CHAPTER - IV
EVALUATION OF DISASTER MANAGEMENT IN HARYANA: AFFECTED INDIVIDUALS VIEWS

In the previous chapter we have evaluated the view of government & non-government officials regarding various aspects of disaster management relating to them. In this sequence now we examine the views of individuals from affected villages. In all views of 200 individuals have been examined selected from affected villages belonging to the four sampled district.

As earlier we begin by reproducing the questions put to the respondents regarding disaster management

Q1. Are you satisfied with the role of Haryana Government in disaster management?

Q2. Are you satisfied with performance of disaster prevention & mitigation policy?

Q3. Are you satisfied with the Haryana state disaster rehabilitation & relief Policy?

Q4. Are you satisfied with relief & rescue operation during disaster situation?

Q5. Whether the role of NGOs, CBOs & VOs is effective in disaster management.

Q6. Is their any role of the armed forces & police in disaster management in Haryana state?

Q7. Are you satisfied with the coordination between different disaster functionaries & agencies?
Q8. Are you invited at disaster management meetings?

Q9. Are you satisfied with the public awareness training programme of disaster?

Q10. Are you satisfied with the role of media in disaster management?

Q11. Are you satisfied with the role of PRIs in disaster management?

Q12. Are you in favour of public-private partnership in disaster management?

Q13. Are you satisfied with training involved at the Haryana Institute of public Administration in disaster management?

Q14. Does Civil Society play an effective role in disaster management?

Q15. Are you aware of the Disaster Management Act-2005?

To keep matter simple the affected villagers were simply asked whether they agree or not to questions put to them. To analyse their response we have used $X^2$ Homogeneity test.

We begin by explaining the concepts involved in using this test.

**Contingency table:** It is a display of observed & expected frequencies arranged in rows (R) and columns (C).

**Determination of expected frequencies:** The frequencies of the cell in the ith row and Jth column is computed as follows:

\[
\text{Expected frequency of the cell in the ith row & jth column} = \frac{\text{Marginal total of the } i^\text{th} \text{ row} \times \text{Marginal total of the } j^\text{th} \text{ Column}}{\text{Total No. of Frequencies}}
\]
Degrees of freedom: They refer to the number of independent observations. These are computed as follows:

\[ \text{Degree of freedom} = (r-1) (c-1) \]

Where \( r \) is no. of rows and \( c \) is the number of columns in a contingency table

Null Hypotheses: (Ho): The views of the respondents of the four sample districts are the same. In other words the sample respondents from the four districts have come from the same population i.e. the four sample are homogeneous.

Alternative Hypothesis (HA): The views are not same:

Level of significance (\( \alpha \)): It is the probability of rejecting a true hypothesis. We shall test the hypothesis at 5% level of significance.

Test Statistics

\[ \chi^2 = \sum_{i=1}^{k} \frac{(o_i - e_i)^2}{e_i} \]

Where \( o \) is observed cell frequency, and \( e \) is expected cell frequency

\[ e = \frac{\text{Row marginal total} \times \text{Column marginal Total}}{\text{Grand Total}} \]

Decision rule: The hypothesis may be accepted if computed value of \( \chi^2 < \chi^2 .05 \) with 3d.f, rejected otherwise.
Evaluation of Responses of Individual From Affected Villages

Now we use the $\chi^2$ homogeneity test to examine the status of the null hypothesis in respect of each of the fifteen questions put to individuals from affected villages.

Q 1 Are you satisfied with the role of Haryana Government in disaster management?

<table>
<thead>
<tr>
<th>District Responses</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>15(17)*</td>
<td>20(17)</td>
<td>18(17)</td>
<td>15(17)</td>
<td>68</td>
</tr>
<tr>
<td>Disagree</td>
<td>35(33)</td>
<td>30(33)</td>
<td>32(33)</td>
<td>35 (33)</td>
<td>132</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>200</td>
</tr>
</tbody>
</table>

* Where figure in parentheses are expected frequencies, figure outside bracket are observed frequencies

$$\chi^2 = \sum_{i=1}^{8} \frac{(o_i - e_i)^2}{e_i}$$

Where $o$ is observed cell frequency, and $e$ is expected cell frequency

Row marginal total X Column Marginal Total

$$e = \frac{3400}{200} = 17$$

Computed Value of $\chi^2 = 1.604$

Since the computed value of $\chi^2$ statistics ($= 1.604$) < $\chi^2 .05$ with 3d.f ($=7.815$), the hypothesis may be accepted.
Q2. Are you satisfied with performance of disaster prevention & mitigation policy?

