Fall 2013

Evaluation and Traffic Management Study for Rafidia Street

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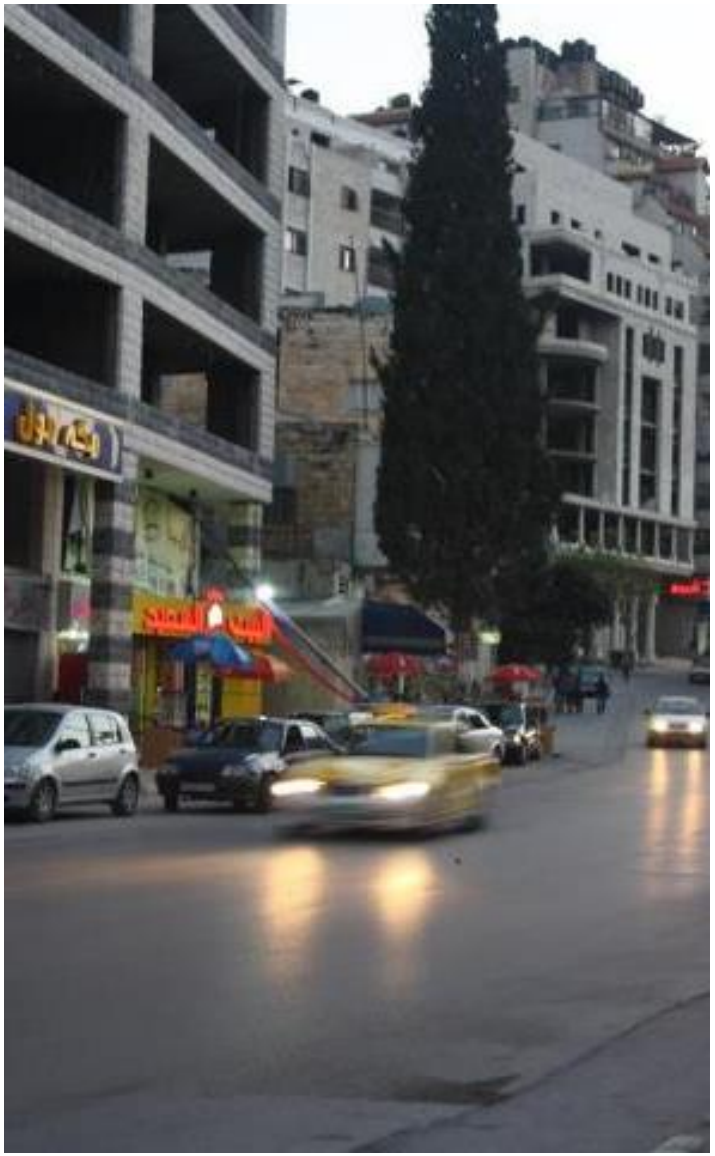


Background

- Central city road.
- Main Link.
- Traffic Boom.

