To compare the effectiveness of the heuristic rules for selecting the set to be added to cover a point having no covering set, a randomly generated problem with 25 points and 100 sets was generated.

50 iterations of subgradient optimization were performed, and after each iteration, the heuristic algorithm was applied 3 times:

- the least-cost set covering the point was added
- the reduced costs of the 4 least-cost sets were computed, and the set having the smallest reduced cost was added.
- like the second rule, but with zero used as the multiplier of any point already covered.

Analysis of the Results

1UE: 44
# sets in best cover: 9
# sets eliminated by penalty: 0

<table>
<thead>
<tr>
<th>set selection rule for opt</th>
<th>option</th>
<th>UB-LB</th>
<th>mean freq</th>
<th>1st found</th>
</tr>
</thead>
<tbody>
<tr>
<td>original cost</td>
<td>(1, 1)</td>
<td>14</td>
<td>3.50</td>
<td>13</td>
</tr>
<tr>
<td>reduced cost</td>
<td>(4, 1)</td>
<td>18</td>
<td>2.15</td>
<td>6</td>
</tr>
<tr>
<td>recompute reduced cost</td>
<td>(4, 1)</td>
<td>24</td>
<td>1.50</td>
<td>13</td>
</tr>
</tbody>
</table>

Frequency of ≤

<table>
<thead>
<tr>
<th>freq</th>
<th>0 6 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>6</td>
<td>34</td>
</tr>
</tbody>
</table>

i.e., the second rule outperformed the first in 20 instances, and the third in 13 instances.