USER BEHAVIOR TOWARDS TRAFFIC VIOLATION

CEPT University, Ahmedabad

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Content

- Background
- Aim & objectives
- Study approach
- Literature & past studies
- Ahmedabad - case study
- Analysis
- Conclusion & interventions
The World Health Organization (WHO) in its Global Status Report on Road Safety (2015) revealed
- India has the worst road traffic accident rate worldwide.
- 215 people die every day in India.

- Based on a study of 2014 traffic accidents, Sabey and Taylor concluded that **human factors** were contributing elements in 95% of the accidents.

Jashua and Garber (1992) studied driver, vehicle and environment factors in traffic accidents and highlighted most common accident a result of **drivers faults**.

A National Crime Records Bureau (NCRB, 2014) report revealed 53.1% accidents are due to traffic **traffic collision**

Road accidents had increased since 2005 due to non-compliance with traffic rules (August 6, 2009, Parker)

Non compliance may be of 3 reasons
- **Violation** Intentional deviation from rules
- **Errors** Are not intentional (by mistake)
- **Forgetfulness** Temporary failure of concentration, memory (Lapses)

Need to look at **User behavior towards traffic violation**
“It might be possible to reduce the accident risk by reducing violation.”

- City of Ahmedabad
- Sample – student drivers

Youth identified to be most vulnerable to complex situations, with an appetite for taking a risk and as a potential threat for traffic safety.

According to the traffic police interview, young drivers are observed to be most frequent traffic rules violators.
AIM

To study user behavior towards traffic violation

OBJECTIVE

• To identify likely factors influencing user behavior towards traffic violation.

• To assess variability in behavior by user characteristics.
Study approach

1. Literature
   - Theory
   - Factors affecting behavior
   - Framework
   - Analysis technique

2. Interviews
   - Psychology department
   - Traffic police
   - User behavior towards violation in Indian context

3. Primary survey
   - Pilot survey
   - Main survey
   - Violation and enforcement
   - Perception of Violating behavior of different user

Study dependent on truthful responses of users
Behavior

(Winsome Gordon, Wilma Guez and John Allen, 1975)

Behavior can be defined as

- The way in which an individual behaves or acts.
- It is the way an individual conducts herself/himself.
- It is the way an individual acts towards people, society or objects.
- It can be either bad or good.
- It can be normal or abnormal.
**Theory of Planned Behavior (TPB)** was developed by Ajzen in 1988. The theory proposes a model which explain the guiding factor for human actions.

Individual's positive or negative feelings about performing a behavior

Social pressure to engage or not to engage in behavior

how much a person has control over the behavior and how confident a person feels.

- **Attitude**
- **Subjective Norm**
- **Perceived behavioral control**

**Behavioral Intentions**

Individual's readiness to perform a given behavior

**Behavior**
Studies on traffic violating behavior of users

Research (Ajzen, 2006; Blanton, Koblitz & McCaul, 2008) indicates that social norms are a strong predictor of behavior.

- **Injunctive norms**
- **Descriptive norms**
- **Perceived behavior control**

Non-compliance can be attributed to social norms among the drivers.

• Attitudes and Awareness of Traffic Safety among Drivers in Tripoli-Libya study investigated **age and gender** related differences in driver's attitudes towards violations of traffic laws.

• **Culture, demographic characteristics** and attitudes to driving explained significant amounts of variation in driver behavior in both rural and urban areas. Eiksund (2009)

• In addition, according to the Turkey belongs to Sumer (2003), **driving time, sex and age** played an important role in involvement in an accident.
Psychologist:

Violating Behavior in context of Indian cities

- Knowledge/education
- Normal tendency to violate traffic rules
- Sense of responsibility (Sensitivity)
- Adventure activity
- Attraction seeking
- Reference group (societal Norm)
- Traffic sense lacking from childhood (Parental pressure)

Survey of traffic police

- Vijay char rasta
- Panjarapol char rasta
- IIM char rasta
- Helmet char rasta

After starting Enforcement Specially E Challan

- Slight improvement in traffic rules adherence.
- Enforcement is not strict - Low man power at junction to control traffic.
- Observations at Junctions –
  - Traffic police not able to catch all violators at once.
  - In absence of traffic police no one comply with rules.
  - Enforcement is not uniform for male female.
Violating Behavior