Area of Study

Methodology

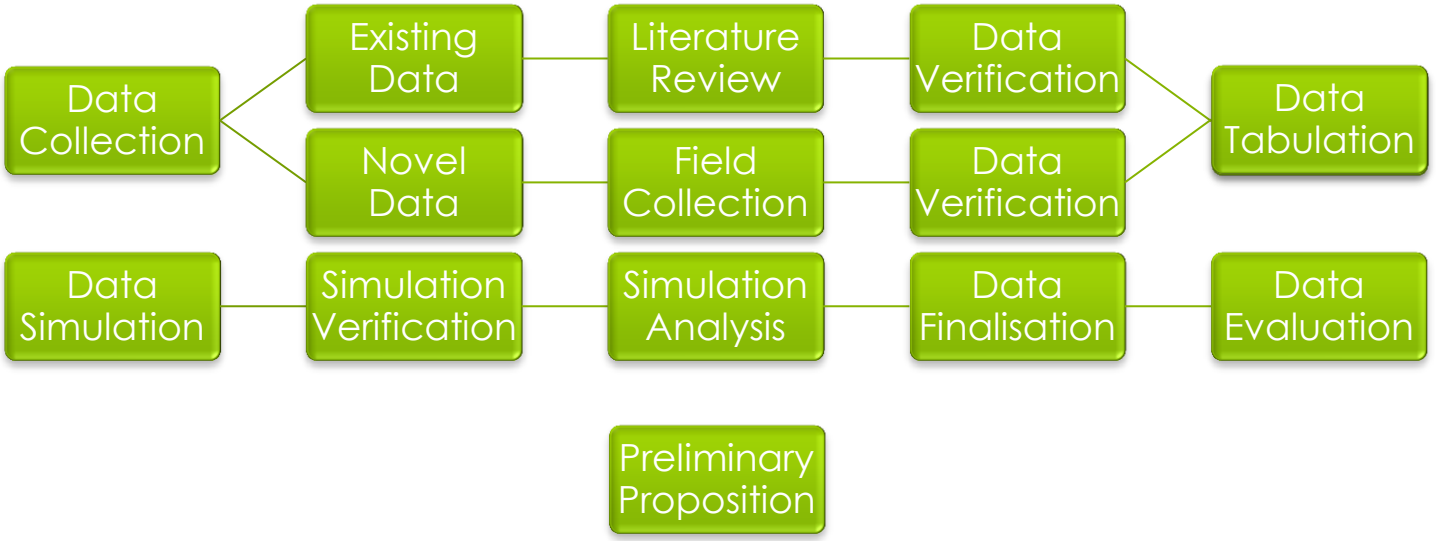
- **Phase One**

- Data collection.
- Data simulation.
- Data analysis.
- Preliminary propositions.

- **Phase Two**

- Refine propositions.
- Test propositions.
- Tabulate test results.
- Construct final proposition plans.

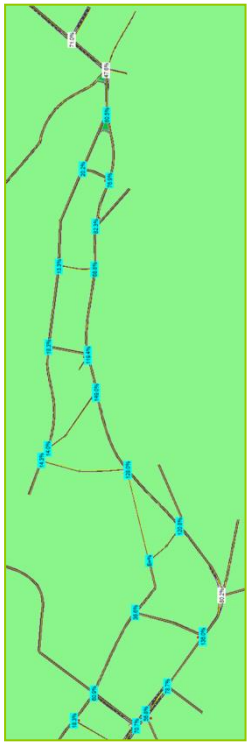
Methodology – Phase One



Data Analysis and Simulation

Int. ID	Vol. (vph)	LOS*	ICU	ICU LOS
5	2071	F	80%	D
6	2265	F	112%	H
7	2764	F	128%	H
9	2450	F	119%	H
12	2090	D	77%	D
15	2345	B	71%	C

* Verified using HCS2000 Software.



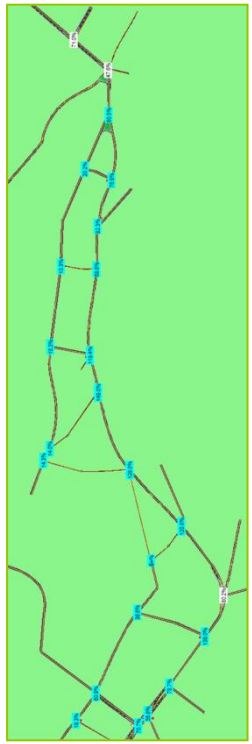
Changes to Existing Project

- **Traffic Signal on Int. 1**
- **New Traffic Plan for Nablus**
- **Nablus Commercial Tower**

Updated Data and Simulation

Int. ID	Vol. (vph)	LOS*	ICU	ICU LOS
5	2111	F	90%	E
6	2052	F	128%	H
7	2764	F	128%	H
9	2612	F	123%	H
12	2090	F	78%	D
15	2345	B	71%	C

* Verified using HCS2000 Software.



