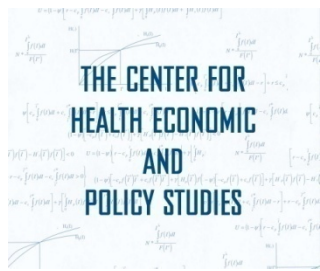


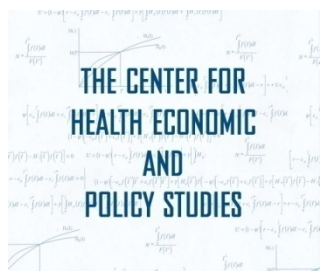
# Background

- Emergency psychiatric admissions to acute care hospitals have increased dramatically over the last 15 years.
- Concurrently, there has been a large reduction in the number of acute and long-term beds.



# Research Questions

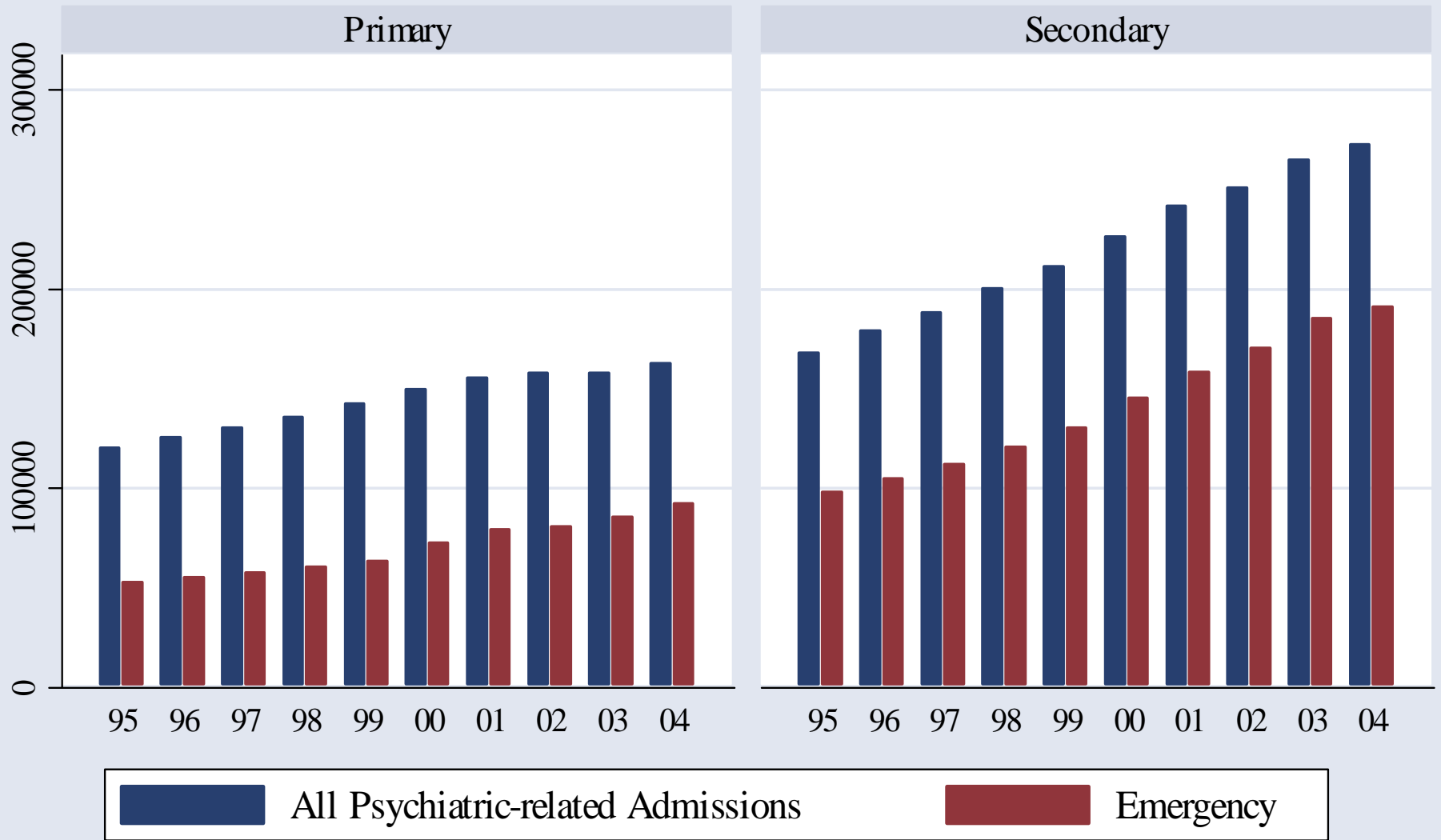
- Did reductions in beds cause the increase in admissions through the ED?
- Could such admissions be prevented with better alternatives to the ED in the community?
- What characteristics of community care prevent ED admissions?