Awareness

Sensitivity

Parental pressure

Societal Norm

Self control

Knowledge

Sensitivity towards other users

Values inherited from parents

Influenced by other driver

Confidence on one's own driving skill
Methods of analysis

Framework available

Attitude and awareness of traffic safety among drivers in Tripoli Libya

Driver attitude towards traffic safety violations and risk taking behavior in Kumasi: the gender and age dimension

Driving Behavior Questionnaire (DBQ) Standard Sample

The Manchester DBQ: self reports of aberrant behavior among Czech driver

Driving Attitude Questionnaire (DAQ) Standard Sample

Constructing a theory of planned behavior questionnaire

Methods used

means and standard deviations

one-way ANOVA and

Multi linear regression analysis

Chi square test

Bonferroni Post Hoc analysis
## E-Challan  Most violated traffic rules

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Helmet</td>
<td>Helmet</td>
<td>Helmet</td>
</tr>
<tr>
<td>2</td>
<td>Dark film</td>
<td>One way/wrong side</td>
<td>One way/wrong side</td>
</tr>
<tr>
<td>3</td>
<td>No parking</td>
<td>Stop line cross</td>
<td>Dark film</td>
</tr>
<tr>
<td>4</td>
<td>Stop line cross</td>
<td>No parking</td>
<td>No parking</td>
</tr>
<tr>
<td>5</td>
<td>More customers in AR</td>
<td>Dark film</td>
<td>Stop line cross</td>
</tr>
<tr>
<td>6</td>
<td>Seat belt</td>
<td>Mobile phone on moving vehicle</td>
<td>Signal cross</td>
</tr>
<tr>
<td>7</td>
<td>One way/wrong side</td>
<td>Signal cross</td>
<td>Mobile phone on moving vehicle</td>
</tr>
<tr>
<td>8</td>
<td>Mobile phone on moving vehicle</td>
<td>More customers in AR</td>
<td>Harsh driving</td>
</tr>
<tr>
<td>9</td>
<td>Traffic line cross</td>
<td>Seat belt</td>
<td>More customers in AR</td>
</tr>
<tr>
<td>10</td>
<td>Harsh driving</td>
<td>Harsh driving</td>
<td>Seat belt</td>
</tr>
</tbody>
</table>
Case of Ahmedabad

Most violated traffic rules

1. Seat belt/helmet
2. Wrong side
3. No parking
4. Signal cross
5. Stop line cross
6. Mobile phone
Study factors

Awareness
- Overtaking
- U-turn
- Junction behavior
- Parking
- Pedestrian crossing
- Wrong side

Violating Behavior
- Sensitivity
- Parental pressure
- Societal Norm
- Self Control

Scale used for the questionnaire
1 - strongly agree
2 - Agree
3 - Neutral
4 - Disagree
5 - Strongly disagree
Awareness

80% - 90% samples aware about traffic rules

There is not significant difference between users holding Driving license and Not holding Driving license
## Violating behavior

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Male</th>
<th>Female</th>
<th>F</th>
<th>P</th>
<th>TW</th>
<th>TWFW</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoid to wear helmet/seat belt for short distance travel.</td>
<td>1.66</td>
<td>1.45</td>
<td>22.201</td>
<td>0.000</td>
<td>1.53</td>
<td>1.72</td>
<td>1.533</td>
<td>0.218</td>
</tr>
<tr>
<td>Do not hesitate to drive on wrong side for short distances</td>
<td>1.98</td>
<td>1.71</td>
<td>5.902</td>
<td>0.016</td>
<td>1.80</td>
<td>2.10</td>
<td>2.497</td>
<td>0.116</td>
</tr>
<tr>
<td>Do not stop at junctions/pedestrian crossings as the car/two wheeler</td>
<td>1.39</td>
<td>1.47</td>
<td>0.974</td>
<td>0.325</td>
<td>1.41</td>
<td>1.48</td>
<td>0.186</td>
<td>0.667</td>
</tr>
<tr>
<td>vehicles have priority on road</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicles can be parked anywhere along the road, where space is available</td>
<td>2.44</td>
<td>2.23</td>
<td>10.006</td>
<td>0.002</td>
<td>2.32</td>
<td>2.59</td>
<td>1.471</td>
<td>0.277</td>
</tr>
<tr>
<td>Cross red signal in absence of traffic police.</td>
<td>1.83</td>
<td>1.68</td>
<td>2.946</td>
<td>0.88</td>
<td>1.64</td>
<td>2.17</td>
<td>9.820</td>
<td>0.002</td>
</tr>
<tr>
<td>Do not have problems receiving phone calls while driving</td>
<td>2.37</td>
<td>2.48</td>
<td>0.238</td>
<td>0.626</td>
<td>2.31</td>
<td>2.79</td>
<td>4.168</td>
<td>0.43</td>
</tr>
</tbody>
</table>

