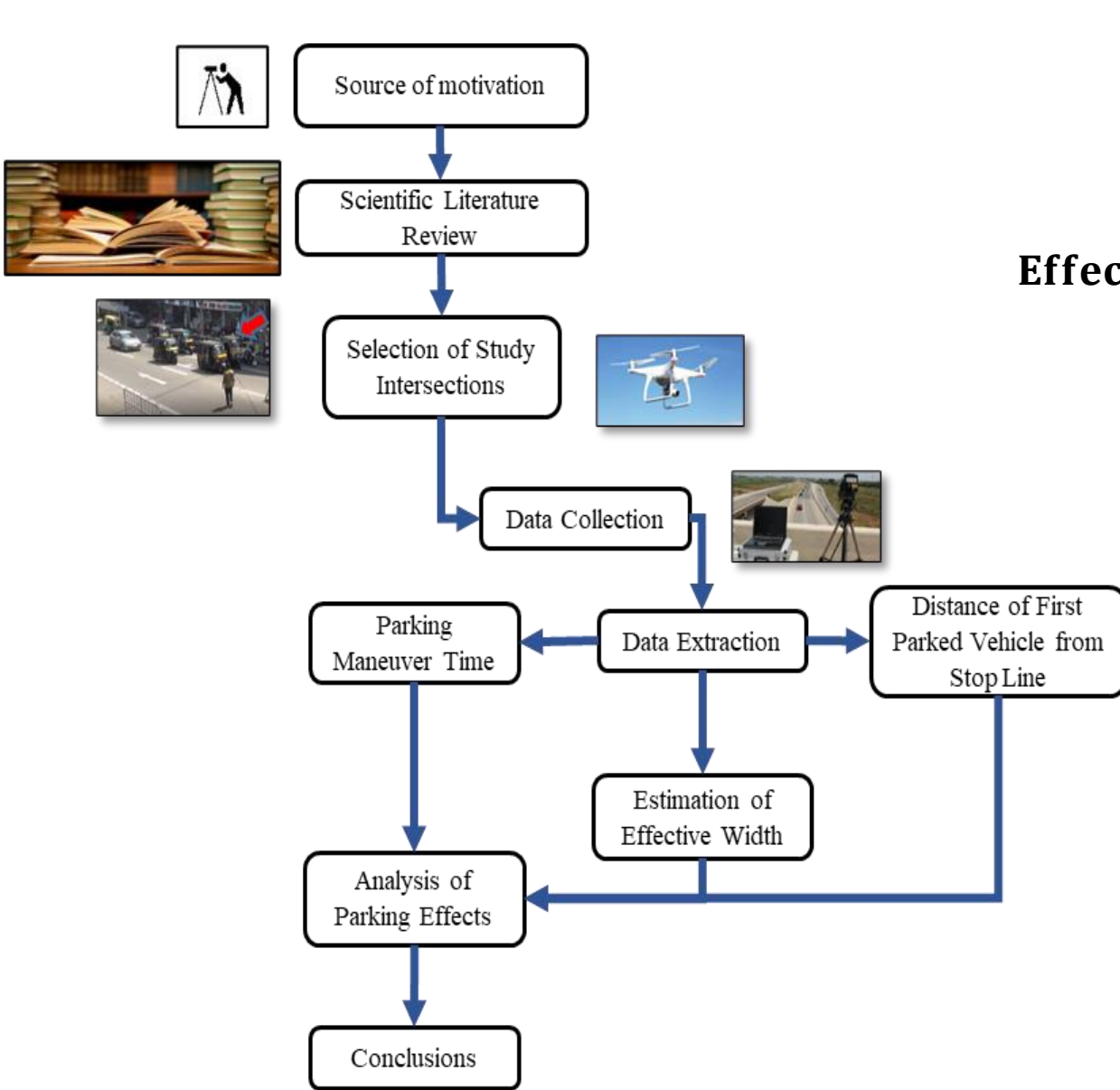


Research World Wide

- ❑ Inadequate sight distance, wasted green time, and a reduction in the capacity of the crossing vehicle
- ❑ On-street parking as a categorical variable "absence" or "presence" in available researches and guidelines
- ❑ Most of the researches are done on midblock section and different category of vehicle need to be considered

