THE IMPACT OF AN ENHANCED PATIENT IDENTIFIER ON ROUTINE HEALTHCARE ANALYTICS USING ADMINISTRATIVE DATA

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Agenda

- **Background**

- Objective

- Study Design

- Principal Findings

- Significance

- Questions & Answers

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Background

- Over the years, the completeness and validity of patient identifiers, such as Social Security Number (SSN), in administrative datasets has been deteriorating

- In Massachusetts' hospital inpatient data, 9.5% of adult discharge records had a missing or invalid SSN in 2018, a significant increase from 4.5% in 2011

- The proportion of missing or invalid SSN varies greatly by hospital, with up to 68% of records missing SSN at certain hospital, and by patient characteristics, such as payer type and age

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Objective

To examine the use of an enhanced patient identifier (EPI), instead of SSN, to link patient records, and its impact on populations studied in a statewide readmissions analysis.

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Study Design

Solution: The EPI was created using IBM Initiate Master Data Service, which utilized probabilistic matching on all available and valid patient characteristic information to identify discharge records belonging to the same patient

Patient Matching Fields	
First and last name	Zip code
Date of Birth (DOB)	Address
SSN	Health plan ID
Sex	

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Study Design

Matching Rules:

Match Description
1. Same organization ID (i.e., data submitting entity) and medical record number
2. All fields agree
3. SSN, DOB, and Health plan ID agree, all else missing
All fields agree except...
4. One field disagrees or is missing
5. Any two fields (excluding SSN and DOB) disagree
6. SSN and DOB missing

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Study Design

Data Sources: The Massachusetts' Acute Hospital Case Mix databases were used for matching

- Hospital Inpatient Discharge Database (HIDD)
- Emergency Department Database (EDD)
- Outpatient Observation Database (OOD)

Matching data spanned from 2006 – 2018, improving the reliability and validity of patient matching.
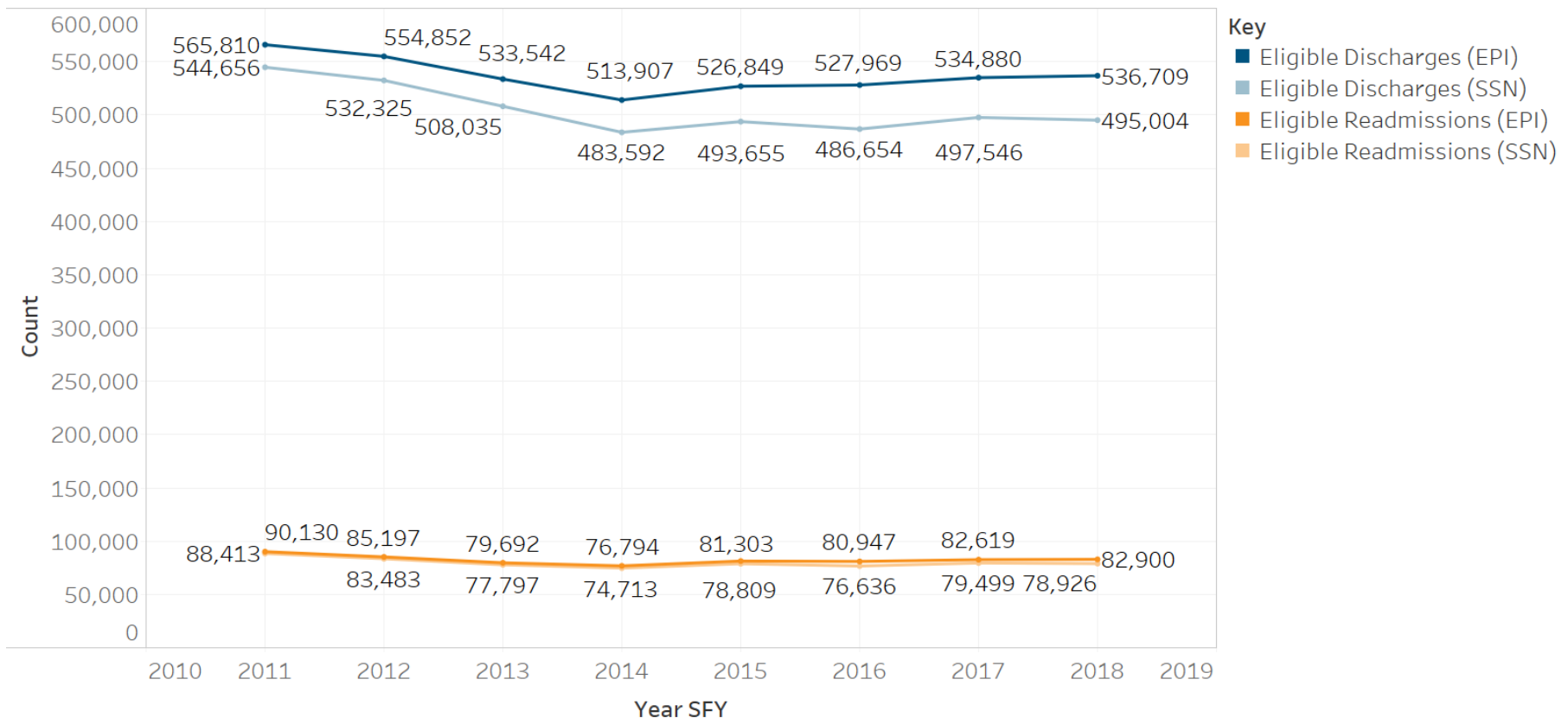
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Study Design