- seat belt/ helmet, wrong side, parking
- Female admitted to violating behavior as compared to male
- cross red signal
- TW riders admitted to violating behavior as compared to male
- Users 0-3 year Driving experience admitted to violating behavior as compared to male

### Analysis

At an aggregate level all user groups violate traffic rules.
No significant difference found in sensitivity and parental pressure

Sensitivity and lacking parental pressure across all user groups.
At an aggregate level all user groups get influenced by other drivers.

<table>
<thead>
<tr>
<th>Societal Norm</th>
<th>Male</th>
<th>Female</th>
<th>F</th>
<th>P</th>
<th>TW</th>
<th>TWFW</th>
<th>F</th>
<th>P</th>
<th>0-3 yrs.</th>
<th>&gt;3 yrs.</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is ok not to use helmet/seat belt when other drivers are not using it.</td>
<td>2.56</td>
<td>2.07</td>
<td>6.296</td>
<td>.013</td>
<td>2.32</td>
<td>2.59</td>
<td>1.172</td>
<td>0.281</td>
<td>2.32</td>
<td>2.38</td>
<td>.089</td>
<td>.765</td>
</tr>
<tr>
<td>If many people are driving in the wrong lane, prefer to do the same.</td>
<td>2.19</td>
<td><strong>1.55</strong></td>
<td>25.581</td>
<td><strong>.000</strong></td>
<td>1.91</td>
<td>2.14</td>
<td>1.899</td>
<td>0.170</td>
<td>1.79</td>
<td>2.00</td>
<td>2.265</td>
<td>.135</td>
</tr>
<tr>
<td>It is ok to park vehicle wherever see other people parking their vehicle.</td>
<td>1.76</td>
<td><strong>1.43</strong></td>
<td>9.591</td>
<td><strong>.002</strong></td>
<td>1.61</td>
<td>1.72</td>
<td>0.785</td>
<td>0.377</td>
<td>1.51</td>
<td>1.68</td>
<td>2.280</td>
<td>.133</td>
</tr>
<tr>
<td>Cross a stop line and stand beside other drivers to avoid looking odd among others.</td>
<td>2.09</td>
<td>2.33</td>
<td>2.878</td>
<td>.092</td>
<td>2.13</td>
<td>2.38</td>
<td>2.154</td>
<td>0.145</td>
<td>2.19</td>
<td>2.19</td>
<td>.002</td>
<td>.968</td>
</tr>
<tr>
<td>Do not stop at signal if other people are not following it.</td>
<td>2.05</td>
<td>1.81</td>
<td>1.750</td>
<td>.188</td>
<td><strong>1.85</strong></td>
<td>2.31</td>
<td><strong>4.344</strong></td>
<td><strong>0.039</strong></td>
<td>1.85</td>
<td>2.00</td>
<td>.631</td>
<td>.428</td>
</tr>
<tr>
<td>Use mobile phone while driving after observing many people doing it</td>
<td>3.44</td>
<td><strong>2.43</strong></td>
<td>36.569</td>
<td><strong>.000</strong></td>
<td>3.00</td>
<td>3.14</td>
<td>0.358</td>
<td>0.550</td>
<td><strong>2.72</strong></td>
<td>3.19</td>
<td>5.782</td>
<td><strong>.017</strong></td>
</tr>
</tbody>
</table>

- Seat belt/ helmet, wrong side, parking & mobile phone
- Female get more influenced by other drivers as compared to male
- Cross signal
- TW riders get more influenced by other drivers as compared to TW+FW rider/driver.
- Users having 0-3 years of driving experience get more influenced by other drivers as compared to users having experience more than 3 years

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1 - strongly agree, 2 - Agree, 3 – Neutral, 4 – Disagree, 5 - Strongly disagree
At an aggregate level all user groups found confident about violating traffic rules.