Sr. No	Guideline	Country	Parameters Included	Comments
1	IRC SP: 41-1994	India	AW, AG, VT, TV	First guidelines representing Indian traffic scenario at signalized intersection
2	HCM 2000	USA	AW, AG, VT, TV, PC, PA, BS, LU	Weather condition and signal timing are not consider
3	MHCM 2006	Malaysia	AW, AG, IG, VT, TV, PA, BS	Pedestrian crossing are not consider
4	IHCM 2011	Indonesia	AW, AG, TV, WC, PA	Weather condition effect are Consider
5	THCM 2011	Taiwan	AG, IG, VT, TV, PC, PA, BS	No provision for approach width
6	HCM 2010, 2016	USA	AW, AG, VT, TV, PC, PA, BS, LU	Guidelines adopted by different countries
7	GHCM 2015	Germany	AW, AG, IG, VT, PC	Parking and bus activities are not consider
8	Indo-HCM 2017	India	AW, VT, TV, BS	Parking activities are not consider





Research Methodology

Step 1

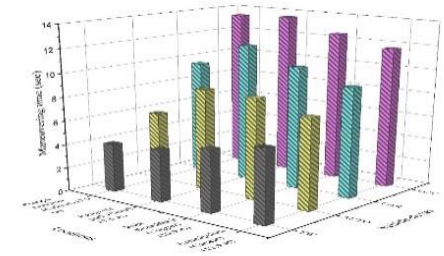
Data Collection and Extraction

