Nurse Staffing Data Analysis

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Recommendation 1: Target Top Facilities by Contractor Hours

Analysis:
I queried the nurse_staffing_Q2_2024 table in SQLite to identify facilities with the highest contractor hours. The query summed contractor hours across all roles (Hrs_RN_ctr, Hrs_LPN_ctr, Hrs_CNA_ctr, etc.) for each facility (PROVNUM). The results were sorted by total contractor hours in descending order, and the top 10 facilities were selected.

Findings:
The top 10 facilities by contractor hours in Q2 2024 heavily rely on temporary staffing, indicating a strong demand for contractors like those provided by Clipboard Health. These facilities are primarily located in New York (6 facilities), Pennsylvania (2), Florida (1), and Michigan (1), with contractor hours ranging from 53,483 to 74,668 hours over the quarter. This high usage suggests potential staffing shortages or a preference for flexible staffing solutions, making them prime targets for Clipboard Health's services.

Supporting Data:

Top Facilities by Contractor Hours

Rank	PROVNUM	PROVNAME	STATE	Total Contractor Hours
1	335100	ISABELLA GERIATRIC CENTER INC	NY	74,668.53
2	395290	PLEASANT ACRES REHABILITATION AND NURSING	PA	73,236.24
3	335791	QUEENS BOULEVARD EXTENDED CARE FACILITY	NY	66,765.5
4	395015	BRIGHTON REHABILITATION AND WELLNESS CENTER	PA	61,079.82
5	335462	THE PLAZA REHAB AND NURSING CENTER	NY	60,962.33
6	335227	WORKMENS CIRCLE MULTICARE CENTER	NY	60,753.64

7	235729	MICHIGAN VETERAN HOMES AT GRAND RAPIDS	MI	56,973.91
8	105910	CORAL REEF SUBACUTE CARE CENTER LLC	FL	55,537.04
9	335772	RICHMOND CTR FOR REHAB AND SPECIALTY HEALTHCARE	NY	54,301.75
10	335201	BETH ABRAHAM CENTER FOR REHABILITATION AND NURSING	NY	53,483.72

Recommendation:

I recommend that the Clipboard Health sales team prioritize these 10 facilities for outreach, as they represent the highest contractor usage in Q2 2024, with a combined total of over 600,000 contractor hours. Facilities like Isabella Geriatric Center (NY) and Pleasant Acres Rehabilitation (PA) are particularly promising, with 74,668 and 73,236 contractor hours, respectively. These facilities are already comfortable with contractor staffing, likely due to staffing shortages or operational preferences, making them ideal candidates for Clipboard Health's services. Focus on New York, where 6 of the top 10 facilities are located, to capitalize on regional demand.

Recommendation 2: Prioritize Sales Efforts in the States with Highest Contractor Usage by Percentage

Analysis:

I queried the nurse_staffing_Q2_2024 to calculate contractor usage by state. The query summed contractor hours (Hrs_RN_ctr, Hrs_LPN_ctr, Hrs_CNA_ctr, etc.) and total hours (Hrs_RN, Hrs_LPN, Hrs_CNA, etc.) across all facilities within each state. I then computed the contractor percentage as (contractor_hours / total_hours) * 100, grouping by State and sorting by contractor percentage in descending order to identify the top 10 states.

Findings:

The top 10 states by contractor usage percentage in Q2 2024 show a significant reliance on temporary staffing, with percentages ranging from 11.29% to 29.64%. Vermont (VT) leads with 29.64%, followed by Maine (ME) at 15.94% and New Hampshire (NH) at 15.39%. These states, particularly in the Northeast (VT, ME, NH, PA, NJ, NY), indicate a regional trend of higher contractor usage, likely driven by staffing shortages or operational preferences for flexible labor. This makes them prime markets for Clipboard Health's contractor staffing solutions.

