MARKET ANALYSIS REPORT

BY

Group - 2

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REPORT ON

Analysis and Market Segmentation on Primary Health care

Overview

This report provides a comprehensive overview of the state of human resources and health infrastructure in India's primary health care system, with a focus on doctors and pharmacists across various healthcare facility types (Sub-Centres, PHCs, CHCs, and District Hospitals).

1. Workforce Shortages Persist Despite Sanctioned Posts

- **Nationwide trends** indicate an average of 1,386 doctors required per state, with 1,466 in position — suggesting adequate numbers on paper.
- However, **significant disparities exist** at the state level. **Madhya Pradesh, Chhattisgarh, and Bihar** have large gaps between sanctioned and in-position doctors, indicating **staffing and deployment inefficiencies**, not just policy deficiencies.
- States like **Uttar Pradesh** have the highest number of required and posted doctors, but still show considerable **vacancy numbers**, suggesting issues in distribution and retention.

2. High Vacancy and Shortfall Rates in Key States

- **Chhattisgarh**: High shortfall (444) and vacancy (457) figures.
- **Madhya Pradesh**: Largest number of vacant posts (~8286), suggesting major HR allocation gaps.
- **Bihar**: Tight PHC coverage but still high shortfalls and vacancies.

3. Geographical and Accessibility Disparities

- **Community Health Centres (CHCs)** cover vast areas (average ~660 sq. km), leading to **low accessibility in remote/rural areas**.
- **States like Chhattisgarh and Bihar** show vast distances between centres, increasing **travel time for critical care**, impacting maternal and emergency health services.

4. Pharmacist Staffing: Similar Gaps

- States such as **Bihar and Uttar Pradesh** show a **high shortfall of pharmacists**.
- **Assam** interestingly reports more pharmacists in position than required, indicating potential **overstaffing or redistribution**.
- Several states have sanctioned pharmacist posts but struggle to fill them — highlighting **execution issues**.

5. Infrastructure vs. Human Resources Mismatch

- There is a noticeable **disconnect between infrastructure (facilities built)** and **available personnel (doctors/pharmacists in position)**, particularly in rural regions.
- **District Hospitals** generally fare better in staffing compared to Sub-District Hospitals, widening the **gap in healthcare access** for decentralized communities.

6. Data Gaps and Quality Concerns

- **Missing data** for some states and UTs (e.g., Arunachal Pradesh, Andaman & Nicobar) may mask deeper challenges.
- A more **integrated approach combining population density, terrain, and infrastructure data** is essential for accurate planning.

Final Policy Recommendations

- **Redistribute and recruit** medical staff in high-vacancy areas like Madhya Pradesh and Chhattisgarh.
- **Enhance accessibility** in remote regions through **mobile health units** and improved road infrastructure.
- Focus on **doctor-to-population ratios** rather than absolute numbers for equitable resource allocation.
- **Monitor implementation** to ensure sanctioned posts are effectively filled and sustained.
- **Integrate data systems** to capture real-time staffing and infrastructure gaps, enabling agile decision-making.

1. Nationwide Summary

Average Required: ~1386 doctors/state.
Average In Position: ~1466 doctors/state.
Vacancies exist in many states despite sanctioned posts.
Max Required: 25,650 (Uttar Pradesh)
Max In Position: 27,124 (also Uttar Pradesh)

States with 0 shortfall/vacancy: Data gaps suggest these may be missing or underreported.

2. Top States by Shortfall

- Chhattisgarh: Required = 785, In Position = 341 → Shortfall: 444
- Bihar: Required = 1899, In Position = 1786 → Shortfall: 113
- Uttar Pradesh and Madhya Pradesh: Also show significant gaps, especially in sanctioned vs. in-position counts.

3. Understaffed States

These have significant vacancies even though sanctioned posts exist:

