4.3 Some Rules of Probability

Ex. As reported in Employment and Earnings, the age dist’n of employed persons 16 years old and over is

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency (000's)</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-19</td>
<td>6,500</td>
<td>A</td>
</tr>
<tr>
<td>20-24</td>
<td>12,138</td>
<td>B</td>
</tr>
<tr>
<td>25-34</td>
<td>32,077</td>
<td>C</td>
</tr>
<tr>
<td>35-44</td>
<td>35,051</td>
<td>D</td>
</tr>
<tr>
<td>45-54</td>
<td>25,514</td>
<td>E</td>
</tr>
<tr>
<td>55-64</td>
<td>11,739</td>
<td>F</td>
</tr>
<tr>
<td>65 &amp; over</td>
<td>3,690</td>
<td>G</td>
</tr>
<tr>
<td>Total</td>
<td>126,709</td>
<td></td>
</tr>
</tbody>
</table>

An employed person is selected at random. Let the following events be defined

\[ W = \text{the person is between 20 and 64} \]
\[ Y = \text{the person is under 65} \]
\[ Z = \text{the person is 55 or over}. \]

Describe each of the following events in words and determine their probabilities.

a. (not Y)

Is the event that the person selected is

\[ P(\text{not } Y) = \]
\( P(Y) = ? \)

Could use the

\[ P(Y) = \]

\[ = \]

\[ = \]

b. \((\text{not } W)\)

Is the event that the person selected is

\[ P(\overline{W}) = \]

\[ = \]

\[ = \]

Since \( A \cap G = \)

\[ = \]

\[ = \]

\[ = \]

c. \( Y \cap Z \) (same as \( Y \& Z \))

Is the event that the person selected is

\[ P(Y \cap Z) = \]

\[ = \]

\[ = \]