County-Level Healthcare Access Disparities and Melanoma Incidence in Imperial & San Diego Counties

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BACKGROUND

Melanoma incidence varies geographically and may be influenced by differences in access to healthcare and diagnostic opportunity. The distribution of the healthcare workforce is an important structural factor that can affect detection rates. San Diego and Imperial Counties differ markedly in healthcare infrastructure and demographic composition, making them a useful comparison. Ecological analyses of these contrasts relevant to public health planning and efforts to address disparities alike.

OBJECTIVES

- Objectives:
  - *Compare melanoma incidence rates between counties.*
  - *Compare healthcare infrastructure indicators (PCP and dermatologist density, insurance coverage, poverty).*
  - *Describe structural differences in diagnostic capacity environments.*
- Hypothesis:
  - Differences in Melanoma incidence between San Diego and Imperial Counties are associated with county-level variation in healthcare infrastructure, including provider density, insurance coverage, and socioeconomic conditions.

METHODS

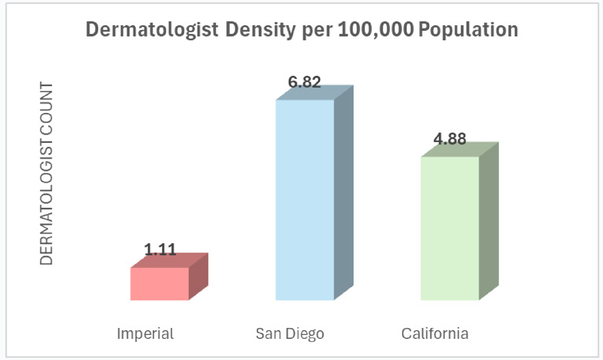
• Study Design:
Cross-sectional ecological comparison using county-level data, including 5-year pooled estimates (2017-2021).

• County-level indicators:

- *Age-adjusted melanoma incidence[1]*
- *Dermatologist per 100,000[2]*
- *Primary Care Physician per 100,000[3]*
- *Percentage below 100% Federal Poverty Line[4]*
- *Percentage of Uninsured[4]*

• Descriptive comparison only

RESULTS



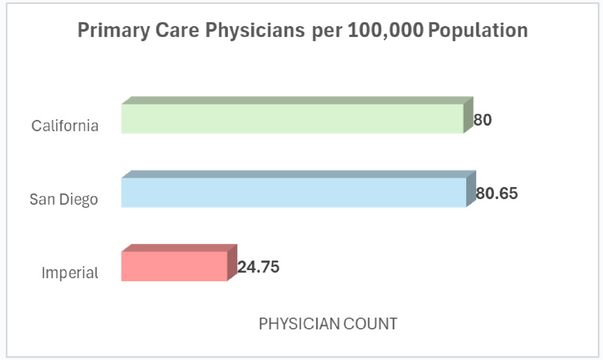
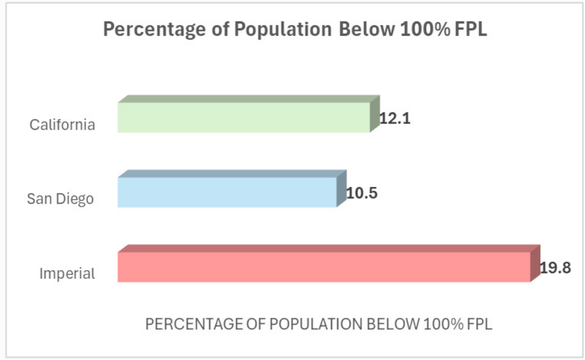


Fig. 1 - Imperial County has substantially fewer dermatologists per 100,000 population compared to San Diego County & the California state average, indicating limited specialist diagnostic capacity.
Fig. 2 - Primary care physician density in Imperial County is significantly lower than San Diego County and the state average, suggesting possible healthcare access shortage.



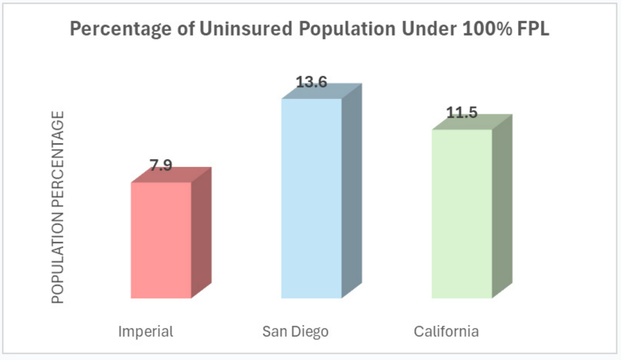


Fig. 3 - Imperial County has nearly double the amount of residents living below the Federal Poverty Level compared to San Diego County, while allocating less than 7% of the population.
Fig. 4 - Despite Imperial County having less uninsured residents below 100% Federal Poverty Level, access to Primary Care Physicians and Dermatologists may hinder diagnosis and treatment, therefore influencing disease outcome.

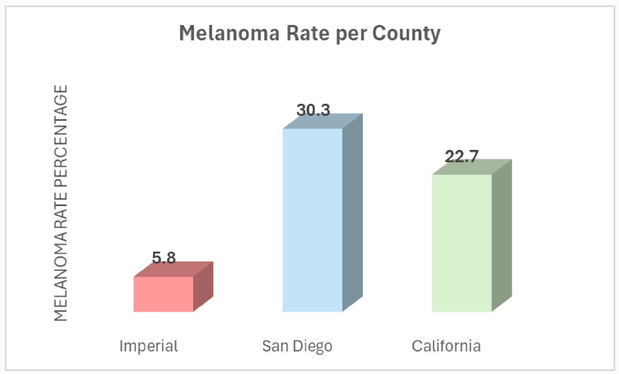


Fig. 5 - Identifying official melanoma rates per county is challenging within ideal conditions but disturbances in healthcare access and infreastructure, especially within underserved and geographically challenged communities, may exacerbate these challenges affecting data quality and skewing otherwise trusted statistics.

CONCLUSIONS

- Melanoma incidence rates vary considerably between the two counties.
- Structural differences in healthcare infrastructure may influence diagnostic opportunity and reported incidence patterns.
- These findings are descriptive and do not imply causaility. A key limitation of this ecological analysis is the absence of adjustment for demographic composition (e.g., age & race/ethnicity), which are known determinants of melanoma incidence.
- Substantial disparities in dermatologist density were observed between San Diego and Imperial Counties.
- Understanding structural healthcare differences may inform workforce planning and future analytic studies.
- The ratio of specialists to primary care providers differs marked across counties, reflecting variation in diagnostic capacity.

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