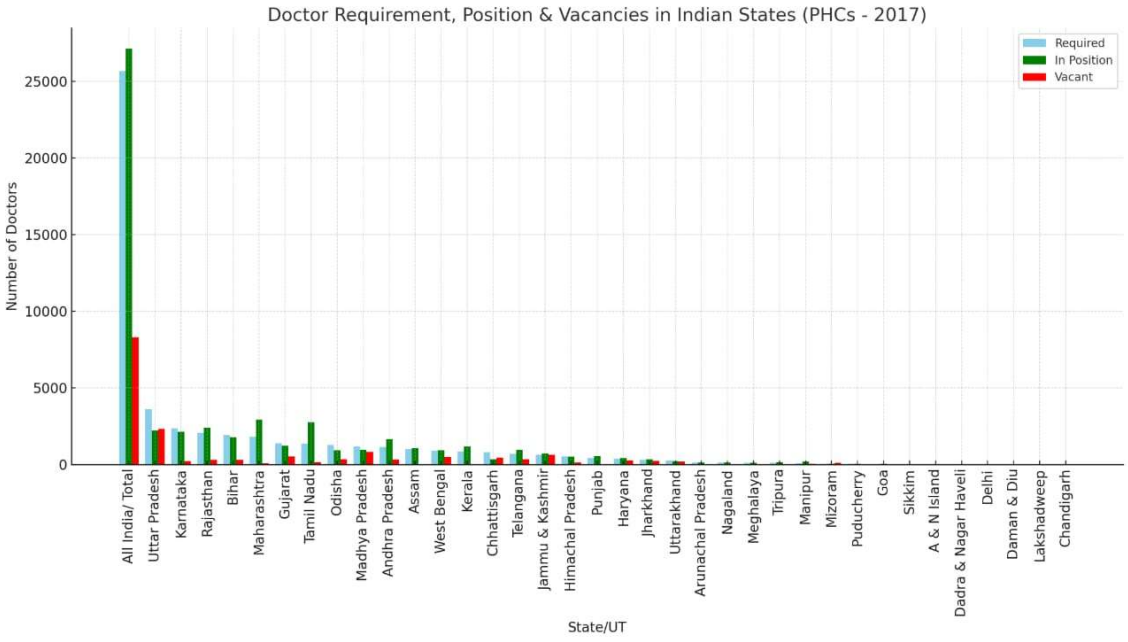
- Madhya Pradesh: ~8286 vacant posts.
- Chhattisgarh: 457 vacant.
- Bihar: 292 vacant.

4. Segmentation Opportunities

Geographic Segmentation: Analyze by region (e.g., North, South, East) to identify patterns.

Doctor Availability per Capita: Combine with population data for doctor-to-population ratio analysis.

Vacancy Rates: Use (Sanctioned - In Position) / Sanctioned * 100 to find % unfilled. **key Observations:**



1. Uttar Pradesh has the highest number of required and in-position doctors, but also a noticeable gap in vacancies.
2. Madhya Pradesh, Chhattisgarh, and Bihar show large gaps between sanctioned and in-position doctors — indicating workforce shortfalls.
3. Smaller states/UTs like Sikkim, Lakshadweep, etc., have lower absolute numbers but may still face proportional shortages.

Average rural area and distance covered by three key rural health facility types:

- Sub-Centre (SC)
- Primary Health Centre (PHC)
- Community Health Centre (CHC)

1. Coverage Patterns (Pan-India Averages)

Facility	Avg. Area Covered (sq. km)	Avg. Radial Distance (km)
Sub Centre (SC)	21.14 sq. km	2.34 km
PHC	121.72 sq. km	5.65 km
CHC	659.96 sq. km	12.73 km

Higher-level centers (CHCs) cover vast areas, which may result in lower accessibility, especially in remote regions.
2. State-Level Disparities
Minimum SC area coverage: 0.26 sq. km (suggests high density of sub-centres in some states)
Maximum CHC coverage: 2,838.5 sq. km (possible in sparsely populated or underdeveloped regions)
3. Examples of Specific States
Chhattisgarh:
- SC covers 25.44 sq. km | CHC covers 780.71 sq. km
- Long distances reflect possible rural inaccessibility

Bihar:
- PHC covers 48.36 sq. km | CHC 612.26 sq. km
- Indicates relatively tighter PHC network, but large CHC coverage may burden secondary care

4. Implications for Accessibility

Long radial distances (CHC: up to 30 km) can limit access to urgent or specialized care.

Inadequate road or transport infrastructure may further increase effective travel time, impacting maternal health, emergencies, etc.