Solutions

Elimination of one-way street proposition

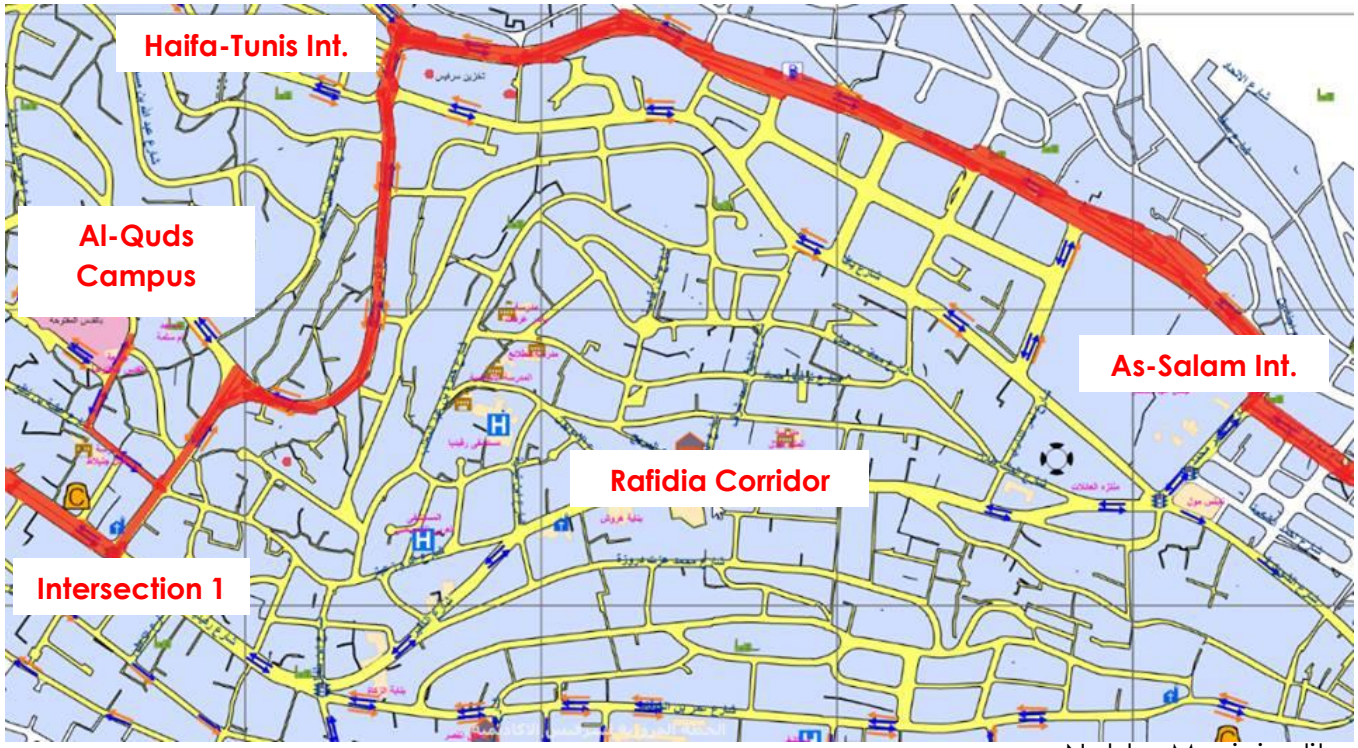
- No suitable alternative.
- Strong public opposition*.

Public Opinion	Against	Proponent	Neutral
Rafidia Street Vendors	91%	4%	5%
General Public	55%	41%	4%

* Abu Bakr et al., 2013.

- **Alternative Solutions**
  - Mandatory detour on city centre-new campus taxi service.
  - Rafidia corridor bus route.
  - Rafidia shared taxi service van conversion.
  - Four-lane temporary segments.
  - Utilisation of left-turning lane.

