Lesson 2: Maximin

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Fundraiser example

Example (Fundraiser)
A school has scheduled a fund-raiser a month into the future. It has a choice between holding a fête or a sports day. On a dry day, it expects to make $150 on a fête and $120 on a sports day. However, on a wet day it would make only $75 on a fête and $85 on a sports day.

<table>
<thead>
<tr>
<th></th>
<th>d</th>
<th>w</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>120</td>
<td>85</td>
</tr>
<tr>
<td>F</td>
<td>150</td>
<td>75</td>
</tr>
</tbody>
</table>
Maximin: choose based on best worst case scenario

- choose action(s) based on best worst case
- originally proposed by Abraham Wald
- for the extremely risk averse

\[
\begin{array}{c|cc|c}
  & d & w & \text{min} \\
\hline
S & 120 & 85 & 85 \\
F & 150 & 75 & 75 \\
\end{array}
\]

Example walk-through

\[
\begin{array}{c|ccc|c}
  & s_1 & s_2 & s_3 & \text{min} \\
\hline
A_1 & 6 & 0 & 4 & 0 \\
A_2 & 2 & 5 & 1 & 1 \\
A_3 & 4 & 3 & 2 & 2 \\
\end{array}
\]

- *Maximin* would choose A₃

- similar rules in lecture notes:
  - *MaxiMax*
  - Hurwicz’s rule