# Structure of Talk

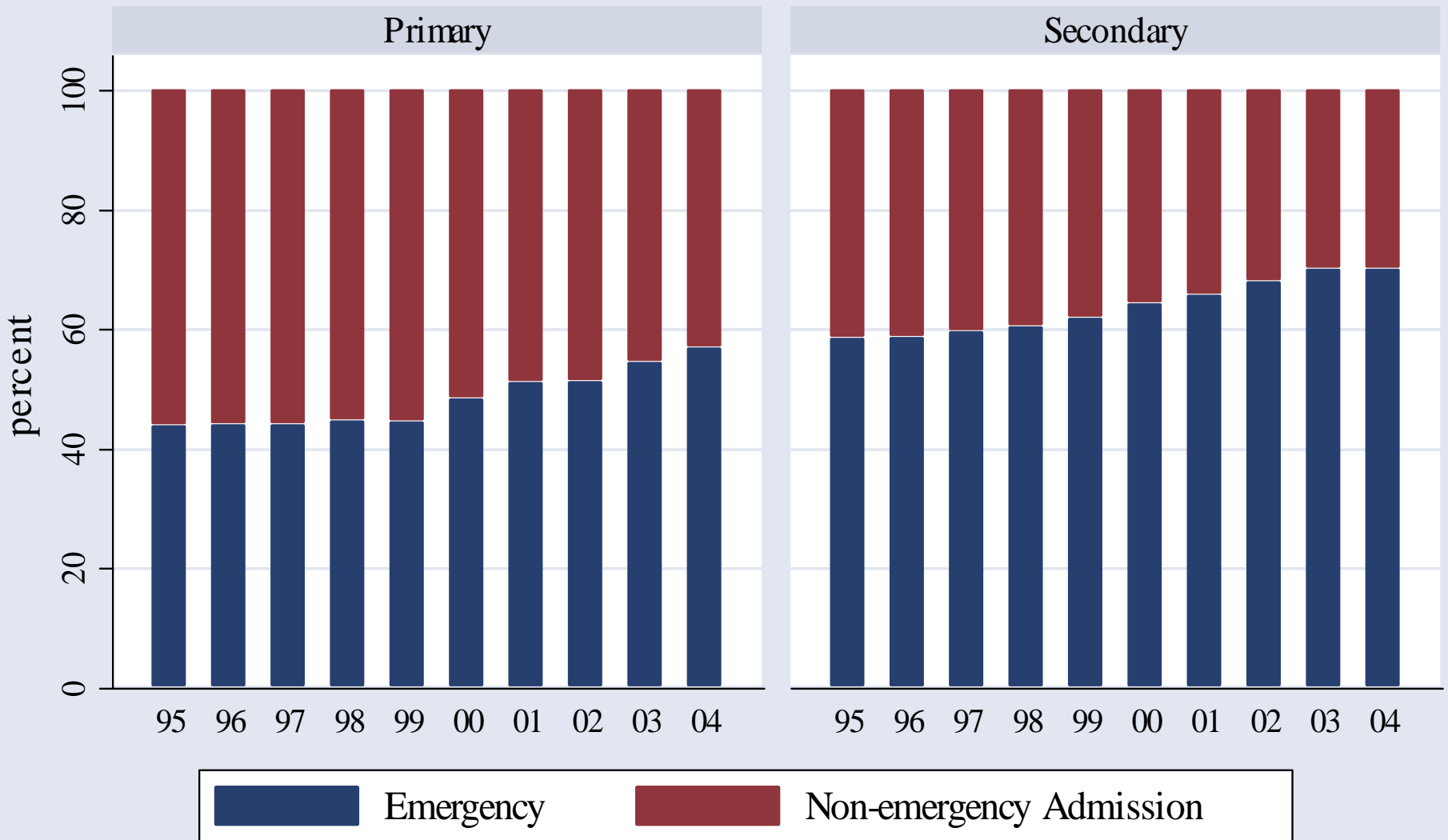
- Trends in Acute Care Admissions: 1995-2004
  - Inpatient claims data in AZ, CO, FL, NJ, WA, WI
- Qualitative Analysis (Frueh)
  - Visited 6 markets to interview stakeholders about the role and state of acute care beds in their city.
  - Generate hypotheses and themes to be tested in a quantitative analysis.
- Quantitative Analysis (Lindrooth)
  - Econometric Model of psychiatric admissions
  - Measure how changes in access affect ED admissions

