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Oracle Life Sciences, Real World Evidence

## Introduction

Data linkage is a valuable resource for observational studies. While insurance claims data are often the “gold standard” for healthcare resource use and cost data, electronic health records (EHR) have the added strength of included uninsured populations and lab test data. Both data sources can be a good source for identifying disease and comorbidity

## Objective

This study examines the added value of linked data over a single data source by comparing the 2011 Charlson Comorbidity Index (CCI) calculated using claims data only, electronic health records (EHR) only, and linked claims-EHR among patients with asthma.

## Methods

The de-identified Oracle EHR Real-World (OERWD) data (extracted June 2023) was linked to a national US claims data source (2015-2022). Included were patients with an asthma diagnosis who had  $\geq 1$  EHR encounter,  $\geq 1$  claim, and  $\geq 1$  asthma treatment of montelukast as monotherapy or inhaled corticosteroids identified from claims. Descriptive analyses were performed and paired t-tests assessed group differences: (1) CCI derived from claims only ('CCI-claims') versus CCI derived from linked claims-EHR ('CCI Claims-EHR') and (2) CCI derived from EHR only ('CCI-EHR') vs CCI Claims-EHR.

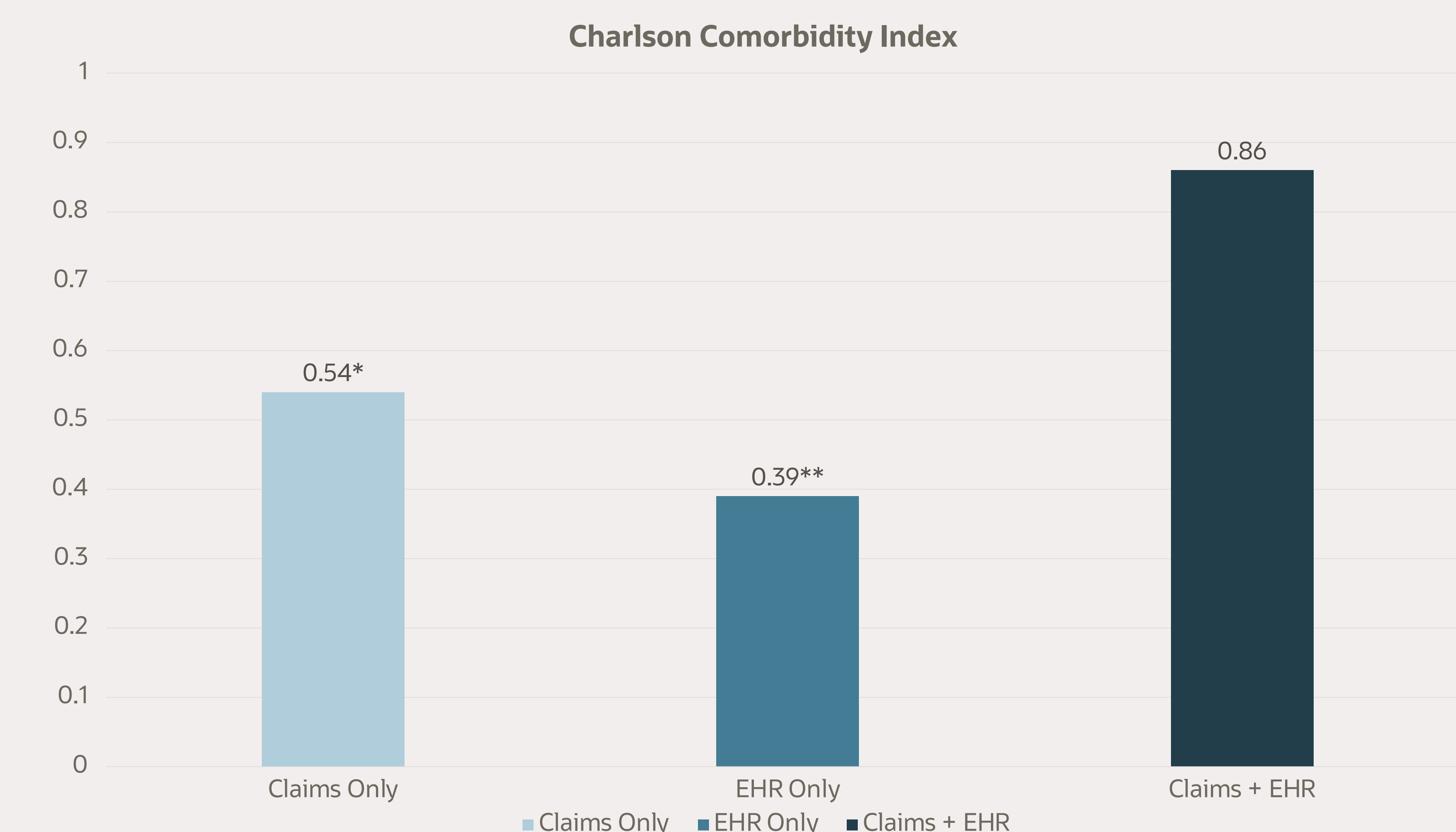
## Results

The cohort, n=109076, had a mean(SD) age of 28.76(20.50) years. The cohort was mostly female (59.36%), residing in the Western US Census Region (38.12%), never married/ single (68.76%), Non-Hispanic (67.10%), and White (54.69%).

Demographics		
Age		
Mean SD	28.76	20.50
Gender, n (%)		
Female	64,748	59.36%
Male	44,328	40.64%
US Census Region, n (%)		
West	41,578	38.12%
South	33,790	30.98%
Northeast	18,342	16.82%
Midwest	14,816	13.58%
Missing	550	0.50%
Marital Status*, n (%)		
Never Married/ Single	75,006	68.76%
Married/ Domestic Partner	18,961	17.38%
Unknown/Missing	6,556	6.01%
Divorced	4,672	4.28%
Widowed	1,754	1.61%
Other	1,101	1.01%
Legally Separated	1,026	0.94%
Ethnicity*, n (%)		
Non-Hispanic	73,139	67.05%
Hispanic or Latino	27,177	24.92%
Unknown/Missing	8,760	8.03%
Race, n (%)		
White	59,657	54.69%
Black or African American	23,302	21.36%
Other	14,290	13.10%
Unknown/Missing	7,417	6.80%
Asian, or American Indian or Alaska Native, or Native Hawaiian or Other Pacific Islander	3,359	3.08%
Multiple Reported	1,051	0.96%

Demographic information only available in EHR indicated with an \*.

Among the 109,076 patients with asthma, mean $\pm$ SD CCI-claims was 0.54 $\pm$ 1.18 while the CCI-EHR was 0.39 $\pm$ 0.81. CCI Claims-EHR was estimated at 0.89 $\pm$ 1.37. Mean CCI values were 65% higher for CCI Claims-EHR compared to CCI-claims, and 128% higher compared to CCI-EHR (p<0.001 for all).



\*Claims Only vs Claims+EHR p-value = <0.001  
 \*\* EHR Only vs Claims+EHR p-value = <0.001

## Conclusion

Comorbidity information derived from linked data adds significantly to the comorbidity information coming from claims or EHR alone and could present a more complete picture of the patient clinical profile.

## References

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