

# Comparison of Matching Strategies Used for Tennessee Hospital Network Analyses

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Background
<ul style="list-style-type: none"> <li>In order to target highly connected healthcare facilities for infection prevention, we created a network of all hospitals in Tennessee (TN)</li> <li>Tennessee Hospital Discharge Data System (HDDS) provided claims data from TN hospitals</li> <li>Protected health information (PHI) in HDDS is accessible for internal Tennessee Department of Health (TDH) use; less is available for approved research outside of TDH</li> <li>Patient date of birth (DOB), sex, and zip code are available for external and internal use</li> <li>Social security number (SSN) and full-name are available only for TDH use</li> <li>We evaluated two person-matching strategies to identify individuals with multiple hospital admissions</li> </ul>

Methods
<p>Person matching, sensitivity analysis, and interrater agreement analysis were conducted using SAS 9.4.</p> <p>See details in Figure 1 and 2.</p>

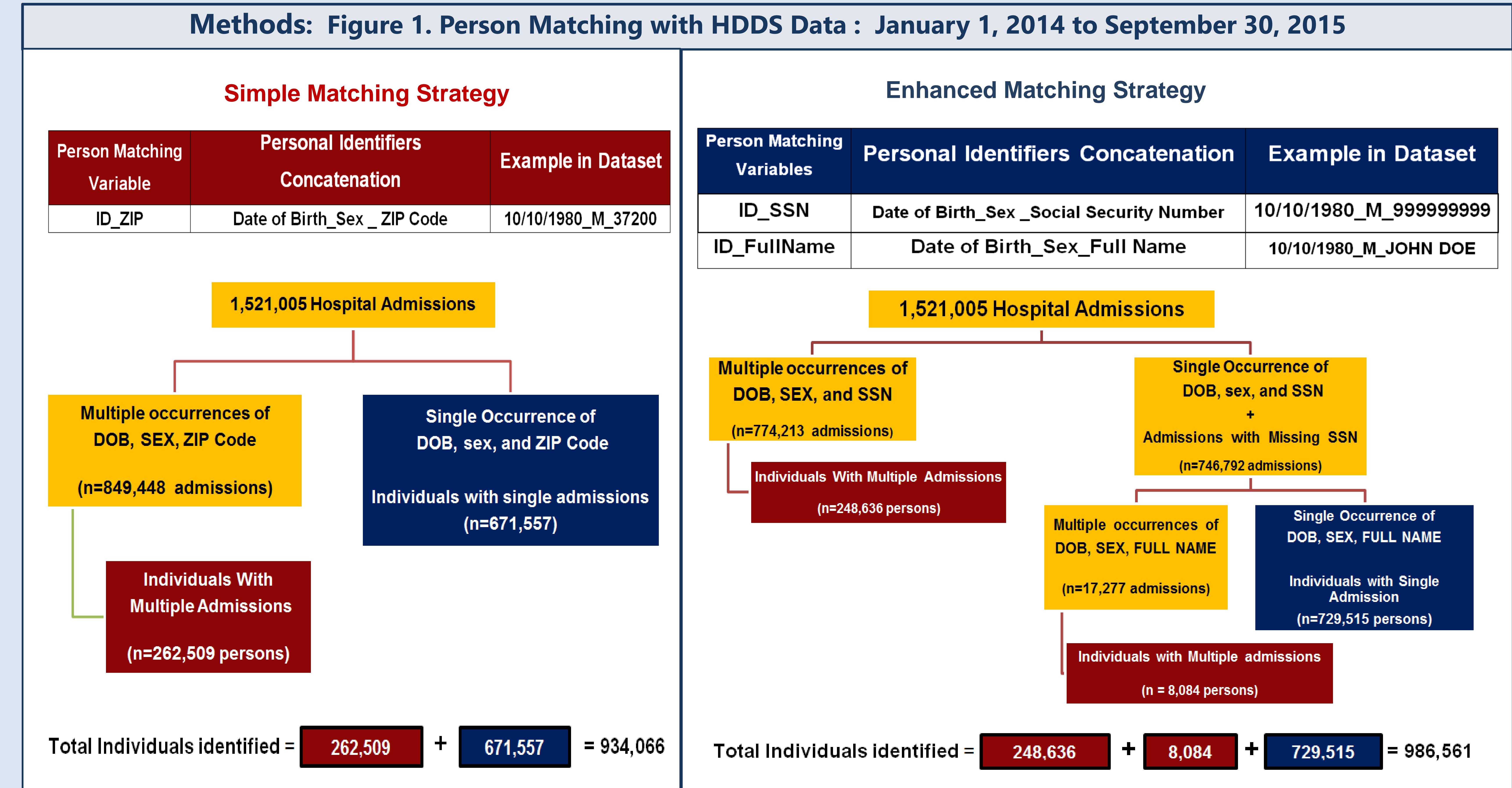


Figure 2. Summary of Results

Simple Matching	Moderately High Interrater Agreement weighted $\kappa=0.759$	Enhanced Matching
Identified <b>934,066</b> individuals <b>262,509 (28%)</b> with multiple admissions	Identified <b>986,561</b> individuals <b>256,720 (26%)</b> with multiple admissions	Identified <b>986,561</b> individuals <b>256,720 (26%)</b> with multiple admissions

Results			
Simple Matching	Enhanced Matching		TOTAL
	Single Admissions	Multiple Admissions	
Single Admissions	241,255	23,596	264,851
Multiple Admissions	34,641	634,574	669,215
<b>TOTAL</b>	<b>275,896</b>	<b>658,170</b>	<b>934,066</b>

**Simple matching**  
 Sensitivity = 87.4%  
 Specificity = 96.4%

to identify individuals with multiple admissions

Conclusions
<ul style="list-style-type: none"> <li>Simple Matching on DOB, sex and ZIP code can identify unique individuals with few limitations</li> <li>Simple strategy is useful when lacking protected health information such as SSN and patient names</li> </ul>

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