Mandatory Detour on City Centre-New Campus Taxi Service



Nablus Municipality

Updated Data and Simulation

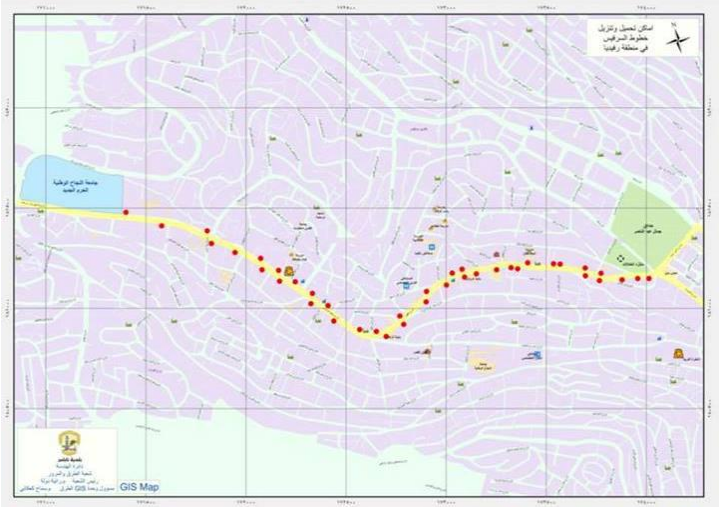
Current Situation

Int. ID	Vol. (vph)	LOS	ICU	ICU LOS
5	2111	F	90%	E
6	2052	F	128%	H
7	2764	F	128%	H
9	2612	F	123%	H
12	2090	F	78%	D
15	2345	B	71%	C
As-Salam	2535	C	106%	G
Tunis-Haifa	1534	F	67%	C

Expected Changes

Int. ID	Vol. (vph)	LOS	ICU	ICU LOS
5	1572	F	79%	D
6	1543	F	96%	F
7	2263	F	110%	H
9	2003	F	110%	H
12	1581	E	64%	C
15	2031	B	68%	C
As-Salam	3247	D	123%	H
Tunis-Haifa	2143	F	87%	E

Rafidia Corridor Bus Route

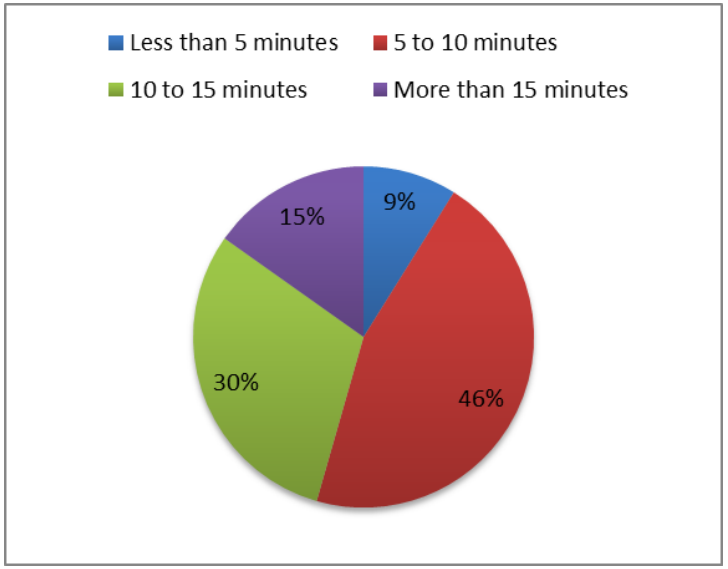


Nablus Municipality

Egged Ltd.

Survey Results

- 89% express difficulty in transport availability.
- 92% experience excessive delay.
- 90% would use bus route instead of taxi.