Analysis: The EPI was used to identify and link patient records in a readmissions analysis and results were compared to the same analysis using SSN.

Analyses included adult (18+) patients discharged from acute care hospitals in Massachusetts from state fiscal year (SFY) 2011 – 2018 (July 1, 2010 – June 30, 2018).

The readmission methodology was adapted from the Yale/CMS unplanned, hospital-wide readmission measure (NQF #1789).
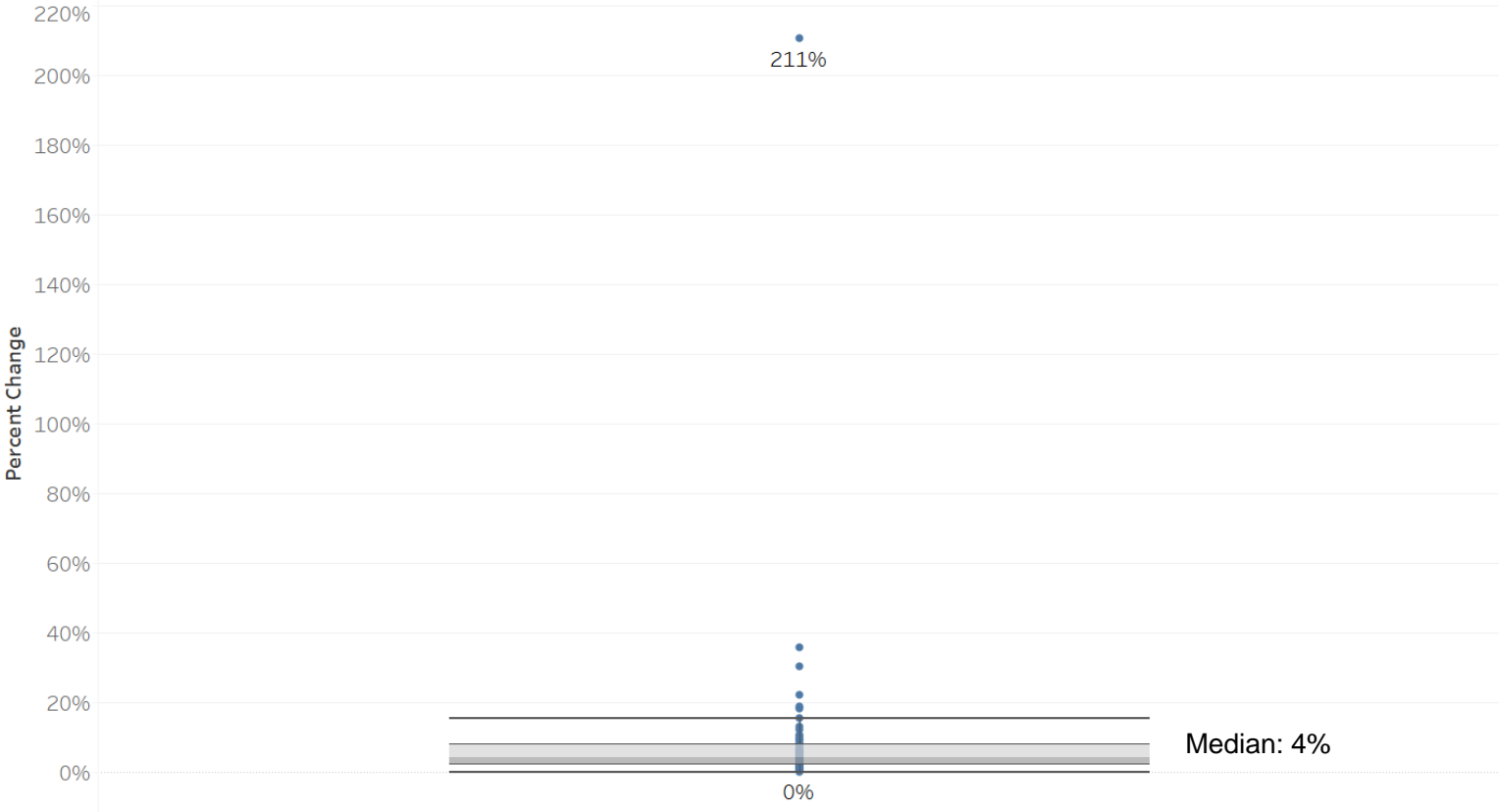
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Principal Findings