$$\text{Effective parking width} = \frac{\sum_i w_i t_i}{\sum_i t_i}$$



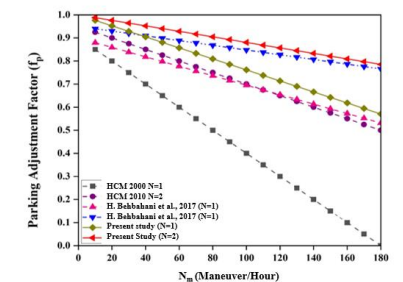
Step 2

Results and Analysis

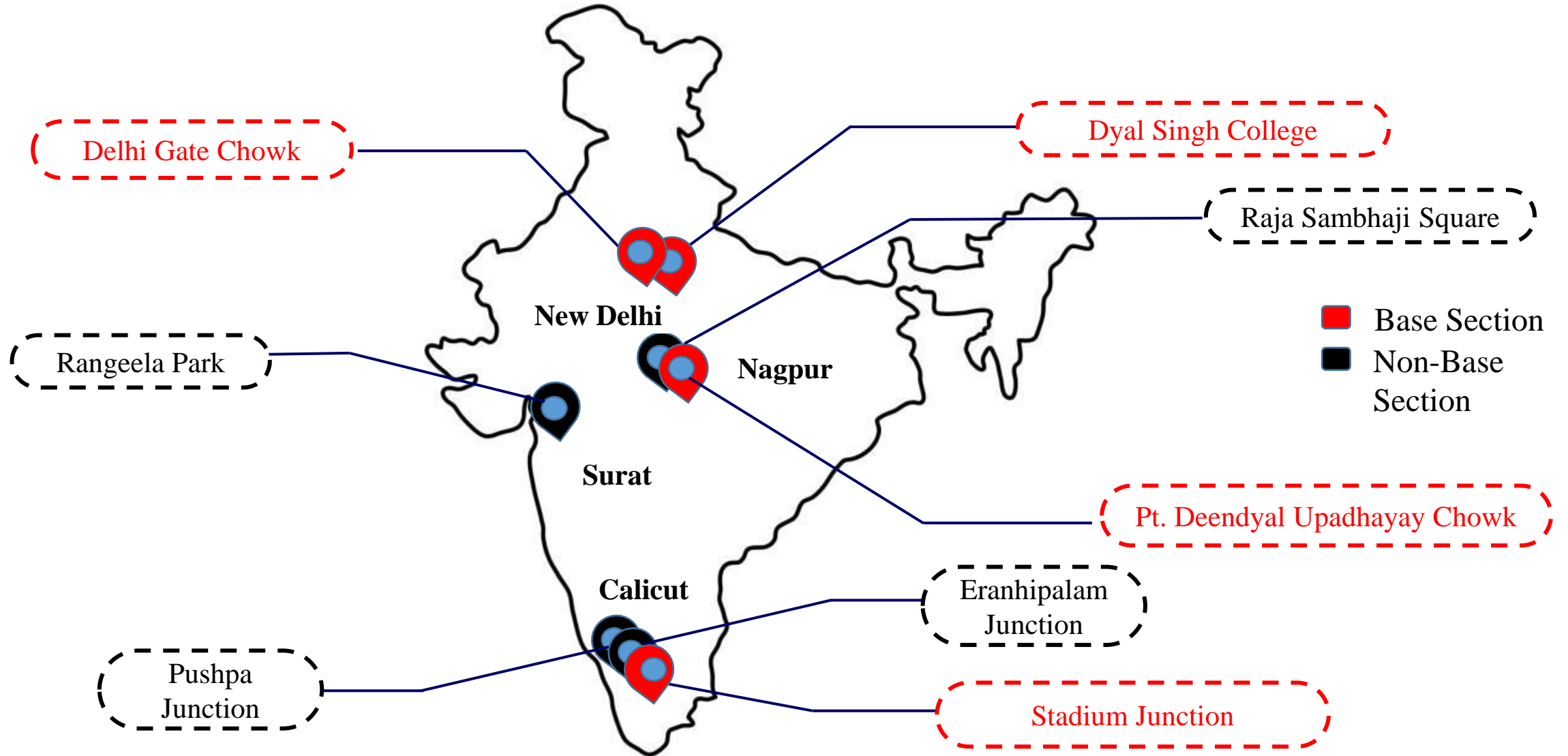


Step 3

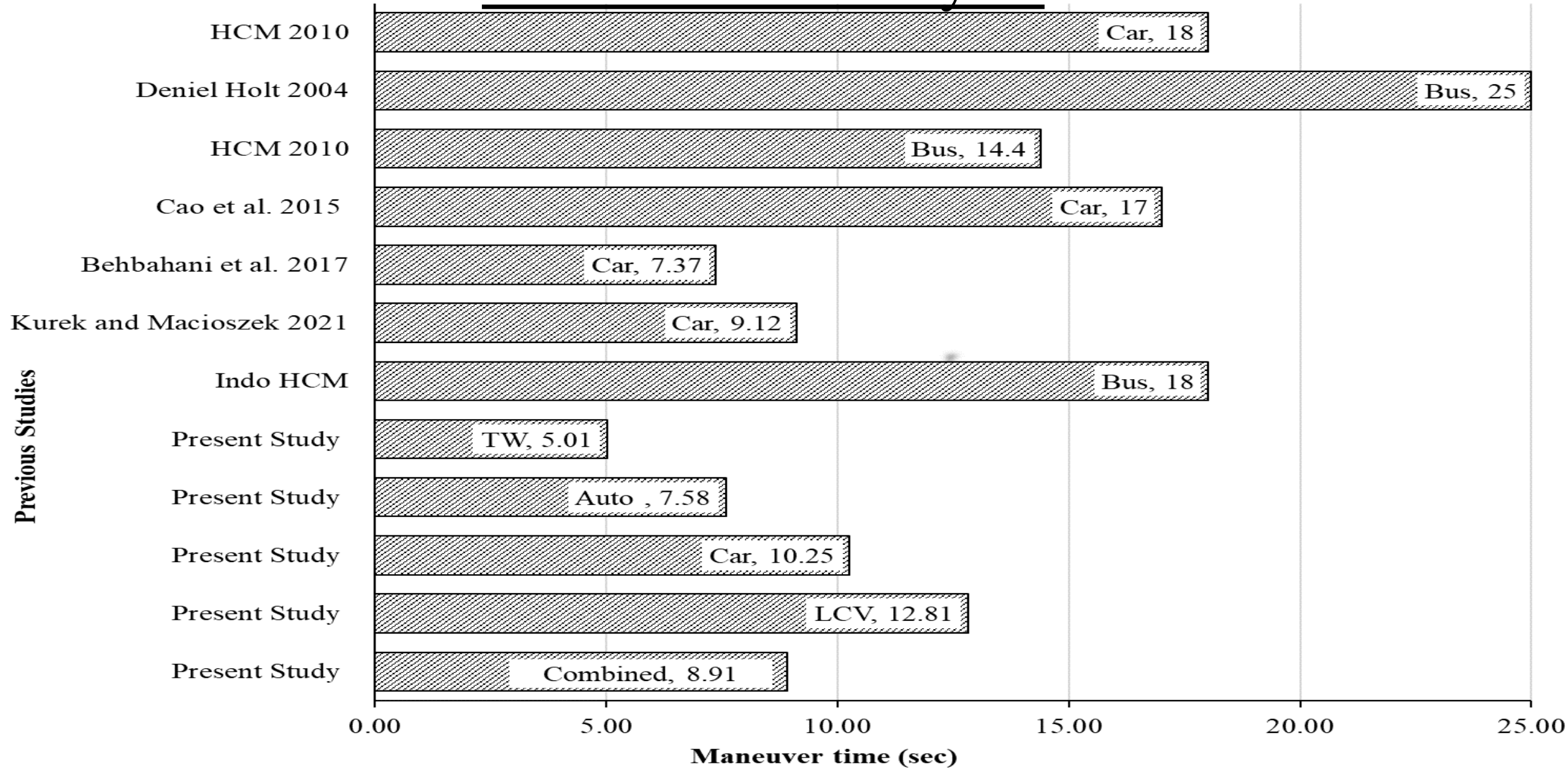
Comparison with Previous Studies



Location of Studied Intersections



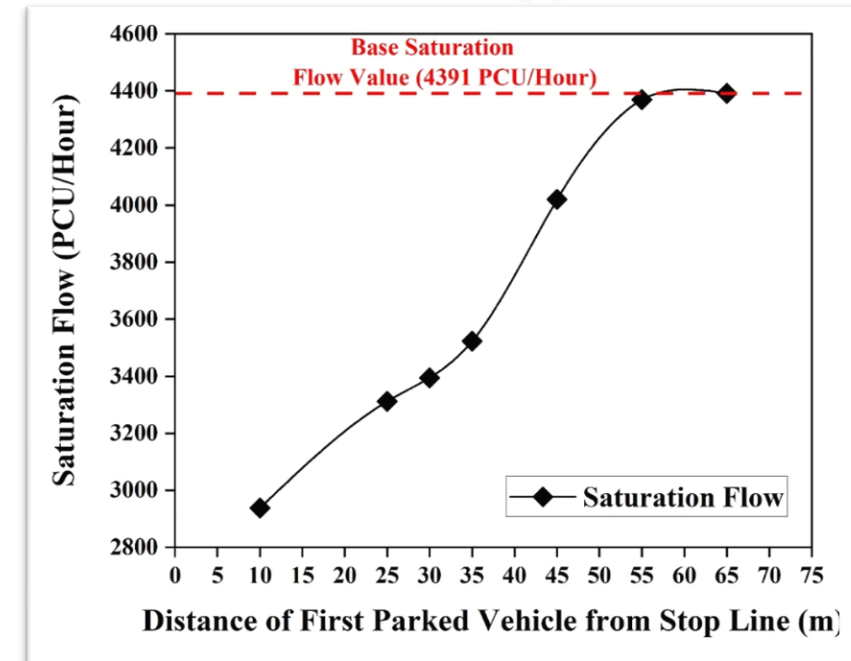
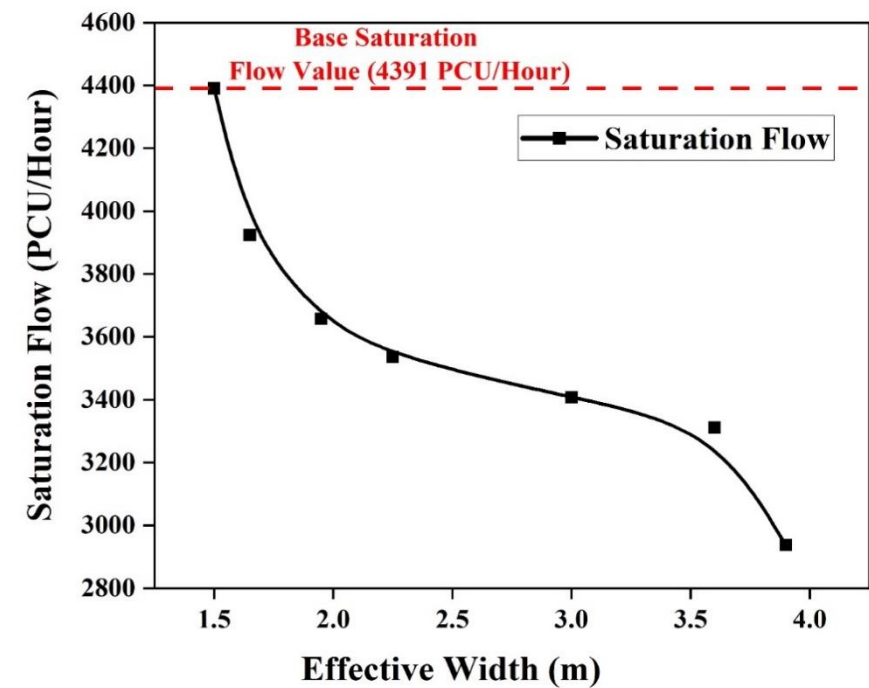
Results and Analysis



