

Comparing Data from Multiple Health Systems to Estimate Disease Burden for VA-Medicaid Dual Enrollees

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Our sponsors

Support

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- VA/CMS data sourced by VA Information Resource Center (VIReC) (SDR 02-237 and SDR 98-004)

Conflicts of interest

- None known

Enough about us already, let's talk about you

Poll #1 What's your general relationship with VA data?

- a. Investigator, PI, Co-I
- b. Statistician/methodologist
- c. Data manager/analyst/programmer
- d. Coordinator
- e. Other – go ahead and type it in the Q & A

That's interesting, tell us about the data you use

Poll #2 Which data sources have you used through VA?

(answer 'yes' to as many as you have used)

- a. VA data (e.g. Corporate Data Warehouse)
- b. Medicare
- c. Medicaid
- d. Other (please describe in Q&A)
- e. None

Background 1: VA and non-VA health coverage

Many VA enrollees have non-VA sources of care

- Medicare (about 50 percent ~ 4.5 million)
- Medicaid (about 8 percent ~750,000)
- Medicare *and* Medicaid (about 4.5 percent ~ 405,000)
- Employer Insurance (significant)
- others

Background 2: Trends and dual enrollment

Policy changes

- Affordable Care Act Medicaid expansion (more Veterans eligible for Medicaid)
- PACT Act (more Veterans and conditions eligible for VA)

Demographic changes

- Veteran population getting older (65+ eligible for Medicare)
- More women Veterans (traditionally more likely eligible for Medicaid)

General trends make dual eligibility, enrollment & utilization more likely

Background 3: Why do we care about dual use?

For Clinicians:

- Incomplete health data presents incomplete picture for treatment decisions
- Excess/Conflicting care may lead to poor outcomes

For Payers/Administrators:

- Duplicative care wastes resources

For Researchers:

- Patient diagnoses needed for understanding patient comorbidities in HSR

Background 4: An annoying realization

Old project



- VA & Medicaid data from 1999-2006 for five states to analyze dual use
- VA-calibrated scores of disease burden (Nosos) are only available 2006 and later
- Calculate our own disease burden estimates

New project:

- Using VA & Medicaid data post 2010
- I get excited about just being able to plug in Nosos scores for disease burden....
- ...and then I realize this is a bad idea

ORIGINAL ARTICLE

Effects of State-level Medicaid Expansion on Veterans Health Administration Dual Enrollment and Utilization *Potential Implications for Future Coverage Expansions*

Patrick N. O'Mahen, PhD*† and Laura A. Petersen, MD, MPH*†

Objective: The objective of this study was to examine how pre-Affordable Care Act (ACA) state-level Medicaid expansions affect dual enrollment and utilization of Veterans Health Administration (VA) and Medicaid-funded care.

Research Design: We employed difference-in-difference analysis to determine the association between pre-ACA Medicaid expansions in New York and Arizona in 2001 and VA utilization. Participants' dual enrollment in Medicaid and VA, the distribution of their annual hospital admissions and emergency department (ED) visits between VA and Medicaid were dependent variables. We controlled for age, race, sex, disease burden, distance to VA facilities and income-based eligibility for VA services.

Measures: Secondary data collected from 1999 to 2006 in 2 states expanding Medicaid and 3 demographically similar nonexpansion states. We obtained residency, enrollment and utilization data from VA's Corporate Data Warehouse and Medicaid Analytic Extract files.

Results: For low-income Veterans, Medicaid expansion was associated with increased dual enrollment of 4.87 percentage points (99% confidence interval: 4.48–5.25), a 4.63-point decline in VA proportion of admissions (–5.87 to –3.38), and a 11.70-point decrease in the VA proportion of ED visits (–13.06 to –10.34). Results also showed increases in the number of

total (VA plus Medicaid) annual per-capita hospitalizations and ED visits among the group of VA enrollees most likely to be eligible for expansion.

Conclusions: This study shows slight usage shifts when Veterans gain access to non-VA care. It highlights the need to overcome care-coordination challenges among VA patients as states implement ACA Medicaid expansion and policymakers consider additional expansions of public health insurance programs such as Medicare-for-All.

Key Words: Medicaid, Veterans Health Administration, Patient Protection and Affordable Care Act, dual use

(*Med Care* 2020;58: 526–533)

Medicaid expansion under the 2010 Affordable Care Act (ACA) extended insurance coverage to adults earning <138% of the Federal Poverty Line (FPL) in 35 states, as of January 1, 2020. The expansion has increased access to coverage and care, while generally improving outcomes.^{1,2} For example, expansion was associated with both an increase in predialysis care and an 8.5% decline in 1-year mortality rates for patients with end-stage renal disease.³ This finding among high-need patients mirrors studies showing declines in relative mortality in expansion states.⁴

Most Medicaid expansion studies focus on individuals without prior access to insurance. But many Veterans receiving care at the Veterans Health Administration (VA) become eligi-

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Background 5: A question and some prior research

What if we only used VA data to estimate risk scores for VA-Medicaid enrollees?

