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CIHI's physician scope of practice methodology

To assign a scope of practice category to a physician, their participation rate is compared with the most typical participation rate for each specialty group and the most similar group is assigned to that physician.

- s = specialty group
- \mathbb{P} = scope of practice category
- R = participation rate sequence for an individual physician
- t_s = most typical participation rate sequence for specialty group s
- p = fee-for-service payments
- n = number of practice areas
- N = number of physicians in a specialty group
- I = number of specialties
- d = distance

Participation rate sequence for each physician:

$$R = (R_1, \dots, R_n) \text{ where } R_i = \frac{p_i}{P} \text{ and } P = \sum_{i=1}^n p_i$$

The participation rate sequence is equal to the physician's fee-for-service payments in each designated practice area divided by their total fee-for-service payments. The total fee-for-service payments are a sum of the fee-for-service payments from each practice area.

Most typical participation rate sequence for each specialty group:

$$t_s = (t_{s1}, \dots, t_{sn}) \text{ where } t_{si} = m_i + (1 - \sum_{i=1}^n m_i) \cdot \text{median}(R_{1i}, \dots, R_{Ni})$$

The most typical participation rate sequence for a specialty group is equal to the median participation rate for all physicians within the specialty group, for each practice area, plus an adjustment factor. The adjustment factor is 1 minus the sum of the median participation rate for each practice area in a given specialty divided by the total number of practice areas.

Scope of practice category for each specialty group:

$$P_s = t_{si}$$

The scope of practice category for a specialty group is equal to the typical participation rate for that specialty group.

Assigning a scope of practice category to each physician:

$$P = \underset{i}{\text{argmin}} \{ |R - t_{si}| \}$$

The assigned scope of practice category for an individual physician is equal to the specialty scope of practice category that is most similar, determined by the minimum distance between the individual physician's participation rate sequence and each specialty group's most typical participation rate sequence. The distance between participation rate sequences is equal to the area of the individual physician and each specialty.

To use a scope of practice measure, an individual physician's practice activity is compared with their peers' typical scope of practice. This results in a value (between 0 and 100 when scaled) that describes the distance between the individual's expected scope of practice and their actual scope of practice. The lower the scaled scope of practice value, the closer the physician's practice is to the average scope of practice of their peers, and vice versa. This value can facilitate observations in physician practices by quantifying physician services to aid researchers and stakeholders in understanding physician practices across jurisdictions at a more granular level.

This methodology enables a high-level understanding of each physician's practice and how it relates to that of their peers, and subsequently enables higher-quality decision-making and planning with better data. A current limitation of the methodology can be observed by comparing the pediatrician and geriatrician scopes of practice; though the populations



