Below is our comprehensive report with five SMART questions. For each question, we’ve included a "Domain Research" section that explains how our recent domain research enriched and refined the question.

# **Comprehensive Staffing Analysis Report with Domain Research Insights**

## **1. Introduction and Objectives**

Nursing homes are facing severe staffing challenges, particularly with the increasing reliance on temporary (contract) staffing. Our goal is to understand how this reliance impacts quality outcomes, operational efficiency, and costs. We focus on data from Q2 2024, examining key roles—such as Registered Nurses (RNs) and Certified Nursing Assistants (CNAs)—and support staff. We integrate our internal staffing data with external CMS datasets (quality reporting, survey summaries, MDS quality measures, ownership, and citation/penalty data) to validate and enrich our analysis.

Recent domain research has highlighted:

* A strong correlation between high temporary staffing and poor quality outcomes.
* The financial impact of inefficiencies (overtime, penalties, and agency fees).
* Short-term fluctuations in staffing that directly affect care quality.
* The potential benefits and challenges of on-demand staffing solutions.

These insights have shaped our final SMART questions and ensure that our research objectives are both data-driven and aligned with current industry trends.

## **2. Our Five SMART Questions with Domain Research Enrichment**

### **Question 1: Refined RN Staffing Analysis**

**SMART Question:** *"What is the ratio of contract hours versus employee hours for Registered Nurses (RNs) in Q2 2024 in facilities with fewer than 120 residents?"*

* **Layman Explanation:** We aim to determine, in smaller nursing homes (fewer than 120 residents), how much work is done by temporary RNs compared to permanent RNs during Q2 2024.
* **Justification & Research Objective:**
  + **Critical Role & Time Frame:** RNs are vital for patient care; using recent data (Q2 2024) is essential.
  + **Resident Census Threshold:** Preliminary data analysis showed that facilities with fewer than 120 residents fall into the lower quartile and often face more severe staffing challenges.
* **Domain Research:** Our domain research reveals that smaller facilities frequently struggle to retain full-time staff due to budget constraints and socioeconomic factors. Studies indicate that understaffing in these facilities directly impacts resident outcomes. This research enriched our question by emphasizing the need to compare temporary versus permanent RN staffing in these vulnerable settings.
* **Actionable Insight:** If a high ratio of temporary RNs is found, it indicates a critical gap in stable staffing, guiding targeted interventions to improve retention and quality of care.
* **CMS Integration Annotation:** We plan to merge this analysis with quality reporting data to check if a high temporary RN ratio corresponds with lower quality performance scores.

### **Question 2: Intra-Quarter Variation for CNAs**

**SMART Question:** *"What are the short-term (within Q2 2024) changes in the ratio of temporary versus permanent staffing for Certified Nursing Assistants (CNAs), and how do these changes relate to fluctuations in the number of residents?"*

* **Layman Explanation:** We will track day-to-day or week-to-week changes in temporary versus permanent CNA staffing during Q2 2024, and see if these changes correspond to increases or decreases in resident numbers.
* **Justification & Research Objective:**
  + **Operational Focus:** CNAs are essential for daily care. Monitoring short-term fluctuations reveals how staffing adjusts to sudden changes in resident demand.
  + **Correlation with Resident Census:** This comparison helps us understand if facilities increase temporary staffing during busier periods.
* **Domain Research:** Research indicates that staffing patterns in nursing homes are highly variable and often reactive to sudden surges in resident needs. Studies from the post-COVID era show that CNAs, due to their critical role in basic care, experience significant shifts in temporary staffing during peak periods. This domain insight led us to focus on intra-quarter dynamics for CNAs.
* **Actionable Insight:** Identifying predictable peaks and troughs in temporary CNA staffing enables proactive scheduling adjustments to ensure adequate coverage.
* **CMS Integration Annotation:** While this question is primarily based on internal operational data, its findings can later be cross-referenced with survey outcomes to assess quality impacts.

### **Question 3: Comparative Trend and Cost Correlation Analysis**

**SMART Question:** *"Over Q2 2024, how do temporary staffing trends differ between direct care (nursing) and support (non-nursing) roles, and what correlations exist between these trends and extra costs such as overtime expenses, temporary staffing fees, and penalties?"*

* **Layman Explanation:** We will compare temporary staffing patterns between direct care staff (e.g., nurses) and support staff (e.g., administrators) during Q2 2024, and determine if a higher reliance on temporary staff is linked to increased extra costs and financial penalties.
* **Justification & Research Objective:**
  + **Holistic Comparison:** Analyzing both groups provides a complete picture of staffing practices.
  + **Cost Linkage:** Higher temporary staffing may lead to increased overtime, agency fees, and penalties.
* **Domain Research:** Recent studies have documented that temporary staffing not only leads to inconsistent care but also incurs hidden costs, such as overtime and regulatory penalties. The financial burden on facilities due to inefficient staffing models has been well documented, which strongly influenced our decision to include cost correlation in this question.
* **Actionable Insight:** A clear link between high temporary staffing and increased costs would justify the need for more efficient staffing solutions.
* **CMS Integration Annotation:** We will integrate CMS quality reporting, VBP performance data, and penalty data to analyze whether facilities with higher temporary staffing incur greater extra costs and penalties.