# Figure 1.1. Trends in Admissions by Primary and Secondary Diagnoses



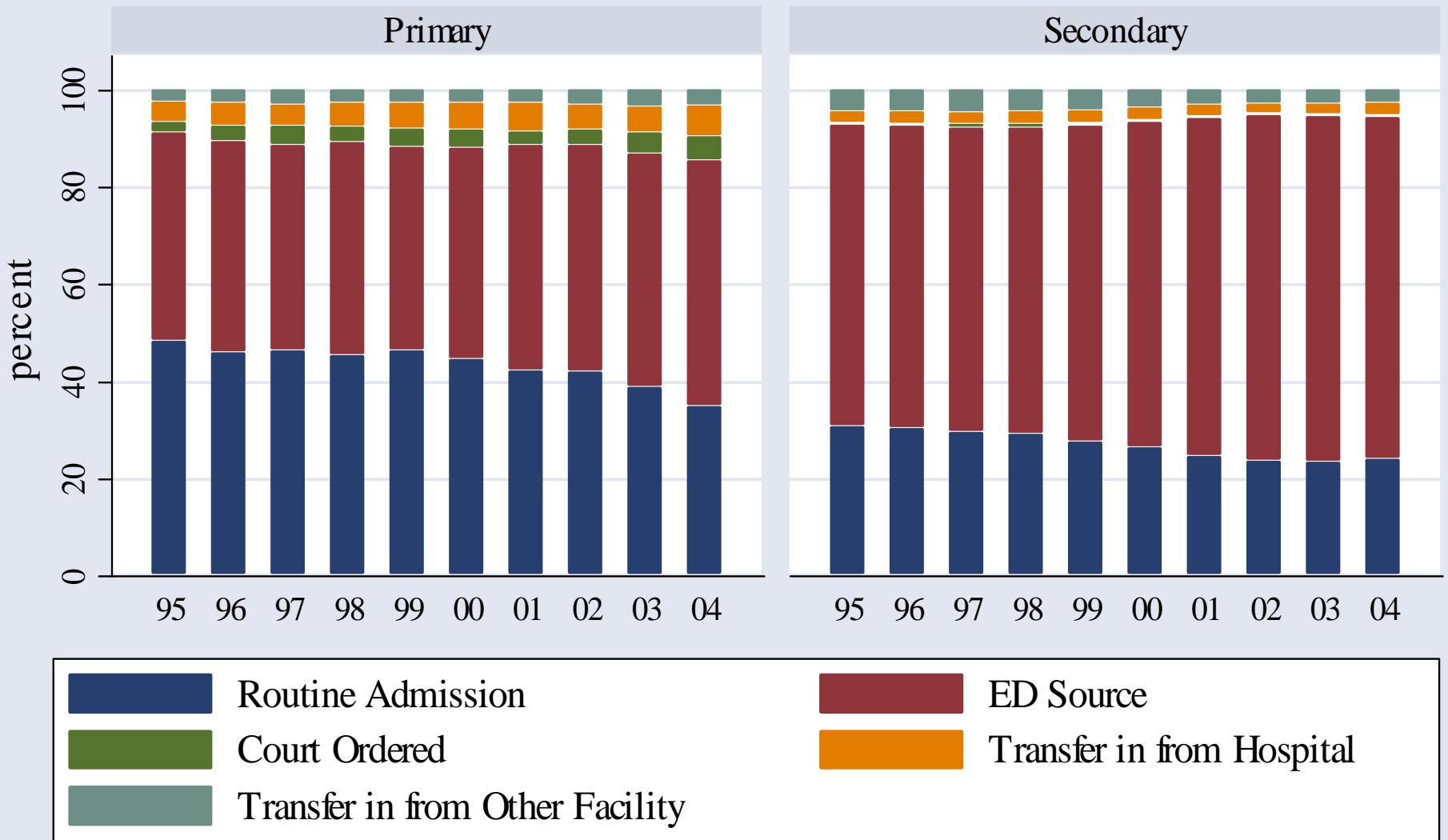
Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
 Source: Health Care Cost and Utilization Project State Inpatient Database

# Figure 1.2. Trends in Share of Admissions by Primary and Secondary Diagnoses



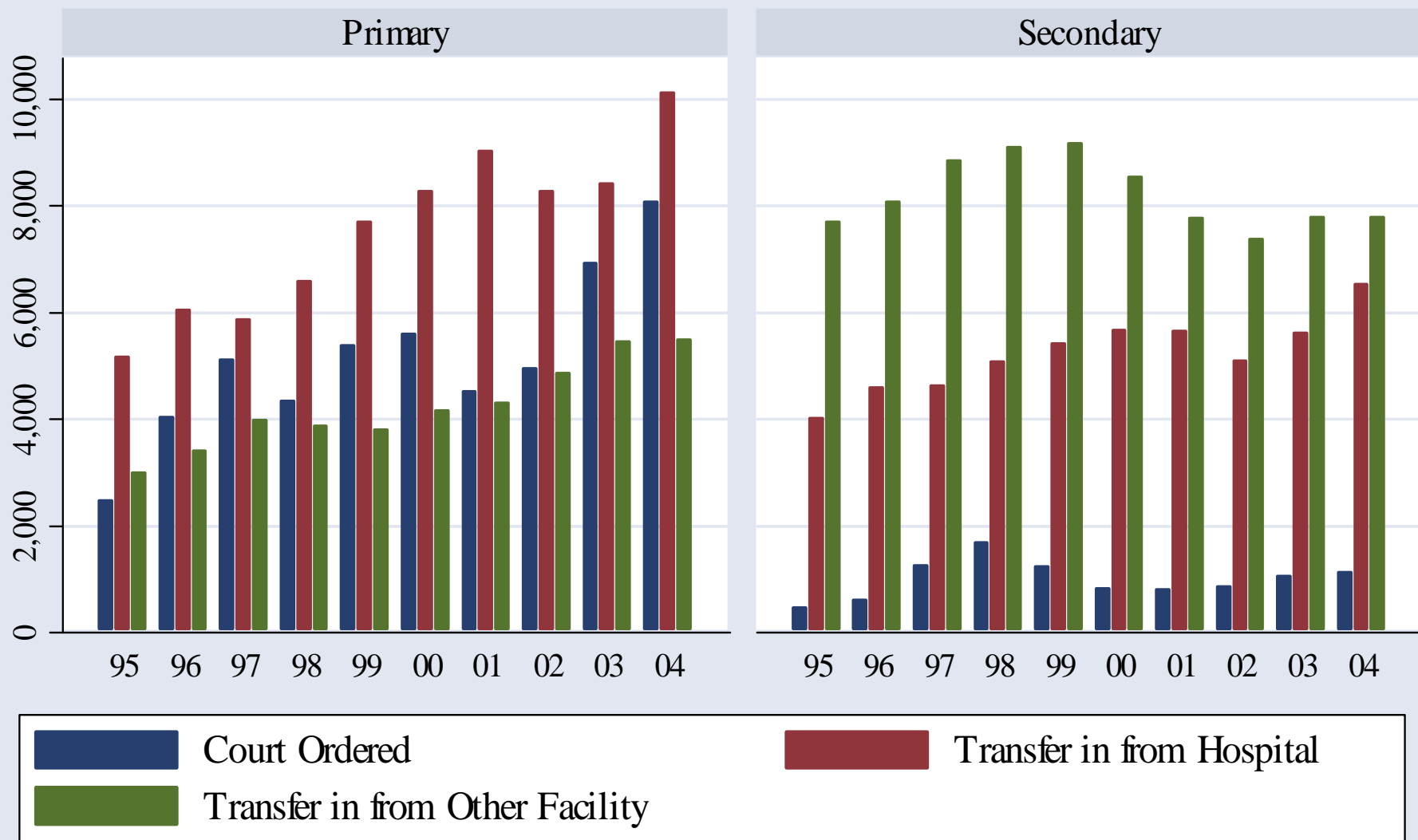
Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
 Source: Health Care Cost and Utilization Project State Inpatient Database