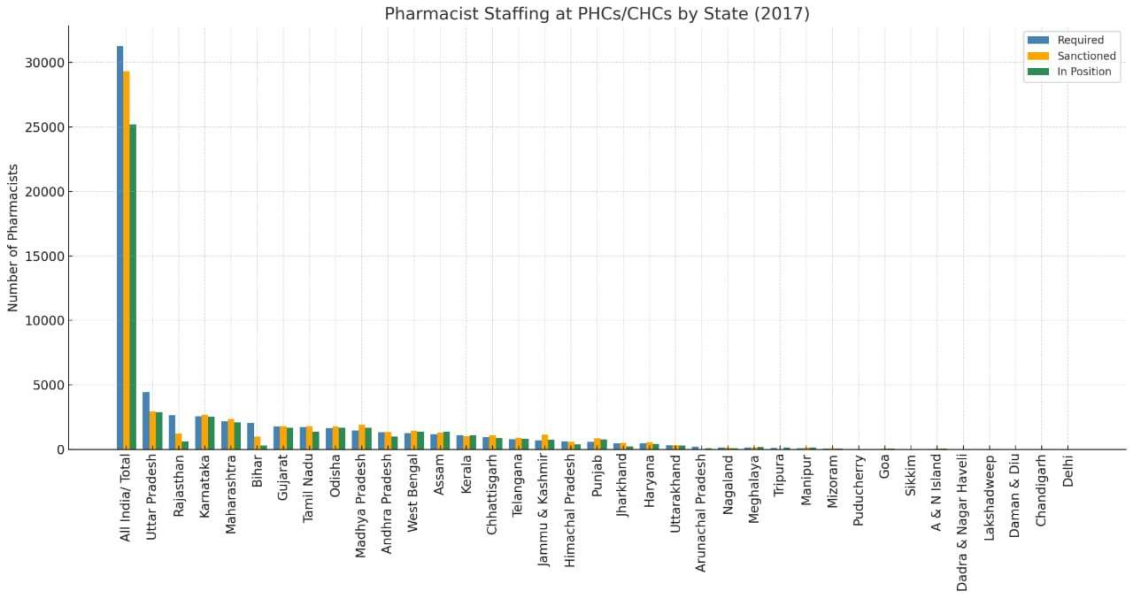
5. Data Quality Notes

Some missing values for Arunachal Pradesh, Andaman & Nicobar Islands, etc.

Should be complemented with population density and terrain data to understand true service reach.

Key Takeaways for Policy & Planning:

- Need-based redistribution or creation of health centres in high-coverage areas.
- Focus on connectivity and mobile health units for areas with large CHC radial ranges.
- Combine with staffing data (from other file) to align infrastructure with human resource availability.
- Key Observations:
- Uttar Pradesh has the highest number of required and in-position doctors, but also a noticeable gap in vacancies.
- Madhya Pradesh, Chhattisgarh, and Bihar show large gaps between sanctioned and in-position doctors — indicating workforce shortfalls.
- Smaller states/UTs like Sikkim, Lakshadweep, etc., have lower absolute numbers but may still face proportional shortages



visualization of the number of pharmacists required, sanctioned, and in position at PHCs/CHCs across Indian states in 2017:

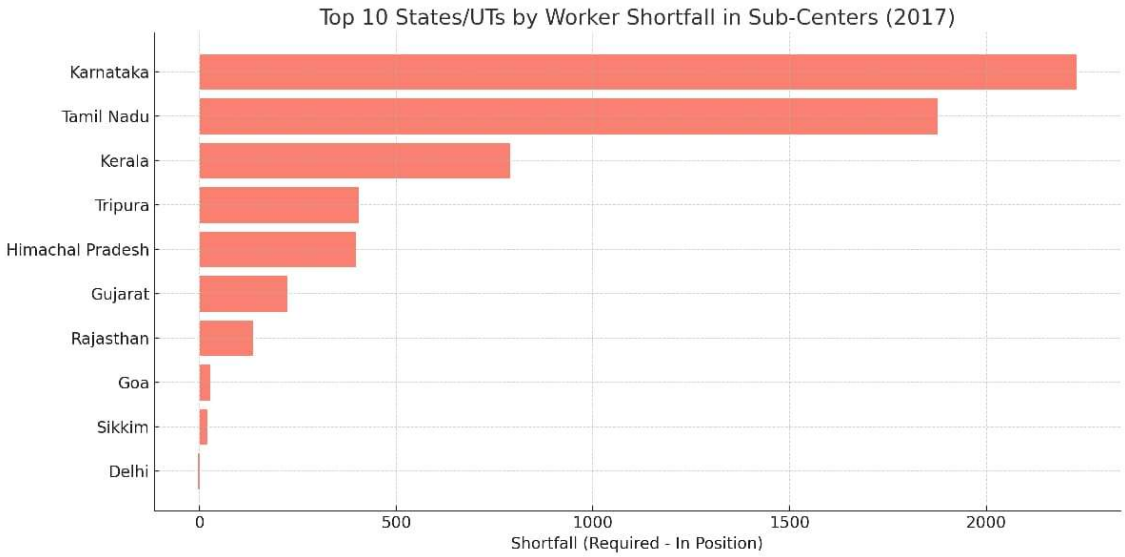
Key Takeaways:

- ✓ Bihar and Uttar Pradesh show a high shortfall between required and in-position pharmacists.

- ✓ Assam appears to have more pharmacists in position than required.
- ✓ Several states have large sanctioned numbers but are understaffed in practice, pointing to implementation issues rather than policy shortcomings.
- ✓ Only 32/37 states have sanctioned doctor data for District Hospitals.

Staff Shortfall:

- ✓ Many states show a shortfall in doctors (i.e., in-position < sanctioned).
- ✓ Some states (e.g., Arunachal Pradesh, Assam) have more doctors in-position than sanctioned, possibly due to reallocation or temporary staffing.



Disparity Between Levels:

- ✓ District Hospitals generally have more sanctioned posts than Sub-District Hospitals.
- ✓ The in-position count is also generally higher at District Hospitals.