Updated Data and Simulation

Current Situation

Int. ID	Vol. (vph)	LOS	ICU	ICU LOS
5	2111	F	90%	E
6	2052	F	128%	H
7	2764	F	128%	H
9	2612	F	123%	H
12	2090	F	78%	D
15	2345	B	71%	C

Expected Changes

Int. ID	Vol. (vph)	LOS	ICU	ICU LOS
5	1341	F	79%	D
6	1132	F	74%	D
7	1844	F	104%	G
9	1692	F	100%	G
12	1170	A	54%	A
15	1425	B	55%	B

Rafidia Shared Taxi Service Van Conversion

- Seven-seater vans carry passengers more effectively.
- Increase of transport effectiveness by 75%.
- Reduction of total trips made by a single taxi – reduction in PHV.

Updated Data and Simulation

Current Situation

Int. ID	Vol. (vph)	LOS	ICU	ICU LOS
5	2111	F	90%	E
6	2052	F	128%	H
7	2764	F	128%	H
9	2612	F	123%	H
12	2090	F	78%	D
15	2345	B	71%	C

Expected Changes

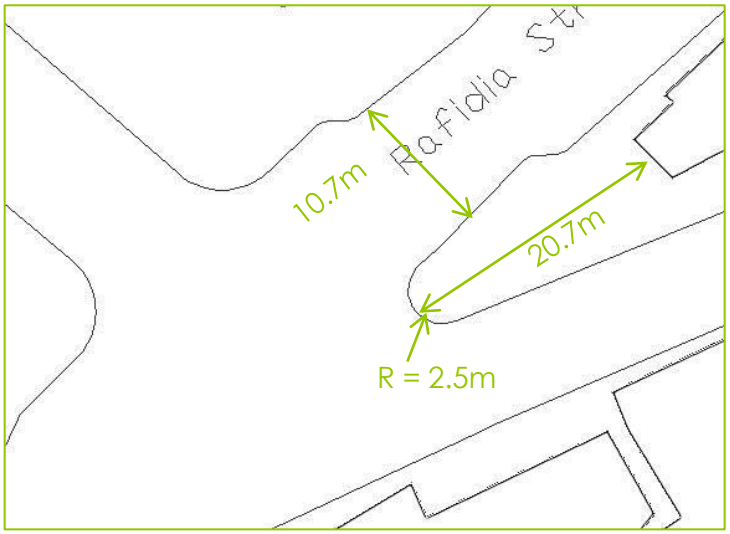
Int. ID	Vol. (vph)	LOS	ICU	ICU LOS
5	1751	F	80%	D
6	1692	F	104%	G
7	2404	F	117%	H
9	2252	F	115%	H
12	1730	F	69%	C
15	1985	B	66%	C