# Figure 2.1. Trends in Share of Admission Source by Primary and Secondary Diagnoses



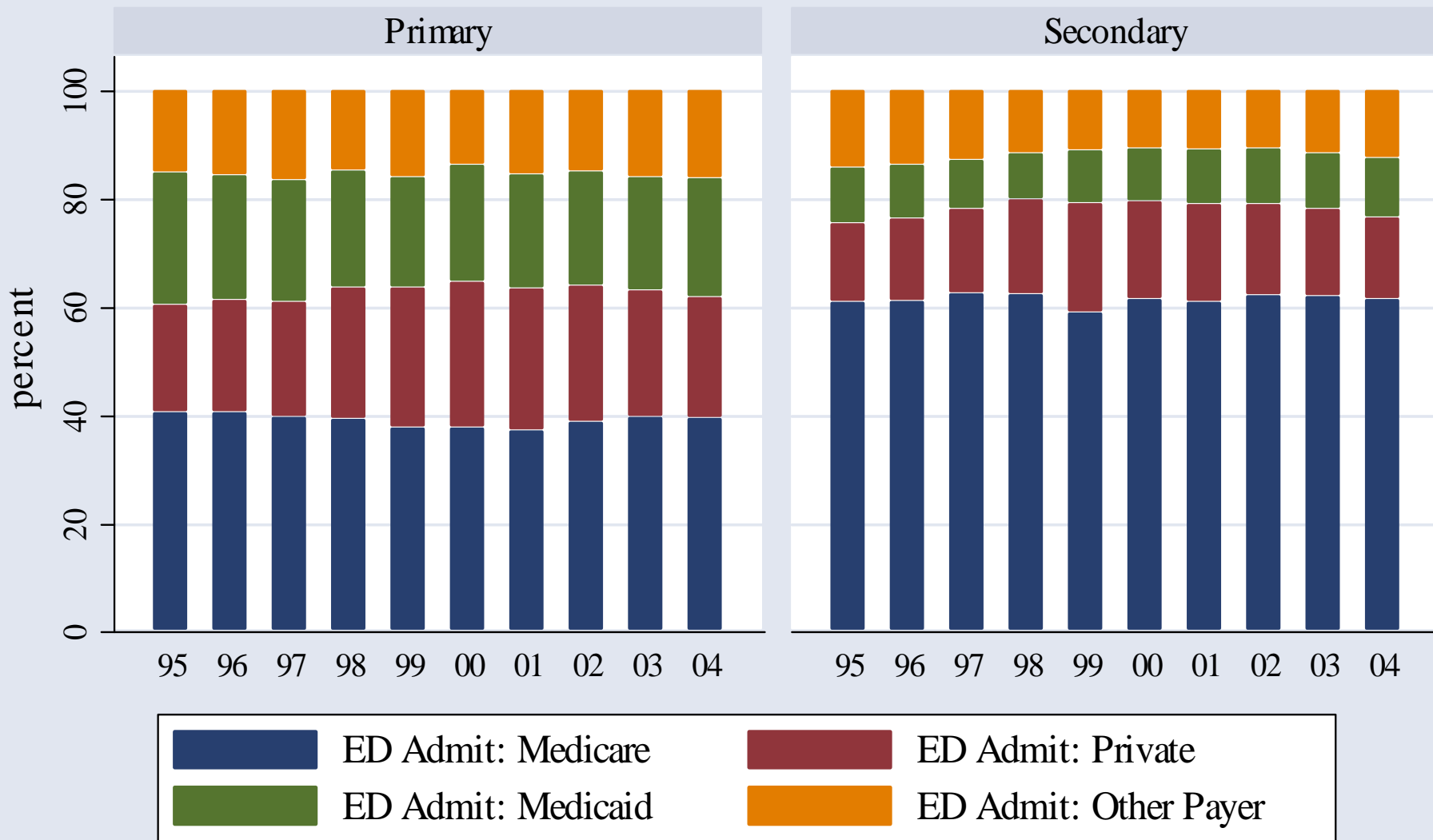
Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
 Source: Health Care Cost and Utilization Project State Inpatient Database