Supporting Data:

Top States by Contractor Percent

Rank	STATE	Contractor Hours	Total Hours	Contractor Percent
1	VT	251,810.02	849,952.83	29.64%
2	ME	317,900.53	1,993,825.96	15.94%
3	NH	305,300.62	1,984,402.45	15.39%
4	PA	3,140,207.69	21,873,504.9	14.36%
5	NJ	1,874,722.27	13,379,614.09	14.01%
6	MT	154,521.03	1,129,748.5	13.68%
7	DE	185,658.59	1,426,998.16	13.01%
8	ND	219,092.37	1,752,783.73	12.5%
9	NY	3,891,488.52	31,903,270.53	12.2%
10	OR	328,261.52	2,908,763.88	11.29%

Recommendation:
I recommend that the Clipboard Health sales team focus on these 10 states, particularly Vermont, Maine, and New Hampshire, which exhibit the highest contractor usage percentages (15.39% to 29.64%). These states are likely experiencing significant staffing challenges, making them receptive to Clipboard Health's contractor solutions. Vermont's 29.64% contractor usage is especially notable, suggesting a strong market. The Northeast region (VT, ME, NH, PA, NJ) dominates the top 5, indicating a regional opportunity to expand.

Recommendation 3: Target Facilities with High RN Contractor Usage and Low RN Hour per Resident Day for Sales Outreach

Analysis:
I queried the table in to identify facilities with both: high RN contractor usage and low RN hours per resident day (HPRD). The query calculated the RN contractor percentage (SUM(Hrs_RN_ctr) / SUM(Hrs_RN) * 100) and RN HPRD (SUM(Hrs_RN) / SUM(MDScensus)) for each facility, filtering for facilities with a contractor percentage greater than 20%, RN HPRD below the CMS benchmark of 0.75, and a minimum of 1,000 RN hours (SUM(Hrs_RN) >= 1000) to ensure meaningful staffing activity. The results were sorted by contractor percentage (descending) and RN HPRD (ascending) to prioritize facilities with the greatest need.

Findings:

The query revealed 11 facilities with 100% RN contractor usage and critically low RN HPRD, ranging from 0.14 to 0.37, well below the CMS minimum of 0.75. These facilities are spread across multiple states, including Massachusetts (MA), Illinois (IL), Texas (TX), New Jersey (NJ), Georgia (GA), Arkansas (AR), Oregon (OR), New York (NY), and Florida (FL). Facilities like Meadow Green Nursing and Rehabilitation Center (MA) and Pearl of Elk Grove (IL) have RN HPRD values as low as 0.14 and 0.16, respectively, indicating severe RN staffing shortages while relying entirely on contractors.

Supporting Data:

Bottom Facilities by RNHPRD With 100% RN as Contractors

PROVNUM	PROVNAME	STATE	RN Contractor Hours	Total RN Hours	RN Contractor Percent	RN HPRD
225440	MEADOW GREEN NURSING AND REHABILITATION CENTER	MA	1,370.75	1,370.75	100.0	0.135
145689	PEARL OF ELK GROVE, THE	IL	2,098.83	2,098.83	100.0	0.160
676100	SAN ANGELO NURSING AND REHAB	TX	1,359.57	1,359.57	100.0	0.162
315396	PREFERRED CARE AT CUMBERLAND	NJ	2,359.79	2,359.79	100.0	0.184
115565	ROSEMONT AT STONE MOUNTAIN	GA	2,847.3	2,847.3	100.0	0.228
45417	ARKANSAS VETERANS HOME AT FAYETTEVILLE	AR	1,385.0	1,385.0	100.0	0.323
38E189	GRACELEN CARE CENTER	OR	1,776.76	1,776.76	100.0	0.360
335436	JAMAICA HOSPITAL NURSING HOME CO INC	NY	7,514.0	7,514.0	100.0	0.367

105982	SUN HARBOR HEALTH	FL	3,856.21	3,856.21	100.0	0.374
115482	EAST LAKE ARBOR	GA	3,054.75	3,054.75	100.0	0.374

Recommendation:
I recommend that the Clipboard Health sales team prioritize outreach to these 11 facilities, as they exhibit 100% RN contractor usage paired with extremely low RN HPRD (0.14 to 0.38), indicating a critical shortage of RN staffing. These facilities are already fully reliant on contractors for RN staffing, making them ideal candidates for Clipboard Health's RN contractor solutions. Pitch the ability to increase RN HPRD to meet CMS standards (e.g., "Adding 5 RNs/day could raise your RN HPRD from 0.14 to 0.75"), emphasizing compliance and improved care quality.