<table>
<thead>
<tr>
<th>District Responses</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>10(13.75) *</td>
<td>15(13.75)</td>
<td>18(13.75)</td>
<td>12(13.75)</td>
<td>55</td>
</tr>
<tr>
<td>Disagree</td>
<td>40(36.25)</td>
<td>35(36.25)</td>
<td>32(36.25)</td>
<td>38(36.25)</td>
<td>145</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
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<td>50</td>
<td>50</td>
<td>200</td>
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</tbody>
</table>

* Where figure in parentheses are expected frequencies, figure outside bracket are observed frequencies

\[ \chi^2 = \sum_{i=1}^{8} \frac{(o_i - e_i)^2}{e_i} \]

Where \( o \) is observed cell frequency, and \( e \) is expected cell frequency

\[
e = \frac{\text{Row marginal total} \times \text{Column Marginal Total}}{\text{Grand Total}}
\]

\[
e = \frac{2750}{200} = 13.75
\]

Computed Value of \( \chi^2 = 3.687 \)

Since the computed value of \( \chi^2 \) statistics (= 3.687) < \( \chi^2 .05 \) with 3d.f (=7.815), the hypothesis may be accepted.
Q3. Are you satisfied with the Haryana state disaster rehabilitation & relief Policy?

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<th>III</th>
<th>IV</th>
<th>Total</th>
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<tbody>
<tr>
<td>Agree</td>
<td>25(18.75)*</td>
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<td>17(18.75)</td>
<td>15(18.75)</td>
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<td>Total</td>
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<td>50</td>
<td>50</td>
<td>200</td>
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</tbody>
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\[ \chi^2 = \sum_{i=1}^{8} \frac{(o_i - e_i)^2}{e_i} \]

Where \( o \) is observed cell frequency, and \( e \) is expected cell frequency

\[
e = \frac{\text{Row marginal total} \times \text{Column Marginal Total}}{\text{Grand Total}}
\]

\[
= \frac{3750}{200} = 18.75
\]

Computed Value of \( \chi^2 = 4.843 \)

Since the computed value of \( \chi^2 \) statistics (= 4.843) < \( \chi^2 .05 \) with 3d.f (=7.815), the hypothesis may be accepted.
Q4. Are you satisfied with relief & rescue operation during disaster situation?

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<th>Total</th>
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<tr>
<td>Agree</td>
<td>22(18.25)*</td>
<td>17(18.25)</td>
<td>19(18.25)</td>
<td>15(18.25)</td>
<td>73</td>
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<tr>
<td>Disagree</td>
<td>28(31.75)</td>
<td>33(31.75)</td>
<td>31(31.75)</td>
<td>35 (31.75)</td>
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<tr>
<td>Total</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>200</td>
</tr>
</tbody>
</table>

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\[
\chi^2 = \sum_{i=1}^{8} \frac{(o_i - e_i)^2}{e_i}
\]

Where \( o \) is observed cell frequency, and \( e \) is expected cell frequency

\[
e = \frac{\text{Row marginal total} \times \text{Column Marginal Total}}{\text{Grand Total}}
\]

\[
e = \frac{3650}{200} = 18.25
\]

Computed Value of \( \chi^2 = 2.308 \)

Since the computed value of \( \chi^2 \) statistics (= 23.08) < \( \chi^2_{0.05} \) with 3d.f (=7.815), the hypothesis may be accepted.
Q5. Is the role of NGOs, CBOs & VOs effective in disaster management?

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<th>IV</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>23(18.5)*</td>
<td>18(18.5)</td>
<td>17(18.5)</td>
<td>16(18.5)</td>
<td>74</td>
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<tr>
<td>Disagree</td>
<td>27(31.5)</td>
<td>32(31.5)</td>
<td>33(31.5)</td>
<td>34(31.5)</td>
<td>126</td>
</tr>
<tr>
<td>Total</td>
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<td>200</td>
</tr>
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$$\chi^2 = \sum_{i=1}^{8} \frac{(o_i - e_i)^2}{e_i}$$

Where o is observed cell frequency, and e is expected cell frequency

Row marginal total X Column Marginal Total

$$e = \frac{\text{Row marginal total} \times \text{Column marginal total}}{\text{Grand total}}$$

$$= \frac{3700}{200} = 18.5$$

Computed Value of $\chi^2 = 2.488$

Since the computed value of $\chi^2$ statistics (= 2.488) < $\chi^2$.05 with 3d.f (=7.815), the hypothesis may be accepted.
Q6. Are the armed forces & police play any role in disaster management in Haryana state?