# Figure 2.2. Trends in Share of Admission Source by Primary and Secondary Diagnoses



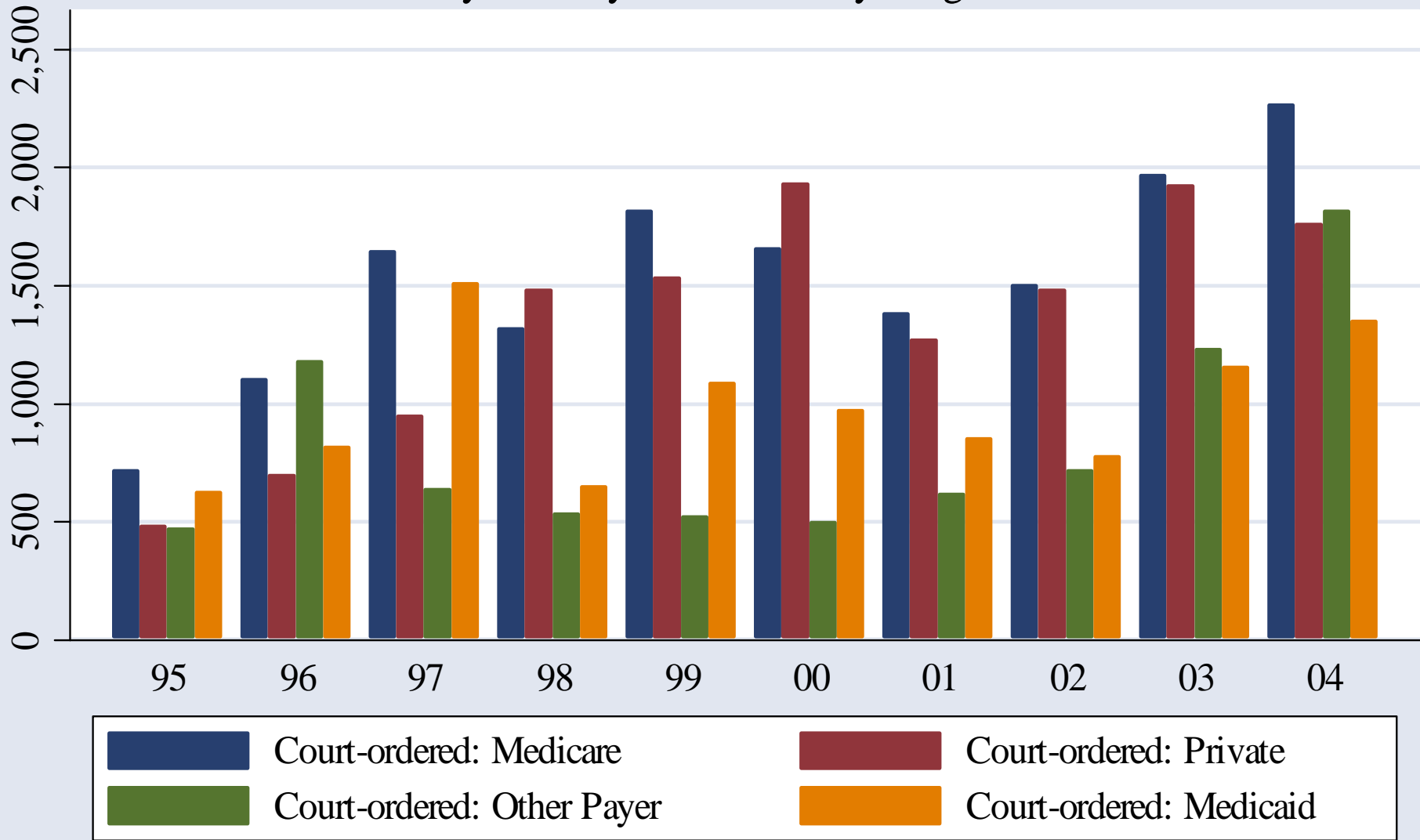
Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
 Source: Health Care Cost and Utilization Project State Inpatient Database

# Figure 10.2 Trends by Payer: Emergency Department by Primary and Secondary Diagnoses

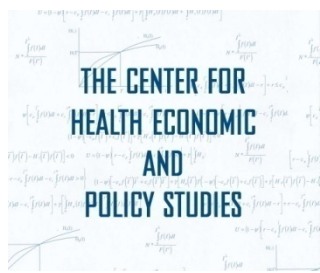


Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
 Source: Health Care Cost and Utilization Project State Inpatient Database

Figure 12 Trends by Payer: Court-ordered Admission  
by Primary and Secondary Diagnoses

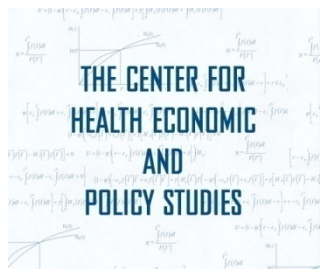


Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
Source: Health Care Cost and Utilization Project State Inpatient Database