Four-Lane Temporary Segments

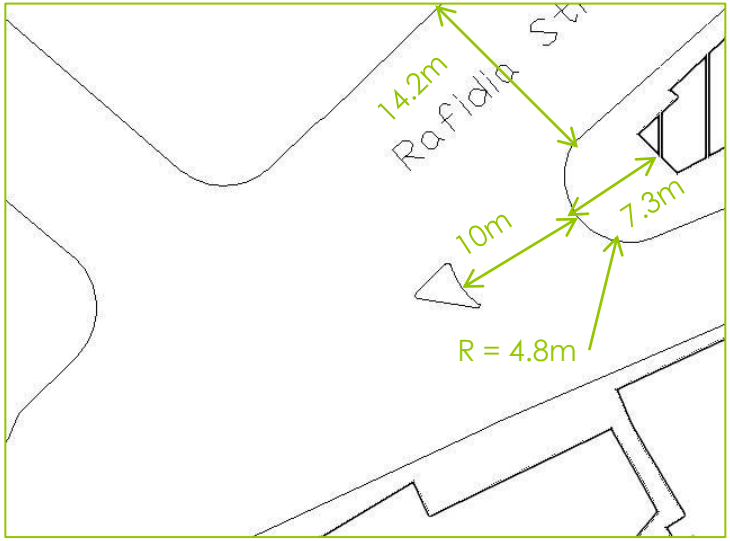
Area of Effect

Intersection 6 Redesign

Current Design



Suggested Design



Updated Data and Simulation

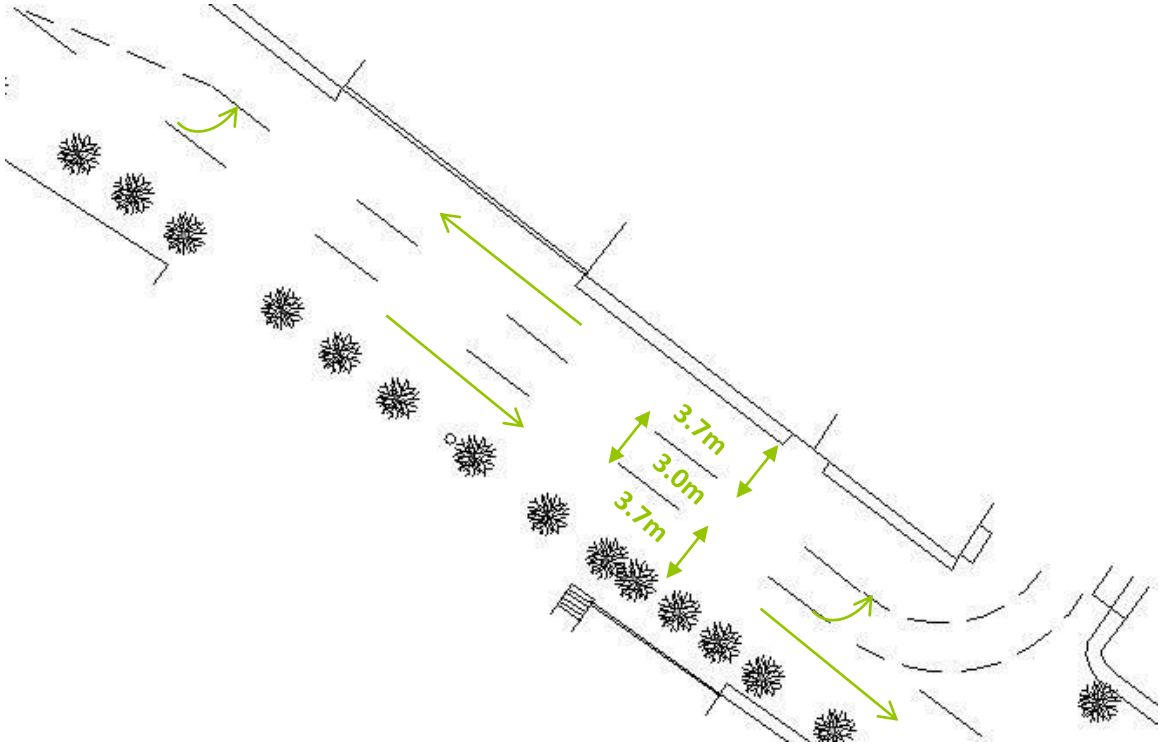
Current Situation

Int. ID	Vol. (vph)	LOS	ICU	ICU LOS
6	2052	F	128%	H
7	2764	F	128%	H
8	2774	A	155%	H
9	2612	F	123%	H

Expected Changes

Int. ID	Vol. (vph)	LOS	ICU	ICU LOS
6	2052	F	86%	E
7	2764	F	77%	D
8	2774	F	71%	C
9	2612	F	78%	D

Utilisation of Left-turning Lane



Updated Data and Simulation

Current Situation

Int. ID	Vol. (vph)	LOS	ICU	ICU LOS
4	2327	F	138%	H
6	2052	F	128%	H
8	2774	A	155%	H
9	2612	F	123%	H

Expected Changes

Int. ID	Vol. (vph)	LOS	ICU	ICU LOS
4	2052	F	90%	E
6	2052	F	87%	E
8	2774	F	87%	E
9	2612	F	97%	F

Conclusions

Solution	Advantages	Disadvantages
Detour	No costs to implementation or operation. Easy to establish and run.	Negative effect on detour road.
Bus	Drastic improvement in LOS on all intersections. Cost effective in operation.	Very high initial costs and planning. Potential protests from taxi drivers.
Van	Easy to establish and run. Low initial costs.	Heavier air pollution. Many taxi drivers made redundant.
4-Ln	Smooth traffic flow on highly-congested segments. Little to no initial costs.	Many parking spots temporarily eliminated. May require some geometric alterations.
L.T.	Smoother through-traffic flow. Reduced delay times.	Potential abuse by reckless drivers. Requires regular maintenance (markings).

