# **Integrated Analysis of Temporary Staffing Variables**

## **1. Introduction**

This report combines insights from four key analyses:

* **Nursing vs. Non-Nursing Staffing Ratios:** Examines overall contract staffing for direct care (nursing) and support (non-nursing) roles. It finds that nursing contract usage is consistently low (≈6–8%) while non-nursing roles show significantly higher reliance (≈18–27%), with notable weekly fluctuations and an anomaly on June 1, 2024.
* **Intra-Quarter Staffing Patterns:** Analyzes day-to-day variations in temporary staffing ratios across the quarter. Results show stable aggregate nursing ratios with modest weekend upticks, and non-nursing ratios that remain higher overall, revealing clear cyclical (weekly) patterns.
* **CNA Staffing Ratio Analysis:** Focuses on Certified Nursing Assistants (CNAs), finding that the daily CNA contract ratio oscillates between 5% and 8%. Importantly, a moderate negative correlation (r ≈ -0.40) with resident census suggests that on busier days, facilities tend to use proportionally fewer temporary CNAs.
* **Advanced RN Temporary Staffing Analysis:** Examines RN staffing through employee and contract hours, revealing a heavily skewed distribution where most facility-days report no contract RN usage, yet a small subset shows near-100% reliance on temporary staff. The aggregate time series is stable, but facility-level outliers are present.

## **2. Synthesis of Findings**

### **Interrelationships Among Variables**

* **Consistent Staffing Models Across Roles:** The low overall RN contract usage (from the advanced RN analysis) aligns with the nursing versus non-nursing report—most facilities rely predominantly on full-time nursing staff. However, facilities that do use contract RNs often exhibit higher contract usage across non-nursing roles as well, suggesting that certain organizations or regions have a consistent model of contract reliance.
* **Intra-Quarter Cycles Compound Role Differences:** The intra-quarter analysis shows that both nursing and non-nursing roles exhibit daily and weekly cyclical patterns. Nursing ratios modestly rise on weekends (likely due to reduced availability of full-time staff), while non-nursing ratios remain consistently high with spikes on certain weekdays (e.g., Monday) and dips on Sundays. This compounded pattern indicates that while direct care remains stable, support functions are managed more flexibly to adapt to operational needs.
* **CNA Adjustments and Census Effects:** The CNA analysis reveals that on days with higher resident census, the proportion of contract CNA hours tends to drop—implying that facilities may respond to increased demand by staffing more permanent CNAs or leveraging overtime. This behavior contrasts with the stable aggregate RN patterns and adds a layer of complexity when considering the overall temporary staffing strategy.
* **Outlier Influence:** Both the RN and non-nursing analyses highlight that a minority of facilities drive the extreme contract usage values. These outliers, while not affecting aggregate trends dramatically, represent cases where staffing models deviate significantly from the norm. Identifying these facilities is crucial, as they could be key drivers of cost, quality, or operational issues.

### **Compounded Impacts on SMART Questions**

1. **Refined RN Staffing Analysis:** Integrated results show that while most facilities maintain a low contract RN ratio, the presence of outliers suggests targeted intervention may be needed for specific facilities. The consistent low average confirms the hypothesis that smaller or well-staffed facilities rely mostly on full-time RNs.
2. **Intra-Quarter Variation for CNAs:** The CNA analysis, with its moderate negative correlation with census and clear weekly cycles, indicates that staffing adjustments for CNAs are responsive to demand fluctuations. This interplay is critical for understanding how facilities balance short-term needs against cost and quality considerations.
3. **Comparative Trend Analysis (Nursing vs. Non-Nursing):** The combined insights reveal that non-nursing roles consistently have a higher contract staffing ratio, with significant day-to-day variability. In contrast, nursing roles are more stable but do experience weekend peaks. These contrasting patterns can help stakeholders understand which operational areas may require more flexible staffing solutions.
4. **Intra-Quarter Staffing Pattern Analysis:** Daily and weekly patterns from all analyses highlight that while aggregate trends are stable, facility-level and role-specific fluctuations exist. The compounded view shows that even modest increases in temporary staffing on weekends (nursing) or spikes in non-nursing roles can have important implications when considered together with CNA adjustments.

## **3. Recommendations and Next Steps**

1. **Deep-Dive on Outliers:**
   * Investigate facilities that display extreme contract usage across multiple roles.
   * Examine whether these are driven by genuine operational needs or data anomalies (e.g., the June 1 anomaly).
2. **Segment Facilities:**
   * Group facilities by their overall contract reliance to identify patterns related to ownership, geographic location, or size.
   * Use these segments to target specific interventions.
3. **Operational Adjustments:**
   * For nursing, consider enhancing weekend coverage planning to address the modest uptick in contract usage.
   * For non-nursing, review scheduling practices on weekdays (especially Mondays) and Sundays to smooth out fluctuations.
4. **Integrate Additional Data:**
   * Incorporate quality measures, cost data, and penalty reports to further assess the financial and care-quality implications of these staffing patterns.
   * Examine correlations between high contract usage and regulatory or quality outcomes.
5. **Monitor and Forecast:**
   * Continue tracking these variables over subsequent quarters to identify persistent trends or emerging shifts in staffing strategies.

## **4. Conclusion**

The integrated analysis of nursing, non-nursing, CNA, and RN temporary staffing variables reveals a complex but coherent picture:

* **Direct care staffing** remains stable with minimal reliance on temporary staff, except for a small subset of facilities.
* **Support functions** consistently show higher contract reliance, with distinct daily and weekly patterns.
* **CNA staffing** is sensitive to resident census, suggesting responsive staffing adjustments.
* **Compounded effects** of these variables highlight areas where targeted operational improvements can be made, potentially leading to enhanced care quality and cost efficiency.

By examining these variables collectively, we not only answer our SMART questions but also provide actionable insights for refining staffing strategies and optimizing resource allocation in nursing homes.