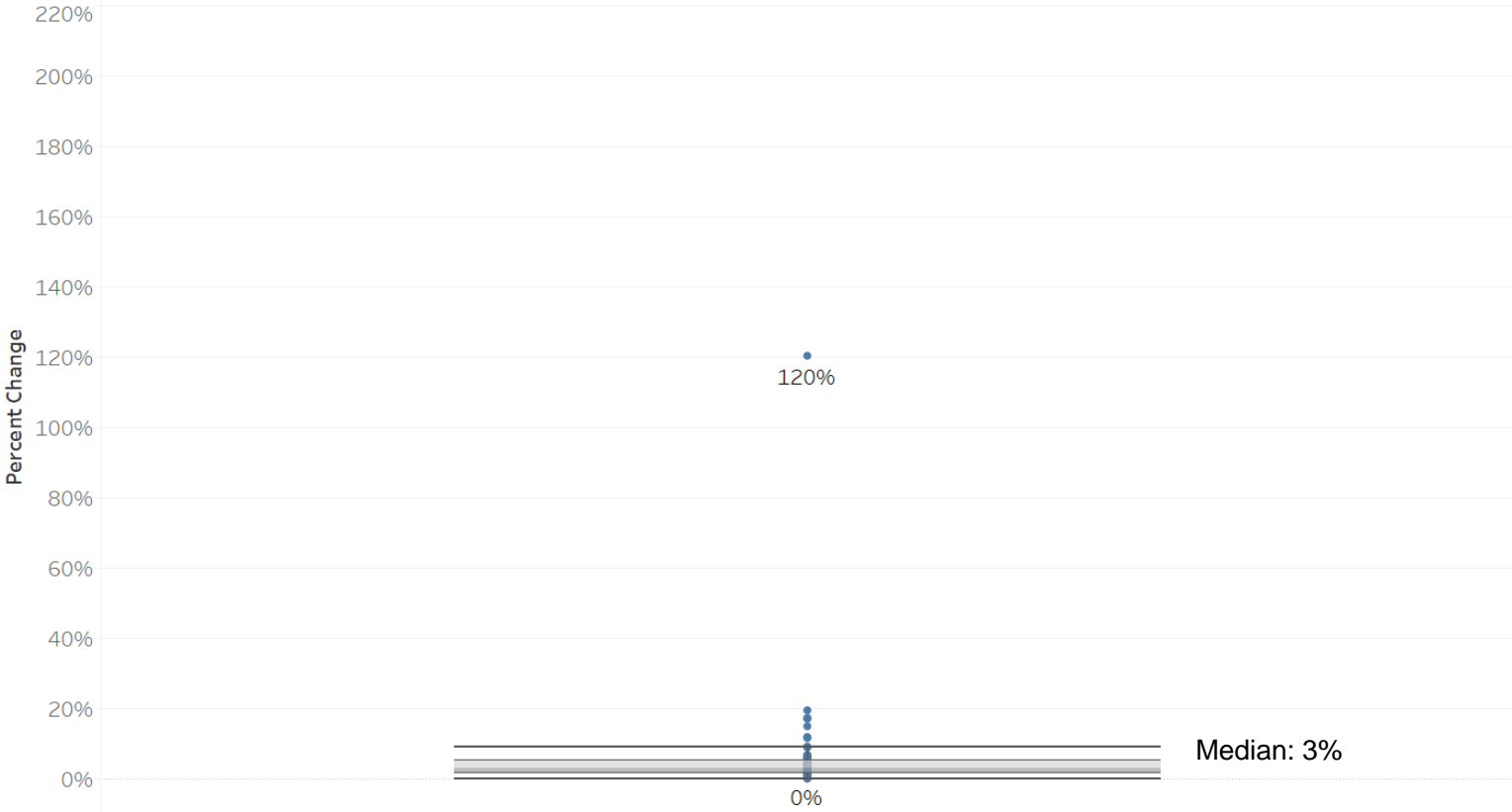**Trend in Statewide All-Payer Discharges and Readmissions using EPI vs. SSN**
SFY 2011 - 2018