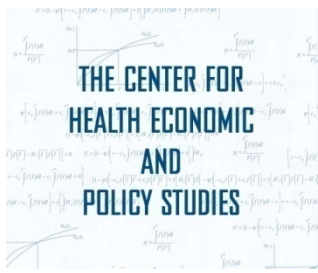
# Summary of Trends

- Number and share of ED admissions increased from 1995-2004.
  - Largely responsible for the overall increase in admissions
  - Not payer or diagnosis specific
  - Discharge destination remained constant
- Court-ordered and inter hospital transfers also saw remarkable growth, especially since 2000.
- Between 2000-2004, the share of Medicaid and other payers (including charity care) increased.



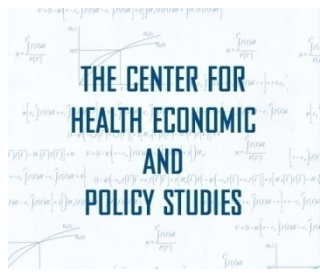
# Qualitative Analysis

- What is the state of the market in 2007-2008?
  - Did these trends continue?
  - Why did they continue?
  - Are they related to supply of long term and acute beds?
  - Are they related to community care?



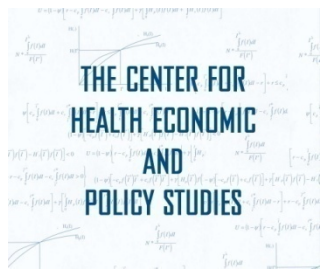
# Qualitative Study

- Overarching goal: To understand mental health professionals' views of the causes and effects of psychiatric inpatient bed reductions on access to mental health care.
- Emphasis on the role of acute care psychiatric beds in community mental health care.



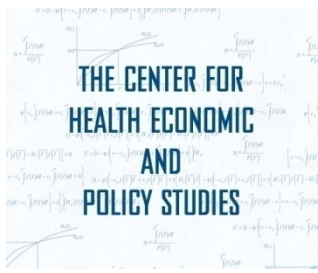
# Methods (Procedures)

- Individual and/or small group thematic interviews
- Flexible interview guide
- Interviews audio-taped & transcribed for accuracy
  
- Participants: Key community stakeholders (e.g., mental health clinicians, supervisors, and administrators from markets with potential reduction in inpatient capacity).



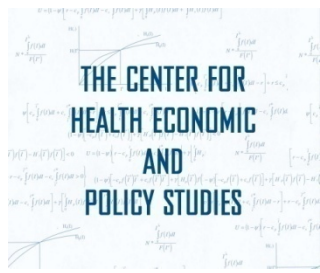
# Methods (Sampling)

- Markets were selected if:
  - State had available HCUP-SID data; & there was
  - An acute care psychiatric bed closure that was large relative to the size of the market.



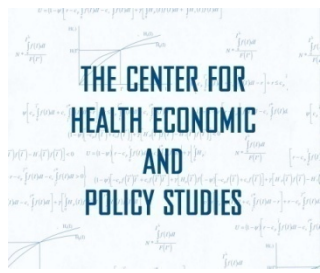
# Methods (Sites/Markets)

- Asheville, NC (n = 12)
- Janesville, WI (n = 5)
- Columbia, SC (n = 6; pilot site)
- Portland/Salem, OR (n = 12)
- Seattle/Tacoma/Olympia, WA (n = 10)
- Tampa/St. Petersburg, FL (n = 11)
- Note: additional sites and interviews are planned and data analysis ongoing



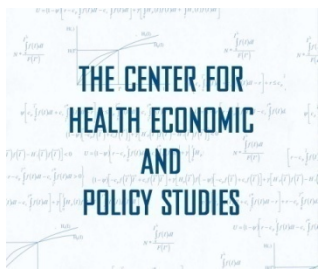
# Methods (Procedures)

- Qualitative analyses Steps:
  - Narrative Description (i.e., careful selection of quotes)
  - Content Analysis (i.e., identifying coherent themes)
  - Inductive Analysis (i.e., looking for variation in themes, patterns)
  - Logical Analysis (creating cross classification matrices based on previous categories)



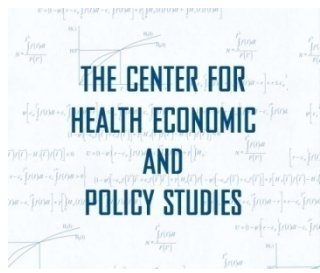
# Qualitative Analyses

- We performed an initial series of narrative analyses.
- We performed a content analysis of responses through multiple close readings of the transcriptions.
- From these readings, we individually developed a list of thematic categories and subcategories.