### **Question 4: Cost Implication Forecasting**

**SMART Question:** *"What are the cost differences in Q2 2024 between facilities with over 50% temporary staffing versus those with less than 50% for both nursing and non-nursing roles, and how would a 10% reduction in temporary staffing affect overall staffing costs?"*

* **Layman Explanation:** We aim to compare the costs of facilities that use a high percentage of temporary staff (over 50%) against those that do not, and estimate potential cost savings if temporary staffing were reduced by 10%.
* **Justification & Research Objective:**
  + **Financial Impact Focus:** Facilities with over 50% temporary staffing generally face higher costs.
  + **Savings Forecast:** The 10% reduction target is based on benchmarks suggesting that significant cost savings are achievable.
* **Domain Research:** Research in healthcare staffing indicates that high reliance on temporary workers is associated with increased financial burdens, including higher staffing fees and penalties. Cost-effectiveness studies have shown that even modest reductions in temporary staffing can yield substantial savings. This insight helped shape our question by focusing on both cost differentials and forecasted savings.
* **Actionable Insight:** A quantified ROI model based on potential cost savings will provide a strong case for investing in more efficient staffing models.
* **CMS Integration Annotation:** By merging with CMS quality reporting, VBP performance, and penalty data, we can further validate that reducing temporary staffing improves both quality and cost outcomes.

### **Question 5: Intra-Quarter Staffing Pattern Analysis**

**SMART Question:** *"What are the short-term (within Q2 2024) variations in temporary staffing levels for both nursing and support roles, and do these patterns show predictable times when staffing gaps occur?"*

* **Layman Explanation:** We will analyze day-to-day or week-to-week changes in the number of temporary staff for both care and support roles during Q2 2024 to identify predictable patterns of staffing gaps.
* **Justification & Research Objective:**
  + **Temporal Patterns:** Analyzing short-term fluctuations helps identify specific times when staffing consistently falls short.
  + **Predictability:** If gaps are predictable, facilities can plan to add staff proactively.
* **Domain Research:** Domain research has shown that staffing shortages in nursing homes often occur in predictable cycles, influenced by factors such as seasonal demand and staff burnout. Recognizing these patterns is key to implementing proactive scheduling and resource allocation strategies.
* **Actionable Insight:** Understanding predictable staffing gaps enables facilities to adjust their schedules in advance, reducing the impact on resident care.
* **CMS Integration Annotation:** Although primarily focused on internal operational data, these patterns can later be compared with external quality and cost outcomes to see if predictable staffing gaps align with poorer performance metrics.

## **3. External CMS Datasets Overview**

To validate and enrich our internal analysis, we will integrate the following external CMS datasets:

* **Skilled\_Nursing\_Facility\_Quality\_Reporting\_Program\_Provider\_Data\_Jan2025.csv:** Provides detailed quality performance metrics (e.g., quality scores, inspection outcomes).
* **NH\_SurveySummary\_Jan2025.csv:** Summarizes survey results and deficiencies from CMS inspections.
* **NH\_QualityMsr\_MDS\_Jan2025.csv:** Contains quality measures derived from the Minimum Data Set (MDS) to reflect resident care outcomes.
* **NH\_Ownership\_Jan2025.csv:** Offers ownership information (for-profit, non-profit, chain) to explain variations in staffing practices.
* **NH\_HealthCitations\_Jan2025.csv:** Lists citations and penalties related to health and safety issues, providing a financial impact perspective.

These datasets complement our internal staffing data by supplying external, standardized benchmarks for quality, operational performance, and cost outcomes. They enable us to correlate staffing practices with tangible performance indicators.

## **4. Conclusion**

Our final set of five SMART questions, enriched by recent domain research, provides a robust framework for analyzing temporary staffing in nursing homes. By integrating internal staffing data with external CMS datasets, we can:

* Correlate high temporary staffing with lower quality outcomes.
* Identify operational gaps and predict staffing shortages.
* Quantify cost implications and forecast potential savings.
* Tailor actionable recommendations to optimize staffing practices.

**Selected External Datasets:**

* Skilled\_Nursing\_Facility\_Quality\_Reporting\_Program\_Provider\_Data\_Jan2025.csv
* NH\_SurveySummary\_Jan2025.csv
* NH\_QualityMsr\_MDS\_Jan2025.csv
* NH\_Ownership\_Jan2025.csv
* NH\_HealthCitations\_Jan2025.csv

These datasets have been chosen for their ability to provide standardized quality, survey, outcome, ownership, and penalty metrics that will validate and enhance our analysis. They form an integral part of our comprehensive strategy to improve staffing efficiency and quality in nursing homes.

## **5. Researcher Influence on Our Questions**

Recent domain research highlighted:

* The adverse impact of high temporary staffing on quality and cost.
* The importance of understanding short-term staffing fluctuations.
* The role of ownership and regulatory penalties in affecting performance.
* The benefits and challenges of on-demand staffing solutions.

These insights directly influenced the formulation of our SMART questions—ensuring that each question not only measures internal staffing metrics but also links them to external quality, cost, and operational outcomes. This integration provides a multi-dimensional view that underpins actionable recommendations for strategic improvements in staffing practices.

This comprehensive report outlines our enriched SMART questions, the integration of external CMS datasets, and how domain research has shaped our analysis framework. Let me know if further refinements are needed or if additional details should be added.