- Sounds like a theoretically bad idea
- But maybe empirically it doesn't matter (...it would save time and extend utility of Nosos)

Past research on Medicare/VA diagnosis overlap:

- Patient disease burden underestimated when only using one information source (see Byrne, Kuebler, Pietz and Petersen 2006 *Medical Care*)

OK, so what about past research on Medicaid/VA diagnosis overlap?

A slightly flippant
summary of prior
research
examining disease
burden overlap
between
Medicaid/VA data
sources

TYPES OF CRICKETS



Camel Cricket



Mormon
Cricket



Jerusalem
Cricket



House
Cricket



Roesel's Bush
Cricket



Australian Field
Cricket



European Field
Cricket



Jamaican
Field Cricket



Emma Field
Cricket



Two-spotted
Cricket



Oriental Mole
Cricket



Pine Cricket



Silent
Leaf-runner Cricket



Tobacco
Cricket



Bell-ring Cricket



Research questions/objectives

1. How do risk scores vary when using different data sources?

- VA only
- Medicaid
- Combined

2. Is variation similar across commonly used comorbidity measures?

- CMS V21 (basis for Nosos scores)
- Charlson
- Elixhauser

Anatomy of a risk score

Risk scores are generally comprised of three components:

$$Score_i = f(w, I_i)$$

Function that combines them

Vector of weights that determine how much a variable affects score

Vector of patient characteristics, including indicators for comorbidities

This is often a weighted sum:

$$Score_i = w_1 I_{1i} + w_2 I_{2i} + \dots + w_J I_{Ji}$$

Note that some risk scores, like Nosos, incorporate other types of variables

Building the components

Step 1: Map diagnoses to comorbidities and extract other variables

- Need to use both ICD-9 and ICD-10 codes
- Often impose a hierarchy based on severity

Step 2: Estimate weights from a regression of an outcome onto the indicators and other variables

- In practice, we use ones that are already estimated

Scores can differ across these two dimensions

We compare results across three risk scores

	V21	Charlson	Elixhauser
ICD -> Comorbidities mapping	Hierarchical Classification Categories (HCCs) developed by CMS	17 categories using ICD mapping from Quan et al, 2005	30 categories using ICD mapping from Quan et al, 2005
Weights estimation	Annual cost on age, sex, and HCCs	Cox Proportional Hazards Model for 1-year mortality on age, sex, and comorbidities	Stepwise multivariate logistic regression of death in hospital on the 30 categories
Sample used for weights	Medicare enrollees – weights are updated periodically	Patients Aged ≥ 18 Years Who Were Discharged From Hospitals in Calgary, Alberta, Canada, 2004 Quan et al, 2011	All hospitalizations at the Ottawa Hospital, Canada, 1996-2008 von Walraven, 2009

Score depends on completeness of diagnosis info

All between-patient variation in a risk score comes from different values of the comorbidity indicators

Incomplete information creates within-patient variation in risk score, depending on the information used

- For Medicaid dual-users diagnosis information may be incomplete
- This leads to possibly incorrect risk scores if relying on one system

Sample and data sources

Sample

- All VA-enrollees from 2011-2016
- Enrolled in Medicaid for at least one month in a given calendar year
- Aged 18-64 during that time
- VA Priority Groups 1-5

VA Data

- CDW tables
- Inpatient stays
- Outpatient visits
- Non-VA claims from PIT

Medicaid Data

- Medicaid claims data from ViREC
- Medicaid Analytical eXtract (MAX)
- T-MSIS Analytic Files (TAF)

Analytical approach: Compare risk scores when using different sets of information for the same patients

For each risk score:

1. Calculate the comorbidity indicators for each patient using diagnoses sourced from VHA-only, Medicaid-only, or both records
2. Calculate risk score based on each set of comorbidities

Measure differences and agreement across data sources and scores using:

1. Average differences in risk scores across data sources
2. Intraclass correlations comparing VA and Medicaid comorbidity indices
3. Differences in comorbidity counts