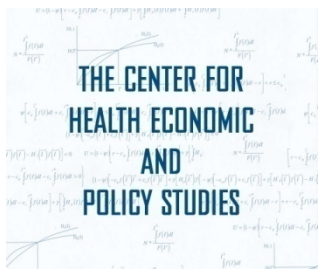
# Qualitative Analyses (continued)

- Themes were then further developed.
- After additional discussion to review and refine categories and resolve questions, the final thematic categories were completed and higher order categories were developed.
- This analysis is ongoing



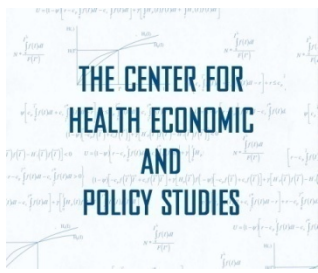
# General Observations

- Participants were sincere and dedicated
- Majority were eager to participate
- Many were disgruntled by a lack of resources and perceived a deterioration of mental health care access as a result
- Few were nervous about speaking with us
- Many viewed the current state of public mental health care as a public health “crisis”



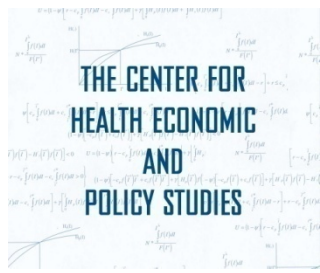
# Preliminary Results: 6 Main Themes

- Continuum of Care
- Fragmentation of Care
- Financial Barriers
- Regulatory Barriers
- Shift to Criminal Justice System
- Local Aspects of Bed Supply



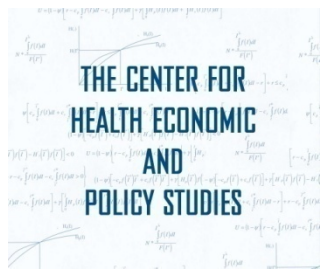
# 1. Continuum of Care

- Bed capacity is only one component of a large and dynamic system of mental health care.
  - Outpatient services, PACT programs, residential facilities, stabilization beds, homeless outreach, etc.
- Many were unsure whether more beds are the right answer to systemic issues.
- Acute beds often inappropriately used to make up for deficiencies in the system elsewhere— a “safety valve.”
- Longer LOS often due to a lack of a suitable discharge destination (e.g. lack of long-term beds)



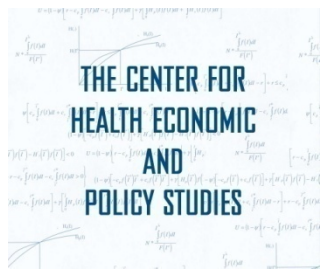
## 2. Fragmentation of Care

- The various elements of MH care are often not well coordinated.
  - acute beds, outpatient services, PACT
  - residential care, home health
  - voluntary vs. involuntary beds
- Fragmented services for substance abuse, mental health and co-morbid medical conditions.
- Lack of systems and case managers to track patients across the continuum of care.



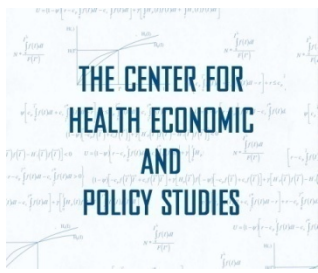
## 3. Financial Barriers

- Low reimbursement rates for acute beds, and many other services. Bed reductions driven by economics and local politics.
- Many viewed their state public mental health systems as grossly under-funded—promised funds to support deinstitutionalization 30 years ago were never delivered.
- Lack of community resources for outpatient services.



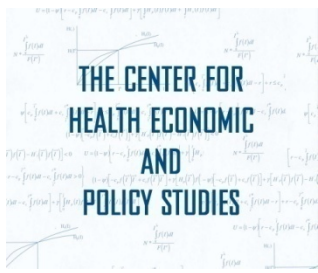
## 4. Regulatory Issues

- Eligibility regulations vary by setting/sector, reinforcing fragmentation of care.
- Employee burnout and turnover are very high, creating additional problems.
  - Can't offer wages commensurate with the skills and training required.
- Regulations often act as barriers to entry or survival
  - BBA-related changes in seclusion and restraint



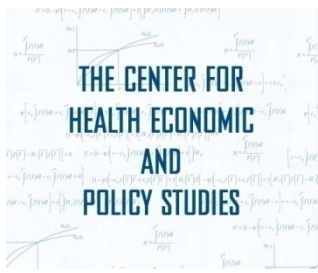
## 5. Shift to Criminal Justice System

- Psychiatric care is shifting to the Criminal Justice system.
- High and ever growing rates of psychiatric disorders in prison population.
- Law enforcement often drop folks off at EDs
- Lack of suitable housing for mentally ill indigent population.



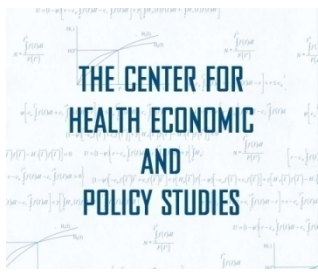
## 6. Local Aspects of Bed Shortages

- Some hospitals that closed since 2001 were closed for good reason.
  - Poor care, low census (25-50% capacity), adverse events, scandals
- Many of these hospitals were not at capacity prior to their closure anyway, so “shock to the system” was not dramatic.
- Shortages due to lack of specific alternative services in some communities (e.g. partial hospitalization).



