PCN – model TC/NW communities
Royal Columbian and Eagle Ridge
Acute care utilization evaluations

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Integrated Analytics
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Version 1.0
Methodology

- **Goal:** how would the clients have used acute care services if they never received “Nurse Debbie” services?

- **Analytical steps:**
  - Examined clients’ acute care usage patterns leading up to the date when their “Nurse Debbie” services went live
  - Performed a projection of how clients would have continued to use the acute care service based on their historical patterns

**Acute avoidance** = Difference between the projected acute care usage versus the actual post-live acute care usage
## Evaluation results

<table>
<thead>
<tr>
<th>Cohort type</th>
<th>Time range</th>
<th>Cohort size</th>
<th>projected post</th>
<th>actual post</th>
<th>% savings</th>
<th>projected post</th>
<th>actual post</th>
<th>% savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing clients enrolled before March 2016</td>
<td>3 year pre, 3 year post</td>
<td>184</td>
<td>5.4 (956)</td>
<td>4.2 (743)</td>
<td>22% (1.2, 212)</td>
<td>86.1 (14809)</td>
<td>49.4 (6312)</td>
<td>43% (36.7, 6312)</td>
</tr>
<tr>
<td>Existing clients enrolled after March 2016</td>
<td>2 year pre, 2 year post</td>
<td>181</td>
<td>3.1 (505)</td>
<td>2.0 (326)</td>
<td>35% (1.1, 179)</td>
<td>51.9 (7733)</td>
<td>29.0 (4321)</td>
<td>44% (22.9, 3412)</td>
</tr>
<tr>
<td>New* clients enrolled after March 2016</td>
<td>1.5 year pre, 1.5 year post</td>
<td>137</td>
<td>1.9 (188)</td>
<td>1.3 (129)</td>
<td>32% (0.6, 59)</td>
<td>45.8 (2977)</td>
<td>23.1 (1502)</td>
<td>50% (22.7, 1476)</td>
</tr>
<tr>
<td>Paris** clients</td>
<td>6 months pre, 6 months post</td>
<td>1071</td>
<td>0.6 (437)</td>
<td>0.4 (292)</td>
<td>33% (0.2, 146)</td>
<td>17.1 (9593)</td>
<td>9.5 (5330)</td>
<td>44% (7.6, 4264)</td>
</tr>
</tbody>
</table>

### Legend

- The "Time range" column refers to the number of months considered in the pre-vs-post evaluation framework.
- The "Projected post" column refers to how much acute care utilization the clients would have used if the redesigned "Nurse Debbie" services did not exist.
- The "Actual post" column refers to the actual volume of acute care utilization that were rendered to the clients after the "Nurse Debbie" services became available to them. The number outside of the bracket in each cell is the average utilization per patient, and the number inside the bracket is the total utilization across the cohort. Avoidance is calculated by subtracting the acute usages in the actual post from the projected post. **Only clients who had at least 1 Emergency or 1 hospital admission were included in the Emergency or Bed days avoidance calculation respectively (i.e. not everyone in the starting cohort was included in the avoidance calculation if they did not use the acute services during the evaluation time range).** The "% savings" column shows the average acute care avoidance per patient as well as the total avoidance for the cohort. Per-patient avoidance is calculated by dividing the total avoidance with the volume of patients who had either at least one Emergency or 1 hospitalized bed day respectively.

*New clients refer to only clients who were not transferred from Nurse Debbie. New clients who were transferred from Nurse Debbie to other nurses were excluded due to lack of enrolment date for when those clients began receiving the redesigned services (regardless of from which nurse). New clients under Nurse Debbie were included.*

**Paris clients refer to clients who were registered in Paris system and were not part of the clients in the above three cohorts. A shorter timeframe of 6 months pre and post was chosen to account for the fact many of these clients were enrolled just recently into the program.**
Some common Q&A

• **How is acute care avoidance calculated?** Acute care avoidance is calculated by tallying ED visits and hospital bed days in the months prior to each client’s enrollment, using a trending analysis to project anticipated use in the next few months, and comparing this projection to their actual use. The number of months evaluated depend on when each client was enrolled, which in turn dictate the amount of data available for evaluation.

• **How come the per patient avoidance shows decimal, or can go below 1?** The average acute care avoidance is calculated by dividing the cumulative avoidance against the total number of clients. For example, an ED avoidance of less than 1 means some clients had avoided 1 or more ED visits while other clients did not.
Appendix
Methodology – detailed 1/2

- Time-interrupted segmented regression

No distinguishment of pre vs post

Segmented regression: With distinguishment of pre vs post
Methodology – detailed 2/2

What does each bin mean?
Example - this bin means a total of 18 Emergency visits were made by clients 9 months prior to program enrollment.

Why is it empty here?
This was due to manual removal of Emergency visits that were deemed too close to date enrollment to avoid ‘referral bias’ in the analysis. It was intentionally introduced to produce a more accurate avoidance calculation.