Recommendations

- Good start with Solution 1.
- Long-term plans to implement Solution 2.
- Immediate action regarding Solution 4 & 5.
- Solution 3 as an intermediate step.

Additional Problems

- Poor law enforcement.
- Selfish pedestrian behaviour.
- Grotesque driver behaviour.
- Poor signal coordination.

Public Awareness

THINK
Road Safety

Proper Maintenance

Proper Maintenance

Better Law Enforcement

Better Law Enforcement

Better Law Enforcement

Better Law Enforcement

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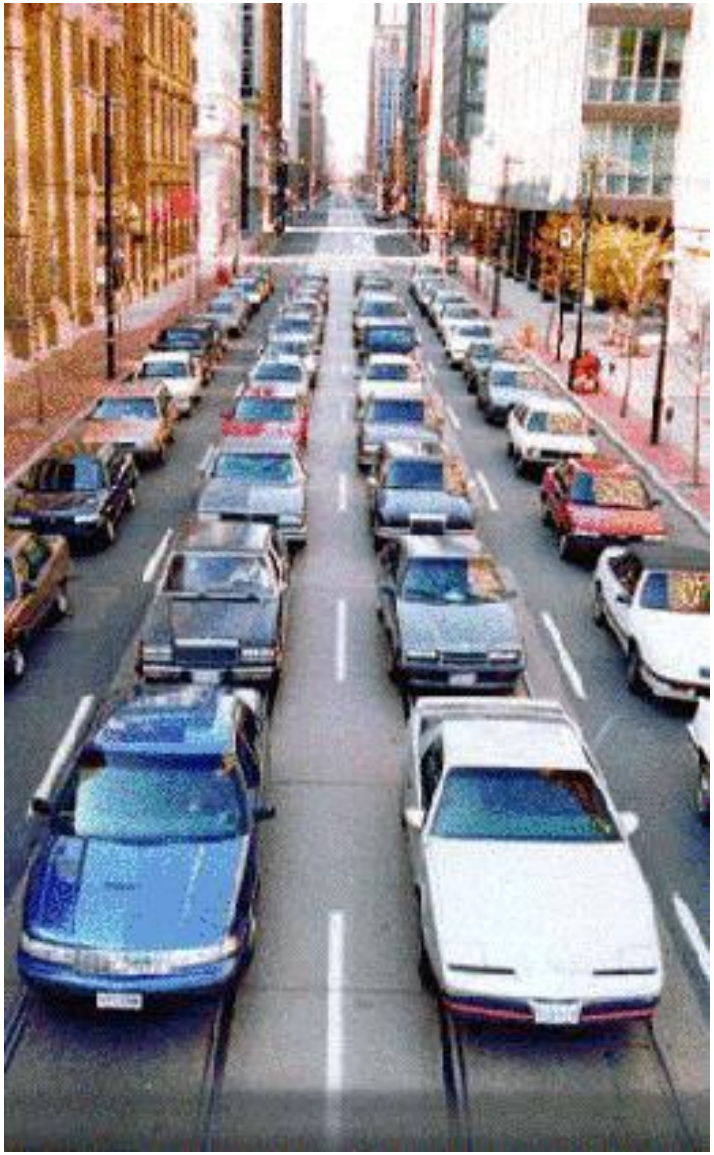
Halts and Difficulties

- Frequent strikes.
- Scarcity of information.
- Poor road markings.
- Inability to simulate driver and pedestrian behaviour.



Thank you for your attendance.

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