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<td>200</td>
</tr>
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\[ \chi^2 = \sum_{i=1}^{8} \frac{(o_i - e_i)^2}{e_i} \]

Where \( o \) is observed cell frequency, and \( e \) is expected cell frequency

\[ e = \frac{\text{Row marginal total} \times \text{Column Marginal Total}}{\text{Grand Total}} \]

\[ = \frac{6350}{200} = 31.75 \]

Computed Value of \( \chi^2 = 2.308 \)

Since the computed value of \( \chi^2 \) statistics (= 2.308) < \( \chi^2 .05 \) with 3d.f (=7.815), the hypothesis may be accepted.
Q7. Are you satisfied with the coordination between different disaster functionaries & agencies?

<table>
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<td>Agree</td>
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<td>50</td>
<td>200</td>
</tr>
</tbody>
</table>

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\[
\chi^2 = \sum \frac{(o_i - e_i)^2}{e_i}
\]

Where \( o \) is observed cell frequency, and \( e \) is expected cell frequency

\[
e = \frac{\text{Row marginal total X Column Marginal Total}}{\text{Grand Total}}
\]

\[
e = \frac{6350}{200} = 31.75
\]

Computed Value of \( \chi^2 = 2.308 \)

Since the computed value of \( \chi^2 \) statistics (\( = 2.308 \)) < \( \chi^2.05 \) with 3d.f (\( = 7.815 \)), the hypothesis may be accepted.
Q8. Are you invited at disaster management meetings?

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<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>15(14.5)*</td>
<td>16(14.5)</td>
<td>17(14.5)</td>
<td>10(14.5)</td>
<td>58</td>
</tr>
<tr>
<td>Disagree</td>
<td>35(35.5)</td>
<td>34(35.5)</td>
<td>33(35.5)</td>
<td>40(35.5)</td>
<td>142</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
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<td>50</td>
<td>50</td>
<td>200</td>
</tr>
</tbody>
</table>

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\[
\chi^2 = \sum_{i=1}^{8} \frac{(o_i - e_i)^2}{e_i}
\]

Where o is observed cell frequency, and e is expected cell frequency

\[
e = \frac{\text{Row marginal total} \times \text{Column Marginal Total}}{\text{Grand Total}}
\]

\[
e = \frac{2900}{200} = 14.5
\]

Computed Value of \( \chi^2 = 2.817 \)

Since the computed value of \( \chi^2 \) statistics (\( = 2.817 \)) < \( \chi^2 .05 \) with 3d.f (\( = 7.815 \)), the hypothesis may be accepted.
Q9. Are you satisfied with the public awareness training programme of disaster?

<table>
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<th>IV</th>
<th>Total</th>
</tr>
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<tbody>
<tr>
<td>Responses</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Disagree</td>
<td>35(36.75)</td>
<td>38(36.75)</td>
<td>34(36.75)</td>
<td>40(36.75)</td>
<td>147</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>200</td>
</tr>
</tbody>
</table>

* Where figure in parentheses are expected frequencies, figure outside bracket are observed frequencies

$$\chi^2 = \sum \frac{(o_i - e_i)^2}{e_i}$$

Where $o_i$ is observed cell frequency, and $e_i$ is expected cell frequency

$$e = \frac{\text{Row marginal total} \times \text{Column Marginal Total}}{\text{Grand Total}}$$

$$e = \frac{2650}{200} = 13.25$$

Computed Value of $\chi^2 = 2.336$

Since the computed value of $\chi^2$ statistics ($= 2.336$) < $\chi^2.05$ with 3d.f ($= 7.815$), the hypothesis may be accepted.
Q10. **Are you satisfied with the role of media in disaster management?**

<table>
<thead>
<tr>
<th>District</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Agree</strong></td>
<td>15(14)*</td>
<td>16(14)</td>
<td>10(14)</td>
<td>15(14)</td>
<td>56</td>
</tr>
<tr>
<td><strong>Disagree</strong></td>
<td>35(36)</td>
<td>34(36)</td>
<td>40(36)</td>
<td>35(36)</td>
<td>144</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>200</td>
</tr>
</tbody>
</table>

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\[ \chi^2 = \sum_{i=1}^{s} \frac{(o_i-e_i)^2}{e_i} \]

Where o is observed cell frequency, and e is expected cell frequency

\[ e = \frac{\text{Row marginal total X Column Marginal Total}}{\text{Grand Total}} \]

\[ = \frac{2800}{200} = 14 \]

Computed Value of \( \chi^2 = 2.183 \)

Since the computed value of \( \chi^2 \) statistics (= 2.183) < \( \chi^2 .05 \) with 3d.f (=7.815), the hypothesis may be accepted.
Q11. Are you satisfied with the role of PRIs in disaster management?

