Do the Social Determinants of Health affect Myocardial Infarction Prognosis?

UC DAVIS HEALTH | MEDICAL CENTER

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INTRODUCTION

- Myocardial infarctions (MIs) largely contribute to the US Cardiovascular disease burden with over 800,00 MIs per year[1]
- Previous work has shown that the prognosis for sub-groups patients post MI is variable.[2]
- Investigations of extrinsic factors such as the social determinants of health (SoDH), that possibly impact prognosis, are limited
- The aim of this study is to determine what social factors may relate and/or contribute to MI prognosis after medical therapies.

OBJECTIVE

To determine if neighborhood and physical environment characteristics are associated with adverse events-free survival post MI.

Methods

- Retrospective review with 798 UC Davis Health patients with a MI diagnosis and standard treatment during initial hospital admission was conducted.
- Patient's Zip code data was cross referenced with the California Healthy Places Index(HPI) for a HPI percentile score ranging from 0% (least healthy) to 100% (most healthy).
- Neighborhood-by-neighborhood, the HPI maps data on social conditions that drive health — like education, job opportunities, clean air and water, and other indicators that are positively associated with life expectancy at birth.
- Associations were assessed between HPI score and major adverse cardiovascular events or MACE (death, recurrent MI, ReMI and Heart failure, HF).

RESULTS

Healthy Place Index Map of Sacramento

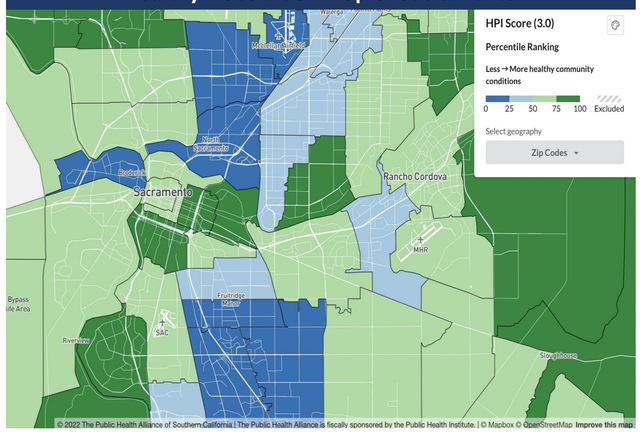


Figure 1: HPI MAP of Sacramento zip code areas. Dark blue is 25% or less (Poor health conditions), light blue is 25% to 50% (fair health conditions,) light green and dark green represent above 50 %(good health conditions).

