Homework, Chapter 4 addendum—Finding probabilities from crosstabulations

Table 1. Labor Force data

<table>
<thead>
<tr>
<th></th>
<th>&lt;HS</th>
<th>HS diploma</th>
<th>Bachelors</th>
<th>Graduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed</td>
<td>0.0250</td>
<td>0.4950</td>
<td>0.2170</td>
<td>0.0270</td>
</tr>
<tr>
<td>Unemployed</td>
<td>0.0060</td>
<td>0.0320</td>
<td>0.0065</td>
<td>0.0015</td>
</tr>
<tr>
<td>Not in Labor Force</td>
<td>0.0185</td>
<td>0.1485</td>
<td>0.0200</td>
<td>0.0030</td>
</tr>
</tbody>
</table>

1. Refer to Table 1 above. Find the following probabilities.
   a. P(Not in Labor Force ∩ HS diploma)
   b. P(Unemployed ∪ <HS)
   c. P(Graduate ∩ HS Diploma)
   d. P(Not in Labor Force ∩ Bachelors)
   e. P(Employed ∩ Graduate)
   f. P(Unemployed ∪ HS Diploma)

Table 2. Regional Ratings

<table>
<thead>
<tr>
<th></th>
<th>North</th>
<th>South</th>
<th>East</th>
<th>West</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>0.10</td>
<td>0.09</td>
<td>0.21</td>
<td>0.07</td>
<td>0.47</td>
</tr>
<tr>
<td>Fair</td>
<td>0.02</td>
<td>0.19</td>
<td>0.07</td>
<td>0.02</td>
<td>0.30</td>
</tr>
<tr>
<td>Poor</td>
<td>0.06</td>
<td>0.11</td>
<td>0.03</td>
<td>0.03</td>
<td>0.23</td>
</tr>
</tbody>
</table>

2. Refer to Table 2 above. Find the following probabilities.
   a. P(Good ∩ South)
   b. P(Fair ∪ West)
   c. P(Good ∩ South)
   d. P(Poor ∪ North)
   e. P(Fair ∪ East)

Table 3. Firms’ Profits vs. Type of Firm

<table>
<thead>
<tr>
<th></th>
<th>Agricultural</th>
<th>Industrial</th>
<th>Commercial</th>
<th>Service</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rising</td>
<td>0.0375</td>
<td>0.0750</td>
<td>0.2750</td>
<td>0.1000</td>
<td>0.4875</td>
</tr>
<tr>
<td>Stationary</td>
<td>0.0625</td>
<td>0.0875</td>
<td>0.0875</td>
<td>0.0250</td>
<td>0.2625</td>
</tr>
<tr>
<td>Falling</td>
<td>0.1125</td>
<td>0.0500</td>
<td>0.0250</td>
<td>0.0625</td>
<td>0.2500</td>
</tr>
</tbody>
</table>

3. Refer to Table 3 above. Find the following probabilities.
   a. P(Falling ∪ Service)
   b. P(Stationary ∩ Industrial)
   c. P(Stationary ∪ Agricultural)
   d. P(Rising ∩ Commercial)
Homework Ch. 4 addendum solutions

1  a  0.149
   b  0.09
   c  0
   d  0.17
   e  0.737
   f  0.968

2  a  0.09
   b  0.4
   c  0.3
   d  0.88
   e  0.93

3  a  0.875
   b  0.175
   c  0.8
   d  0.4