<table>
<thead>
<tr>
<th>Self Control</th>
<th>Male</th>
<th>Female</th>
<th>F</th>
<th>P</th>
<th>TW</th>
<th>TWFW</th>
<th>F</th>
<th>P</th>
<th>0-3 yrs.</th>
<th>&gt; 3 yrs.</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being a safe driver, seat belt/helmet can be avoided for short distance travel.</td>
<td>RV1</td>
<td>2.49</td>
<td>1.52</td>
<td>39.322</td>
<td>.000</td>
<td>1.99</td>
<td>2.55</td>
<td>6.992</td>
<td>0.009</td>
<td>1.96</td>
<td>2.16</td>
<td>1.297</td>
</tr>
<tr>
<td>Being a skilled driver, can drive efficiently on wrong side without causing much trouble.</td>
<td>RV2</td>
<td>2.29</td>
<td>1.93</td>
<td>4.374</td>
<td>.038</td>
<td>2.13</td>
<td>2.28</td>
<td>0.464</td>
<td>0.497</td>
<td>2.04</td>
<td>2.20</td>
<td>.708</td>
</tr>
<tr>
<td>Parking in restricted area does not cause any problem</td>
<td>RV3</td>
<td>2.10</td>
<td>2.16</td>
<td>.107</td>
<td>.744</td>
<td>2.03</td>
<td>2.45</td>
<td>5.102</td>
<td>0.025</td>
<td>2.00</td>
<td>2.19</td>
<td>1.327</td>
</tr>
<tr>
<td>If wanted to they could cross stop line without being noticed by anybody.</td>
<td>RV4</td>
<td>2.50</td>
<td>2.21</td>
<td>2.726</td>
<td>.101</td>
<td>2.25</td>
<td>2.71</td>
<td>4.907</td>
<td>0.28</td>
<td>2.19</td>
<td>2.47</td>
<td>2.312</td>
</tr>
<tr>
<td>Ignore traffic signal to ensure traffic keeps moving</td>
<td>RV5</td>
<td>2.71</td>
<td>2.48</td>
<td>1.087</td>
<td>0.299</td>
<td>2.47</td>
<td>3.00</td>
<td>4.062</td>
<td>0.046</td>
<td>2.62</td>
<td>2.62</td>
<td>0.000</td>
</tr>
<tr>
<td>Can drive without any problem while talking on mobile phone.</td>
<td>RV6</td>
<td>2.47</td>
<td>2.09</td>
<td>4.255</td>
<td>0.041</td>
<td>2.28</td>
<td>2.48</td>
<td>0.823</td>
<td>0.366</td>
<td>2.13</td>
<td>2.40</td>
<td>2.008</td>
</tr>
</tbody>
</table>

- Significant difference – seat belt/ helmet, wrong side, parking & mobile phone
- Female feel more confident about performing behavior.
- Significant difference – seat belt/ helmet, parking & cross signal
- TW riders feel more confident about performing violating behavior.
- No significant difference between users varying driving experience
## Multi linear regression analysis

<table>
<thead>
<tr>
<th></th>
<th>Coefficients</th>
<th>Standard Error</th>
<th>t Stat</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>1.698</td>
<td>0.273</td>
<td>6.225</td>
<td>0.000</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>-0.270</td>
<td>0.064</td>
<td>-4.222</td>
<td>0.000</td>
</tr>
<tr>
<td>Parental Pressure</td>
<td>-0.051</td>
<td>0.045</td>
<td>-1.142</td>
<td>0.255</td>
</tr>
<tr>
<td>Societal Norm</td>
<td>0.270</td>
<td>0.075</td>
<td>3.620</td>
<td>0.000</td>
</tr>
<tr>
<td>Self control</td>
<td>0.241</td>
<td>0.066</td>
<td>3.631</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Societal norm is dominating factor affecting violation than other factors.

* --- Not significant
Users are aware about traffic rules

Among other factors

• Societal norm is a predominant factor influencing violating behavior.
• Sensitivity and parental pressure are also responsible for violation.

Within sub user groups

• There is significant difference in gender for violating behavior, societal norm and self control.
• Females more agreeable in compare to males regarding traffic violating behavior.
• It revealed that TW riders are mainly associated with factors affecting violation and having self confidence for violation as compared to users who ride and drive both TW+FW.
• There is a significant difference in users with varying driving experience.
• New users (< 3 years experience) seem to violate traffic rules more frequently than users having experience more than 3 years.
Possible reasons could also be:

- Weak enforcement – less manpower
- Enforcement is not uniform for all.

Possible interventions:

- Government should introduce driving curriculum with involvement of the workshops on societal norm, Parental pressure and training on compliance of traffic rules.
- Education along with stringent enforcement, E Challan.
- Enforcement should be uniform for everyone.
- Effective traffic monitoring & strict enforcement.
THANK YOU....!!!