Unit of analysis: person-year

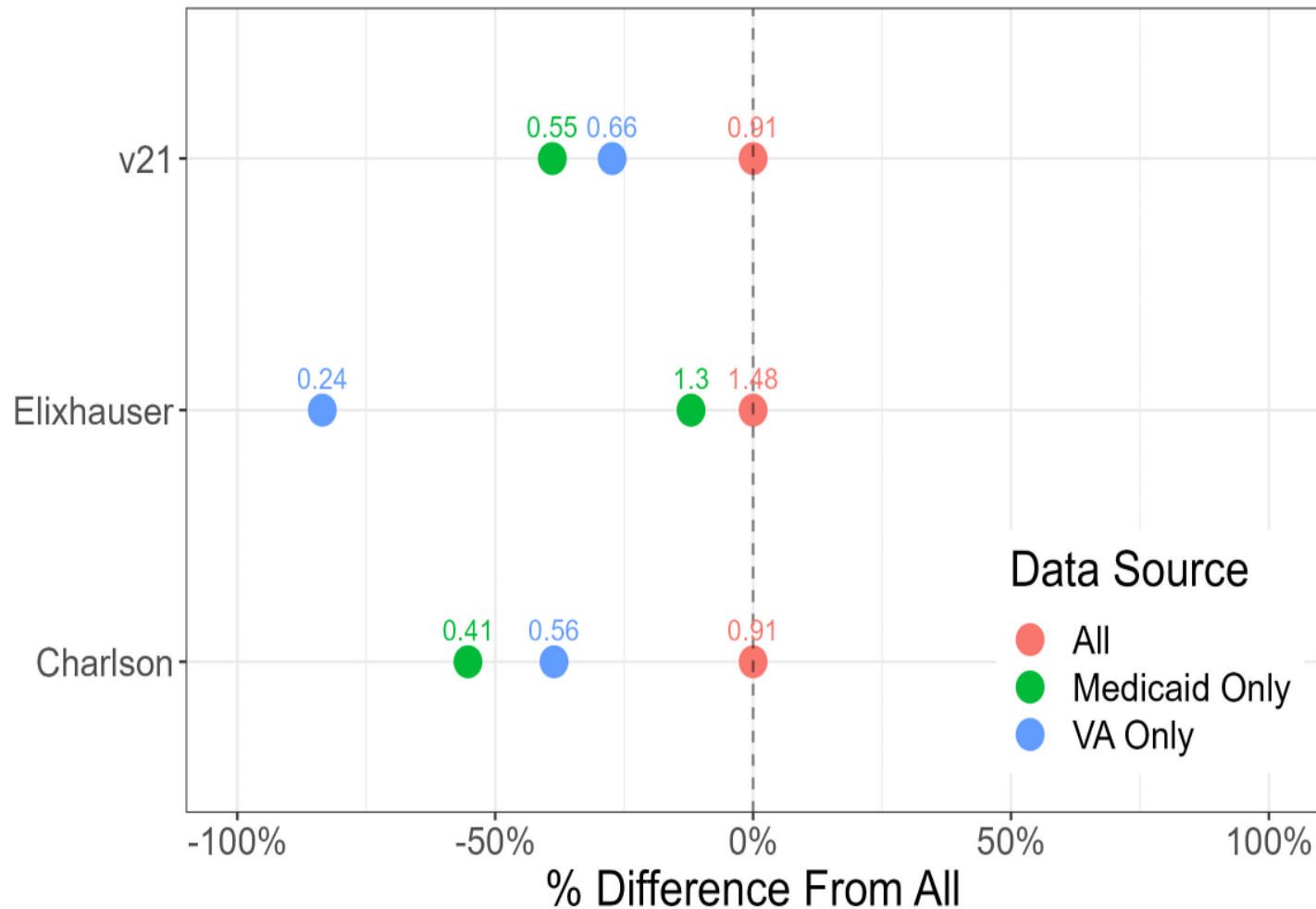
Population statistics

- 686,644 VA-enrollees
- 1,821,943 person years

Table 1

<u>Characteristic</u>	<u># person years</u>	<u>% (SD)</u>
Male	1,559,268	86%
White	1,078,884	60%
Income-eligible	1,079,514	59%
Age	50	(12)

Differences in average risk scores by source



- Use the full information dataset (all) as a benchmark
- For every score, the restricted information yields lower scores
- VA-only is closest to all for v21 and Charlson, Medicaid is closer for Elixhauser