<table>
<thead>
<tr>
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<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>35(35.5)*</td>
<td>34(35.5)</td>
<td>40(35.5)</td>
<td>33(35.5)</td>
<td>142</td>
</tr>
<tr>
<td>Disagree</td>
<td>15(14.5)</td>
<td>16(14.5)</td>
<td>10(14.5)</td>
<td>17(14.5)</td>
<td>58</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>200</td>
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</table>

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\[
\chi^2 = \sum_{i=1}^{8} \frac{(o_i - e_i)^2}{e_i}
\]

Where o is observed cell frequency, and e is expected cell frequency

Row marginal total X Column Marginal Total
\[
e = \frac{7100}{200} = 35.5
\]

Computed Value of \(\chi^2 = 2.817\)

Since the computed value of \(\chi^2\) statistics (= 2.817) < \(\chi^2 .05\) with 3d.f (= 7.815), the hypothesis may be accepted.
Q12. Are you in favour of public-private partnership in disaster management?

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>35(33)*</td>
<td>34(33)</td>
<td>33(33)</td>
<td>30(33)</td>
<td>132</td>
</tr>
<tr>
<td>Disagree</td>
<td>15(17)</td>
<td>16(17)</td>
<td>17(17)</td>
<td>20(17)</td>
<td>68</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
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<td>200</td>
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</tbody>
</table>

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\[ \chi^2 = \sum_{i=1}^{8} \frac{(o_i - e_i)^2}{e_i} \]

Where \( o \) is observed cell frequency, and \( e \) is expected cell frequency

\[ e = \frac{\text{Row marginal total} \times \text{Column Marginal Total}}{\text{Grand Total}} \]

\[ = \frac{6600}{200} = 33 \]

Computed Value of \( \chi^2 = 1.248 \)

Since the computed value of \( \chi^2 \) statistics \( = 1.248 \) < \( \chi^2.05 \) with 3d.f \( (=7.815) \), the hypothesis may be accepted.
Q13. Are you satisfied with training involved at the Haryana Institute of public Administration in disaster management?

<table>
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<tr>
<td></td>
<td>Agree</td>
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</tr>
<tr>
<td></td>
<td>15(16.5)*</td>
<td>16(16.5)</td>
<td>17(16.5)</td>
<td>18(16.5)</td>
<td>66</td>
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<td>35(33.5)</td>
<td>34(33.5)</td>
<td>33(33.5)</td>
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\[ \chi^2 = \sum_{i=1}^{8} \frac{(o_i - e_i)^2}{e_i} \]

Where o is observed cell frequency, and e is expected cell frequency

Row marginal total X Column Marginal Total
\[ e = \frac{3300 \times 200}{200} = 16.5 \]

Computed Value of \( \chi^2 = .452 \)

Since the computed value of \( \chi^2 \) statistics (= .452) < \( \chi^2 .05 \) with 3d.f (=7.815), the hypothesis may be accepted.
Q14. Does civil society play effective role in disaster management?

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\chi^2 = \sum_{i=1}^{8} \frac{(o_i - e_i)^2}{e_i}
\]

Where \( o \) is observed cell frequency, and \( e \) is expected cell frequency

\[
e = \frac{\text{Row marginal total} \times \text{Column Marginal Total}}{\text{Grand Total}}
\]

\[
e = \frac{3400}{200} = 17
\]

Computed Value of \( \chi^2 = 1.248 \)

Since the computed value of \( \chi^2 \) statistics (= 1.248) < \( \chi^2 .05 \) with 3d.f (=7.815), the hypothesis may be accepted.
Q15. Are you aware of the role of disaster management act-2005?

<table>
<thead>
<tr>
<th>District</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>20(16.5)</td>
<td>15(16.5)</td>
<td>15(16.5)</td>
<td>16(16.5)</td>
<td>66</td>
</tr>
<tr>
<td>Disagree</td>
<td>30(33.5)</td>
<td>35(33.5)</td>
<td>35(33.5)</td>
<td>34(33.5)</td>
<td>134</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>200</td>
</tr>
</tbody>
</table>

* Where figure in parentheses are expected frequencies, figure outside bracket are observed frequencies

\[ \chi^2 = \sum_{i=1}^{3} \frac{(o_i - e_i)^2}{e_i} \]

Where \( o \) is observed cell frequency, and \( e \) is expected cell frequency

\[
e = \frac{\text{Row marginal total} \times \text{Column Marginal Total}}{\text{Total}}
\]

\[
e = \frac{3300}{200} = 16.5
\]

Computed Value of \( \chi^2 = 1.538 \)

Since the computed value of \( \chi^2 \) statistics (= 1.538) < \( \chi^2 .05 \) with 3d.f (=7.815), the hypothesis may be accepted.

Thus on the basis of the \( \chi^2 \) test we can conclude that there is no significant difference in the opinions of the respondents of the affected villages of the four sample district.

It is really hearting to find that individuals from the affected villages hold high opinion about disaster management arrangement made in the Haryana state.