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Principal Findings

Hospital-Level Percent Change in Discharges using EPI vs. SSN
SFY 2018

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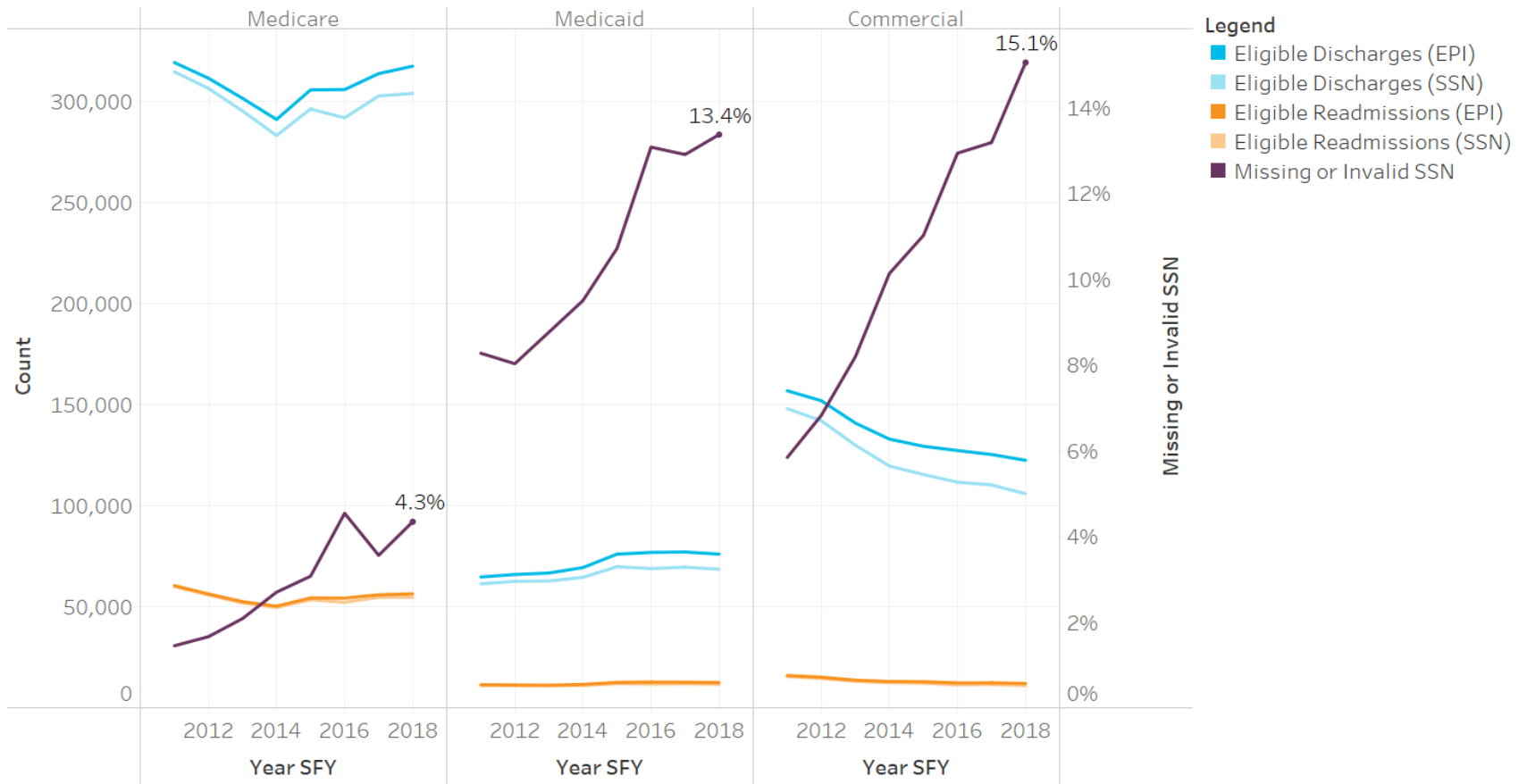
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Principal Findings