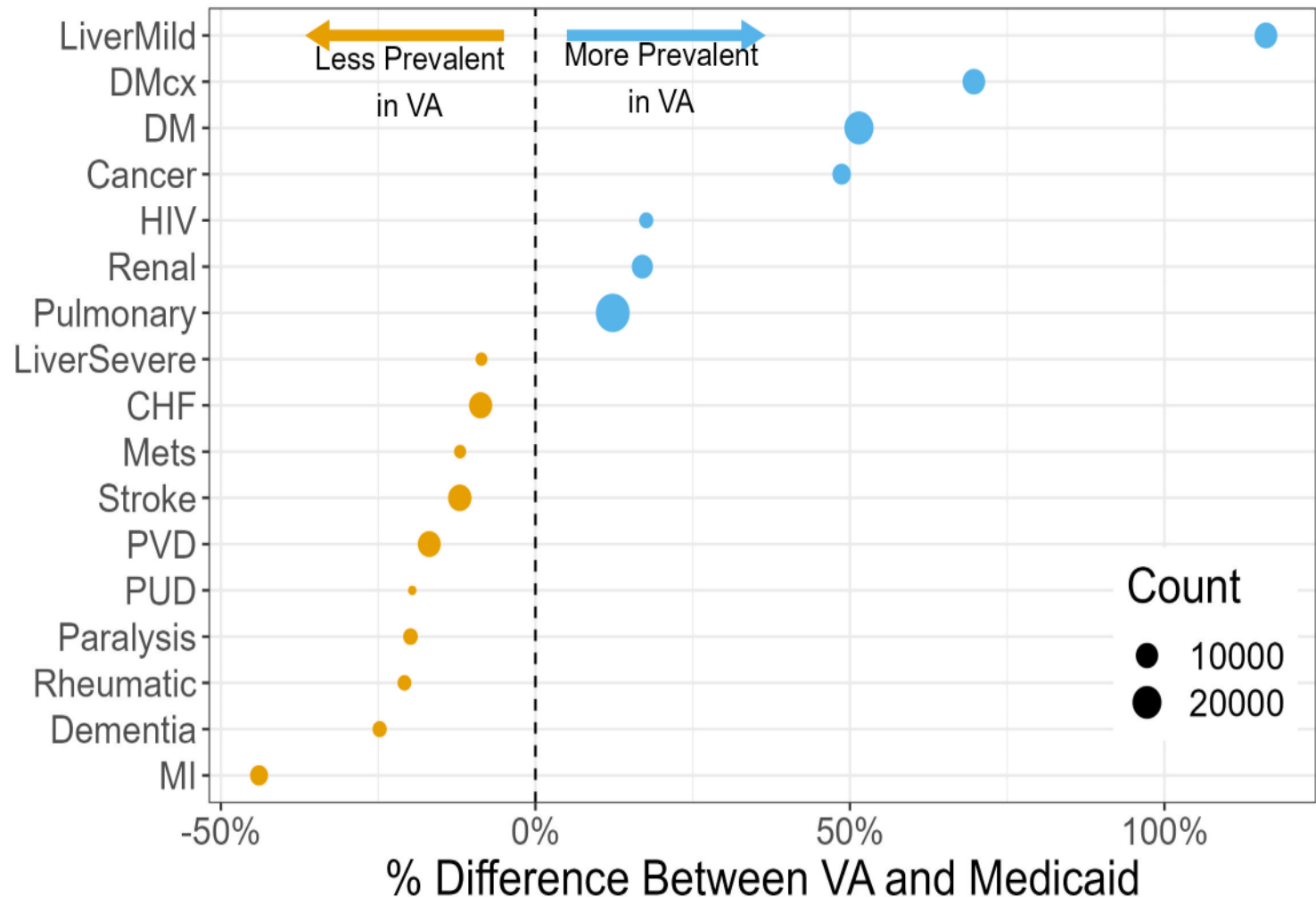
Intraclass correlations within scores

- Low correlation between VA and Medicaid scores (~0.2)
- Neither VA nor Medicaid substitute for combined scores (all less than 0.75)
- VA closer to combined score for 2 types and Medicaid for 1

Table 3

<u>Score type</u>	<u>VA & Medicaid</u>	<u>VA & both</u>	<u>Medicaid & both</u>
CMS V21	0.20	0.68	0.71
Charlson	0.19	0.69	0.58
Elixhauser	0.19	0.71	0.63

Differences in Charlson comorbidity counts



Differences

- 10 comorbidities are more commonly reported in Medicaid
- 7 comorbidities are more common in VA
- Differences may reflect:
 1. Where patients decide to get their care
 2. Differences in diagnostic skill or intensity
 3. Differences in record-keeping and reporting

What [might] we have learned?

Some tentative conclusions

- VA-only data inadequate to account for VA-Medicaid diagnoses
- Medicaid data inadequate as well
- Conclusion holds true across common risk scores
- VA tends to more closely mirror combined risk scores
- However, different specific comorbidities appear more likely to appear in Medicaid data, while others more likely appear in VA

Some final thoughts

Implications

- Veterans may use different health systems for different health issues
- Great for taxpayers: government not paying for duplicated care
- Tough on researchers (need more data for accurate inferences)

Possible future work

- Possible to extend a Nosos-like score to encompass VA & CMS data?

Context reminder

- VA-Medicaid dual enrollment increasing makes issue more important

Further VA/Medicaid resources

From VA HSRD seminars:

Medicaid (archived)

- “Using Medicaid Data in VA Research” (Kristin de Groot 7/22/2022)

Non-VA data for VA enrollees (upcoming)

- “Overview of CMS and USRDS Data in the VHA” (Kristin de Groot 10/10/2023)

Thanks!

The floor is open for Q & A