Recommendation 4: Prioritize Sales Outreach in States With Significant Growth in Contractor Usage

Analysis:
I queried the nurse_staffing_Q2_2024 table in SQLite to analyze the overall growth in contractor hours from April to June 2024 for each state. The query calculated contractor hours for each state in April and June, then computed the overall percentage growth as (June_hours - April_hours) / April_hours * 100, alongside the absolute growth in hours (June_hours - April_hours). A minimum threshold of 1,000 contractor hours in April was applied to exclude states with small baselines (Puerto Rico) that could skew percentage growth, ensuring the results focus on meaningful opportunities. The top 10 states were ranked by overall growth percentage to identify those with the largest increases in contractor work, highlighting emerging markets for Clipboard Health to target with its contractor staffing solutions.

Findings:
The top 10 states by overall contractor growth percentage from April to June 2024 show significant increases in contractor usage, with New Mexico (NM) leading at 23.91%, followed by Wyoming (WY) at 16.9%, and West Virginia (WV) at 11.75%. NM and WV also exhibit substantial absolute growth (8,489.24 and 5,930.59 hours), indicating a significant increase in contractor demand that aligns with Clipboard Health's focus on high-volume opportunities. WY's growth (16.9%, 1,733.29 hours) suggests an emerging market, though its smaller volume indicates a more modest market size. States like Vermont (VT) and Connecticut (CT), previously identified as high contractor usage markets (VT at 29.64% contractor percentage), show more modest growth (4.05% and 3.56%) but still contribute notable absolute increases due to their large baselines.

Supporting Data:
States Ranked By Overall Contractor Growth % in Q2 2024

Rank	STATE	April Hours	June Hours	Growth Hours	Overall Contractor Growth Percent
1	NM	35,501.85	43,991.09	8,489.24	23.91%
2	WY	10,258.7	11,991.99	1,733.29	16.9%
3	WV	50,455.59	56,386.18	5,930.59	11.75%
4	ID	25,640.66	28,271.81	2,631.15	10.26%
5	OK	52,241.74	57,568.78	5,327.04	10.2%
6	AR	43,428.44	46,276.43	2,847.99	6.56%
7	HI	37,897.71	40,206.02	2,308.31	6.09%
8	VT	81,676.69	84,984.58	3,307.89	4.05%
9	CT	119,047.58	123,284.64	4,237.06	3.56%
10	UT	29,397.1	30,369.43	972.33	3.31%

Recommendation:
I recommend that the Clipboard Health sales team prioritize New Mexico, West Virginia, and Wyoming for outreach, as these states exhibited the largest overall growth in contractor work from April to June 2024, with growth percentages of 23.91%, 11.75%, and 16.9%, respectively. NM and WV are particularly promising due to their significant growth (8,489.24 and 5,930.59 hours), indicating a substantial increase in contractor demand that Clipboard Health can address. These states likely face staffing challenges in rural or underserved regions (e.g., NM and WY in the Mountain West, WV in Appalachia), making Clipboard Health's flexible staffing solutions a perfect fit.

Part 2: SQL Test

Tables:

Assume you have the following tables in your database:

1. **Sales**
   a. sales_id (INT)
   b. customer_id (INT)
   c. product_id (INT)

    d. `sale_date` (DATE)

    e. `quantity` (INT)

    f. `total_amount` (DECIMAL)

2. **Customers**

    a. `customer_id` (INT)

    b. `customer_name` (VARCHAR)

    c. `sales_region` (VARCHAR)

    d. `sign_up_date` (DATE)

3. **Products**

    a. `product_id` (INT)

    b. `product_name` (VARCHAR)

    c. `category` (VARCHAR)

    d. `price` (DECIMAL)

FYI: This is coded for SQLite

1) Write a query to return the `customer_name`, `product_name`, and `total_amount` for each sale in the last 30 days.

```
SELECT

        c.customer_name,

        p.product_name,

        s.total_amount

FROM

        Sales s

        INNER JOIN Customers c ON s.customer_id = c.customer_id

        INNER JOIN Products p ON s.product_id = p.product_id

WHERE

        s.sale_date >= DATE('now', '-30 days')

ORDER BY

        1;
```

2) Write a query to find the total revenue generated by each product category in the last year. The output should include the product category and the total revenue for that category.