Hospital-Level Percent Change in Readmissions using EPI vs. SSN
SFY 2018

Principal Findings

Trend in Discharges and Readmissions by Payer Type using EPI vs. SSN
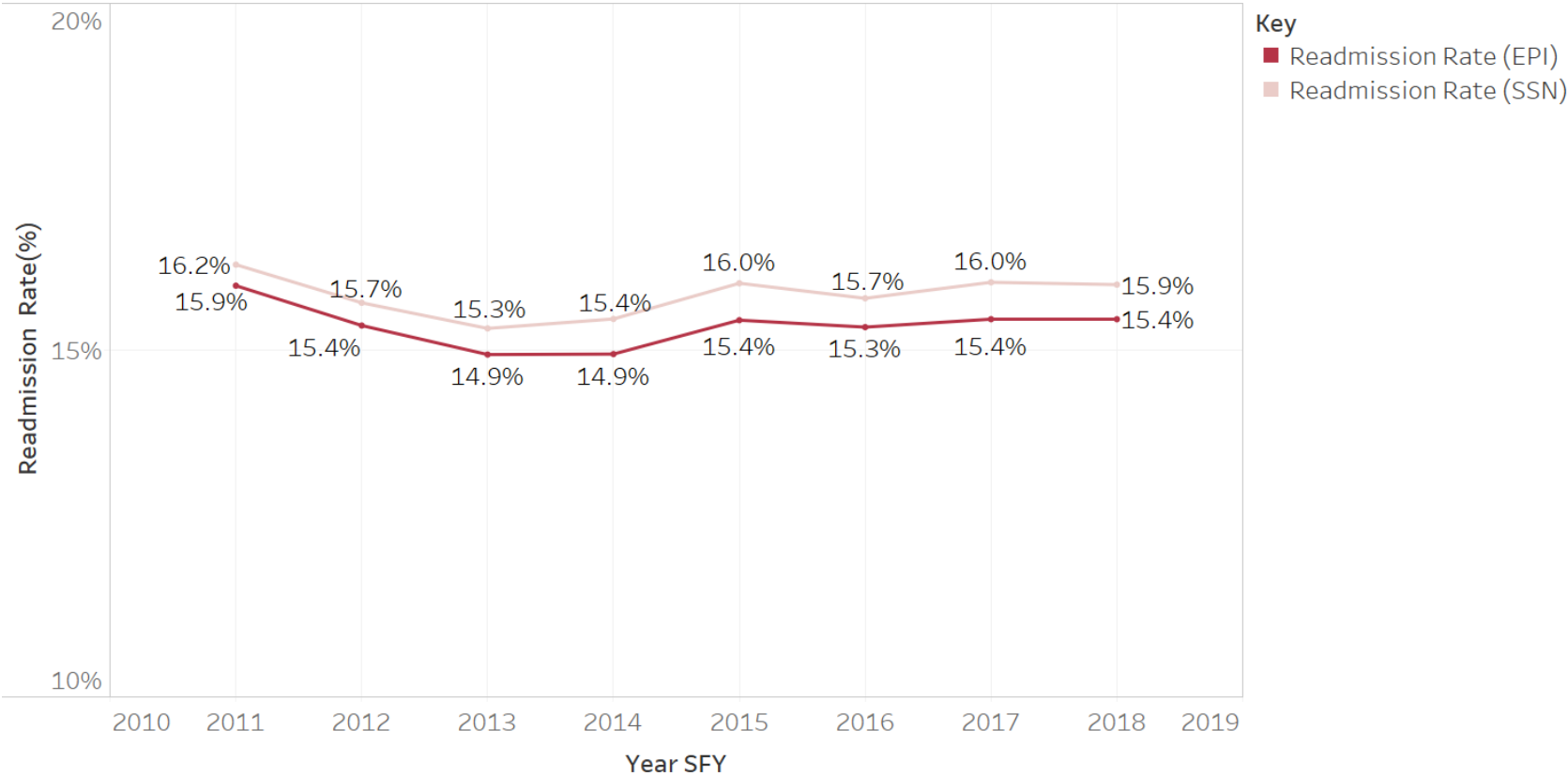### SFY 2011- 2018