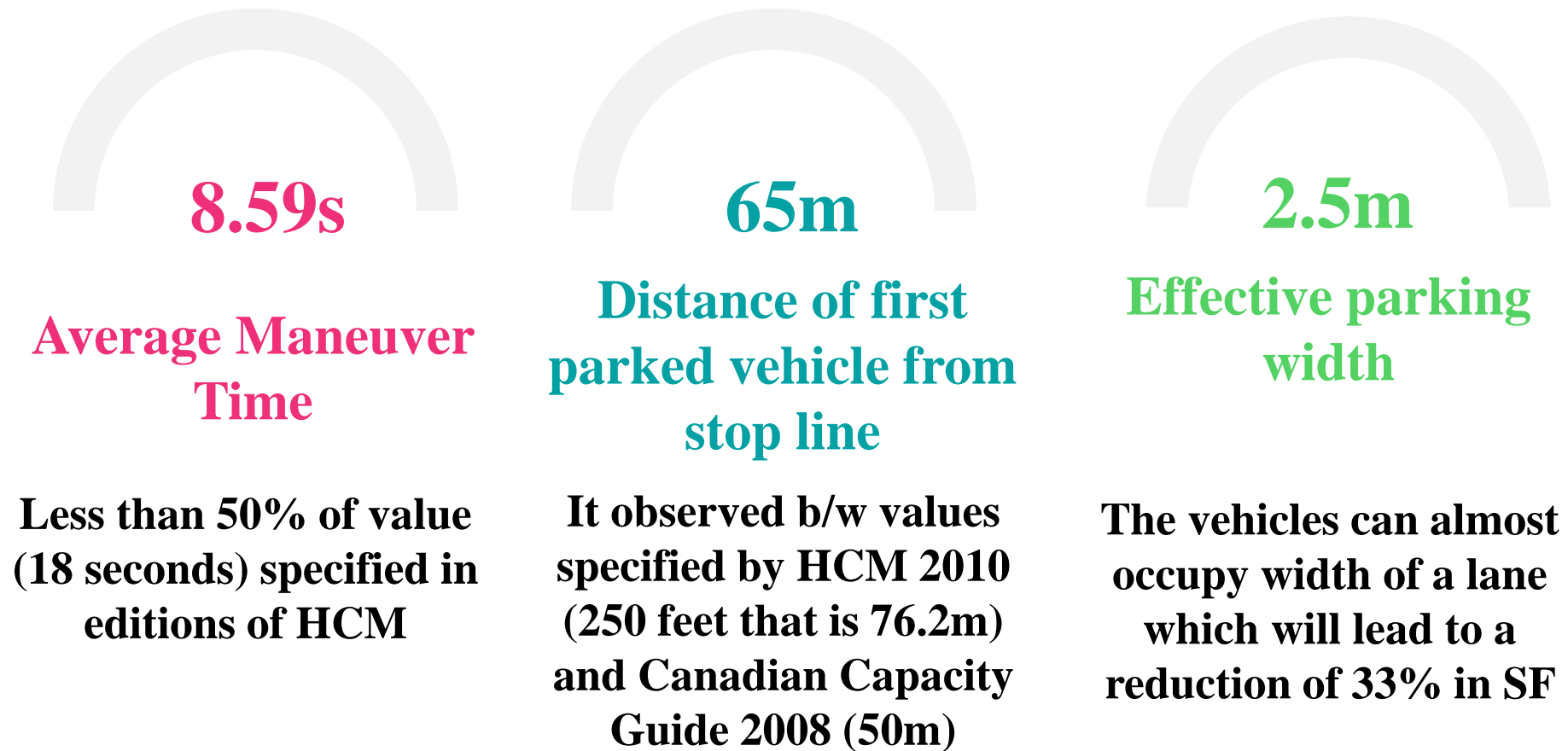
Results and Analysis

- ❑ Saturation flow might drop by as much as 33 percent when the effective width of parking is 3.9m
- ❑ Potential reduction in effective width may lead to a decline in flow velocity, thereby causing unnecessary congestion and ultimately reducing the saturation flow
- ❑ When the effective width exceeds 1.5m, the saturation flow does not decrease as swiftly as when the effective width is between 1 and 1.5m. However, as the effective width saturation flow nears the width of one lane, the flow decreases rapidly
- ❑ Positive correlation between the distance (D_p) of the first parked vehicle from the stop line
- ❑ D_p greater than 65 meters, the saturation flow reaches nearly the same level as when no parking is observed (base section)

Effective width (m)	Saturation Flow % Reduction
1.5	0.01
1.65	10.63
1.95	16.71
2.25	19.47
3.0	22.41
3.6	24.57
3.9	33.11



Outcomes of the Study



Limitations and Future Scope

Only eight intersections which may not represent the entire range of signalized intersections and traffic conditions



Angle of on-street parking did not considered in present study



Variation in average parking maneuver time due to different positions of parked vehicle



Effect of green time (g) can also include in future research



Simulation studies can be the part of future studies



Distance (D_p) can be part of Parking Adjustment Factor (f_p)



References

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THANK YOU

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