SELECT

       p.category,

       SUM(s.total_amount) AS total_revenue

FROM

       Sales s

       INNER JOIN Products p ON s.product_id = p.product_id

WHERE

       s.sale_date >= DATE('now', '-1 year')

GROUP BY

       1

ORDER BY

       2 DESC;

3) Write a query to return all customers who made purchases in 2023 and are located in the "West" region.

SELECT DISTINCT

       c.customer_id,

       c.customer_name

FROM

       Sales s

       INNER JOIN Customers c ON s.customer_id = c.customer_id

WHERE

       STRFTIME('%Y', s.sale_date) = '2023'

AND c.sales_region = 'West'

ORDER BY

1;

4) Write a query to display the total number of sales, total quantity sold, and total revenue for each customer. The result should include the `customer_name`, total sales, total quantity, and total revenue.

SELECT

c.customer_name,

COUNT(s.sales_id) AS total_sales,

SUM(s.quantity) AS total_quantity,

SUM(s.total_amount) AS total_revenue

FROM

Sales s

INNER JOIN Customers c ON s.customer_id = c.customer_id

GROUP BY

1,

c.customer_id

ORDER BY

1;

5) Write a query to find the top 3 customers (by total revenue) in the year 2023.

SELECT

c.customer_name,

SUM(s.total_amount) AS total_revenue

FROM

Sales s

       INNER JOIN Customers c ON s.customer_id = c.customer_id

WHERE

       STRFTIME('%Y', s.sale_date) = '2023'

GROUP BY

       1,

       c.customer_id

ORDER BY

       2 DESC

LIMIT 3;

6) Write a query to rank products by their total sales quantity in 2023. The result should include the `product_name`, total quantity sold, and rank.

SELECT

       p.product_name,

       SUM(s.quantity) AS total_quantity_sold,

       RANK() OVER (ORDER BY SUM(s.quantity) DESC) AS rank

FROM

       Products p

       INNER JOIN Sales s ON p.product_id = s.product_id

WHERE

       STRFTIME('%Y', s.sale_date) = '2023'

GROUP BY

       1,

p.product_id

ORDER BY

3;

7) Write a query that categorizes customers into "New" (if they signed up in the last 6 months) or "Existing" based on their `sign_up_date`. Include the `customer_name`, `region`, and category in the result.

SELECT

customer_name,

sales_region AS region,

CASE

WHEN sign_up_date >= DATE('now', '-6 months') THEN 'New'

ELSE 'Existing'

END AS category

FROM

Customers

ORDER BY

1;

8) Write a query to return the month and year along with the total sales for each month for the last 12 months.

SELECT

STRFTIME('%m', sale_date) AS month,

STRFTIME('%Y', sale_date) AS year,

SUM(total_amount) AS total_sales

FROM

Sales

WHERE

    sale_date >= DATE('now', '-1 year')

GROUP BY

    1,

    2

ORDER BY

    2,

    1;

9) Write a query to return the product categories that generated more than $50,000 in revenue during the last 6 months.

SELECT

    p.category,

    SUM(s.total_amount) AS total_revenue

FROM

    Products p

    INNER JOIN Sales s ON p.product_id = s.product_id

WHERE

    s.sale_date >= DATE('now', '-6 months')

GROUP BY

    1

HAVING

    SUM(s.total_amount) > 50000

ORDER BY

2 DESC;

10) Write a query to check for any sales where the `total_amount` doesn't match the expected value (i.e., `quantity` * `price`).

SELECT

    s.sales_id

FROM

    Sales s

    INNER JOIN Products p ON s.product_id = p.product_id

WHERE

    ABS(s.total_amount - (s.quantity * p.price)) > 0.01;