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Principal Findings

Trend in Discharges and Readmissions by Age using EPI vs. SSN
SFY 2011- 2018

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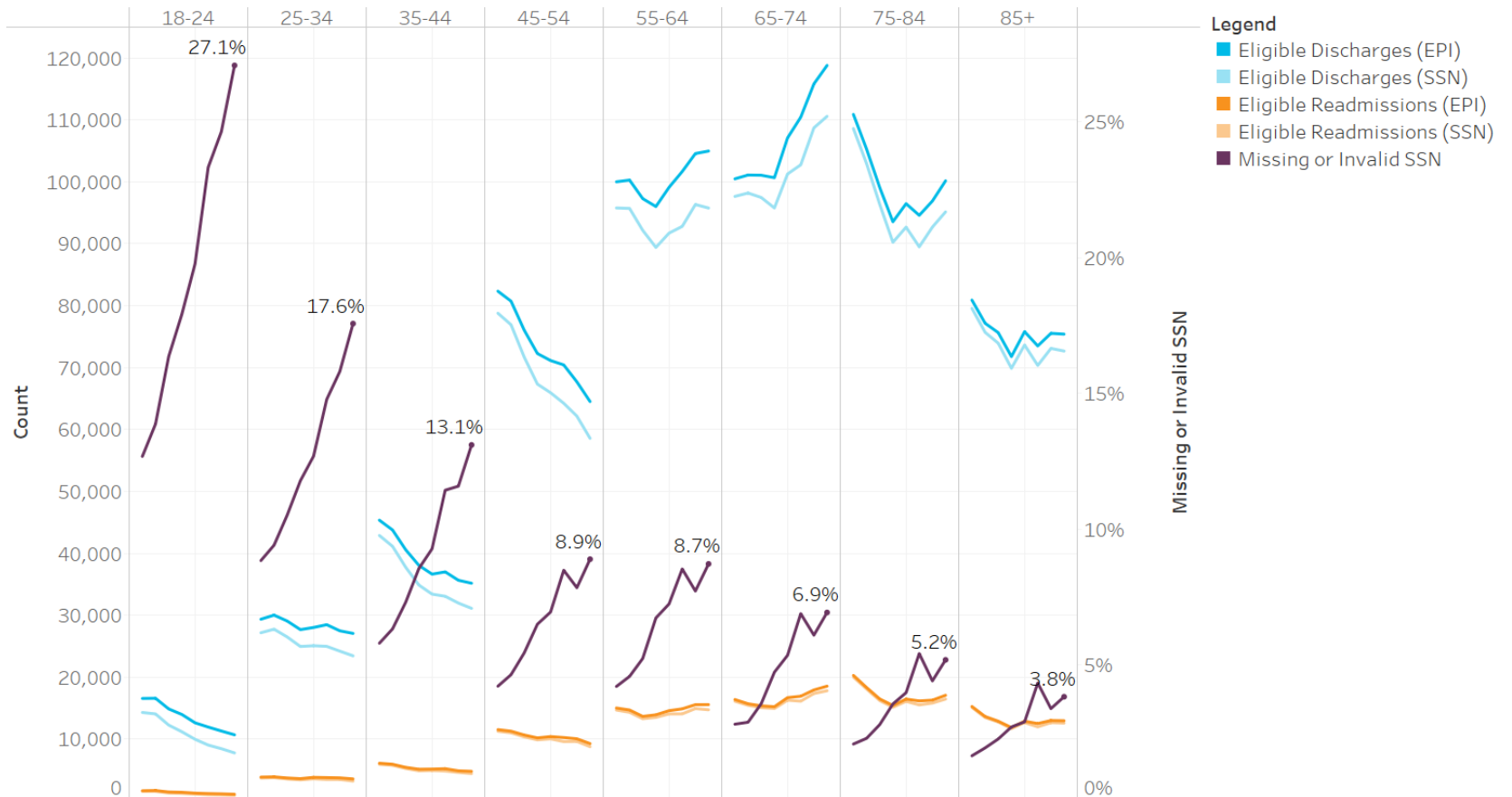
Principal Findings

Trend in Statewide All-Payer Readmission Rates using EPI vs. SSN
SFY 2011 - 2018

Significance

- The EPI enabled us to keep otherwise valid and complete discharge records in our analysis of readmissions, especially for certain hospitals and patient populations.

- It also greatly strengthened our capacity to capture and analyze hospital discharge records from all types of hospitals and patient populations.

- As the health care system continues to move towards more coordinated and integrated care for patients, the methods by which unique patients are identified is of critical importance.

- Future studies should continue to explore how different linkage methodologies may impact the populations captured in key health care analyses.

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Questions?

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Contact Information

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