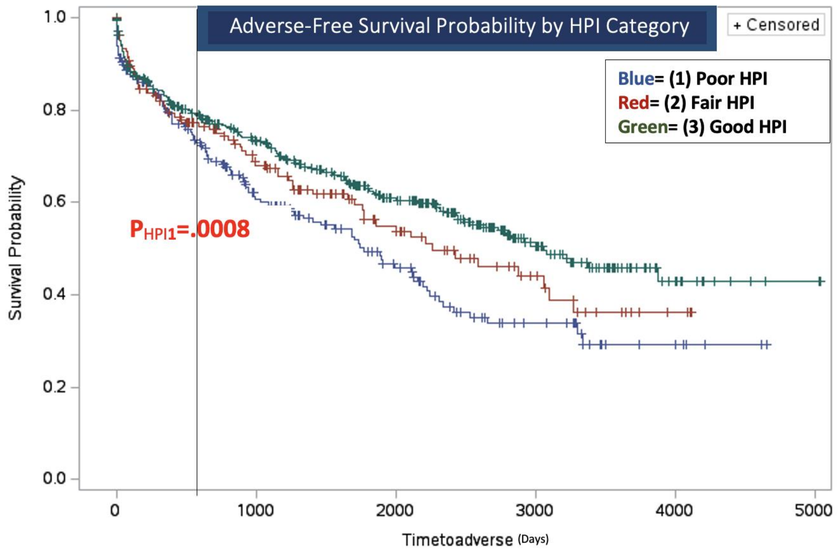


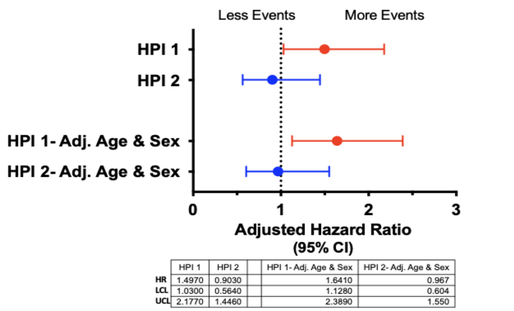
Figure 2 &3 : KM Curve of Adverse Free probability by HPI. Adverse = death, ,ReMI, & HF. P value is compared to HPI 3 curve. Line represents start of curve separation around 600 days (1.6 yrs**).** Hazard Ratios (HRs) for Death and HF by HPI category. HPI HRs are significant.

HPI Percentile Summary of MI Cohort					
N	Missing*	Mean %	SD	Min %	Max %
767	31	49.29	23.20	7.3	99.

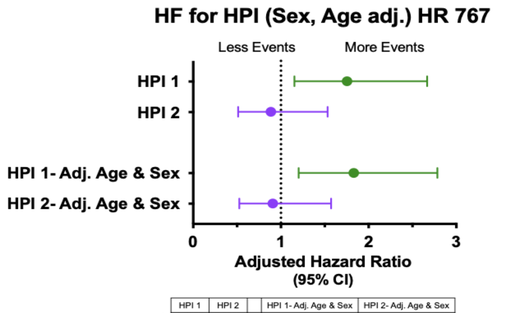
Table 1:HPI Percentile summary*31 patients did not have a HPI percentile due to living out of state or being excluded from the HPI Map

Distribution of Patient Membership within HPI Categories		
HPI Level	Frequency	Percent
Missing	31	3.88
(1)Poor HPI	196	24.56
(2)Fair HPI	163	20.43
(3)Good HPI	408	51.13
Total	798	100

Table 2:HPI Categories: HPI Percentile less than 25%= Poor health conditions, HPI greater than 25% but less than 50% = Fair health conditions, Greater than 50% HPI percentile= Good health conditions



	HPI 1	HPI 2	HPI 1- Adj. Age & Sex	HPI 2- Adj. Age & Sex
HR	1.4970	0.9030	1.6410	0.967
LCL	1.0300	0.5640	1.1280	0.604
UCL	2.1770	1.4460	2.3890	1.550



	HPI 1	HPI 2	HPI 1- Adj. Age & Sex	HPI 2- Adj. Age & Sex
HR	1.7550	0.8860	1.8300	0.908
LCL	1.1540	0.5120	1.2020	0.525
UCL	2.6680	1.5320	2.7840	1.572

Characteristics of MI cohort by HPI Category			
Characteristic	HPI Level 1 (Poor)	HPI Level 2 (Fair)	HPI Level 3 (Good)
Race			
White	44%	62%	73%
Black	18%	14%	7%
Asian	18%	8%	10%
Native American	2%	0%	0%
Pacific Islander	8%	1%	1%
Other	10%	13%	7%
Unknown	3%	3%	2%
Sex			
Female	29%	30%	30%
Male	71%	70%	70%
MI TYPE			
STEMI	52%	57%	49%
NSTEMI	48%	43%	51%
AGE			
Mean Age	61 Years	63 Years	63 Years

Table 3: Characteristics: No significant differences in Sex, MI type or mean age across HPI categories.

CONCLUSION

- SoDH as defined by HPI are associated to long-term MI outcomes despite initial therapies.
- Living in a neighborhood or physical environment with poor health conditions may be associated with long-term MACE
- Further studies are needed to explore factors within neighborhoods and physical environments that may drive long-term outcomes.

REFERENCES

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2) Kardasz, I., & De Caterina, R. (2007). Myocardial infarction with normal coronary arteries: a conundrum with multiple aetiologies and variable prognosis: an update. *Journal of internal medicine*, *261*(4), 330-348.

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