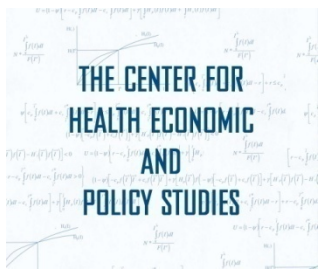
# Emergency Admissions

- How did downsizing state hospital beds affect emergency admissions at acute care hospitals?
- What aspects of community care mitigated the effect of down-sizing?
  - Hospital outpatient
  - Hospital stabilization/partial hospitalization
  - MHSA residential options
  - Acute Beds



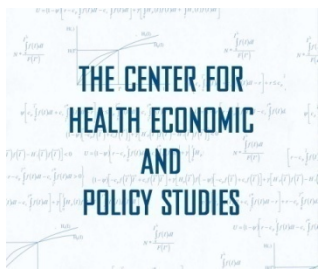
# Quantitative Analysis: Data

- AZ, CO, FL, NJ, WA, & WI discharge data
  - Years: 1998, 2002-2004
  - Patients admitted with ICD9 Code related to:
    - Psychoses: 290-294.95
    - Schizophrenia: 295.00-295.99
    - Major Affective Disorder: 296.00-296.99
    - Other psychoses: 297-299.99
- Sample includes all admissions to acute care hospitals.



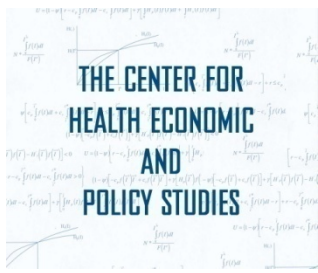
# Quantitative Analysis: Data

- Matched with AHA survey, Census, and Medicare Cost Reports
  - Identified hospital-based services from AHA
  - Identified community treatment options from Census



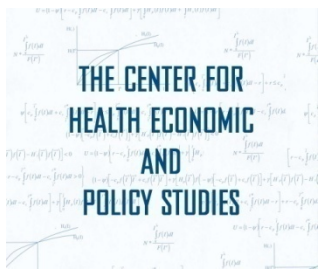
# Methods

- Fixed Effect Negative Binomial Regression
  - Zip code fixed effect
  - Sample Year 1998, 2002-2004
- Unit of analysis: Zip code by year
- Dependent Variable: Number of ED Admissions
- Measure the effect of:
  - 50% reduction of state beds between 1998 & 2002
  - 20% reduction of state beds between 1998 & 2002
    - 2002, 2003 and 2004



# Methods

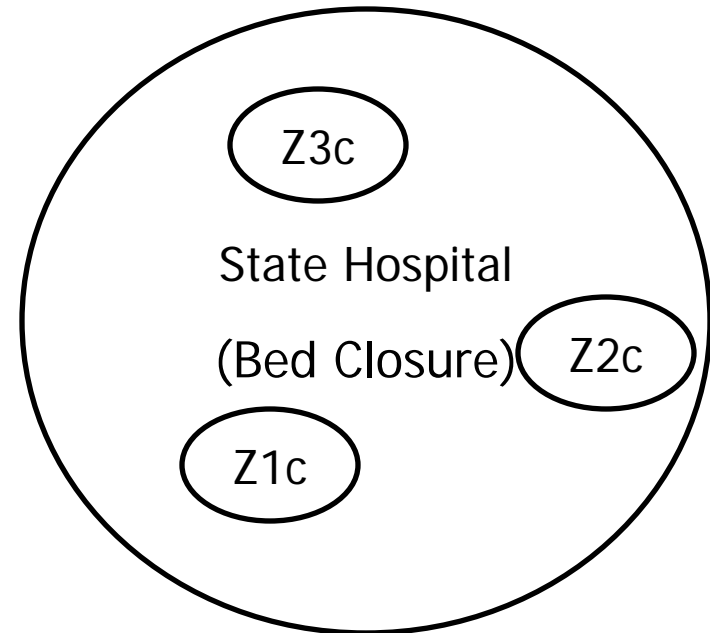
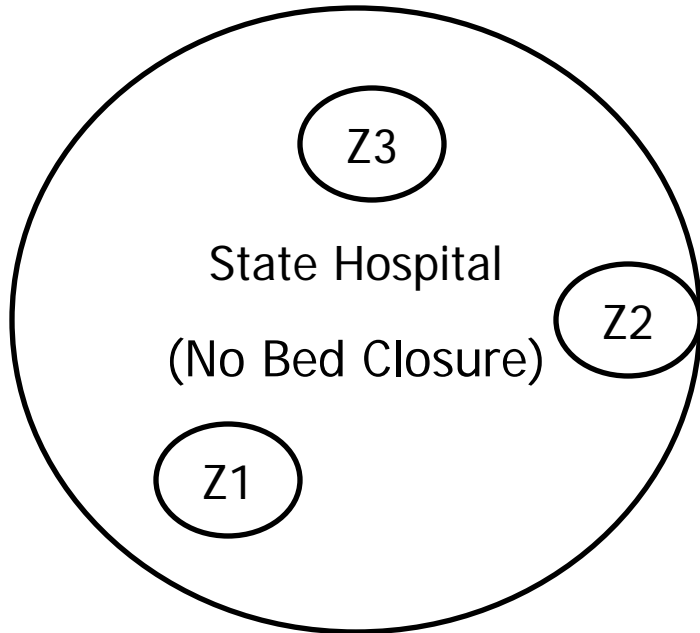
- “Treatment group”
  - Zip codes within 100 (200) miles of a state hospital that downsized between 1998-2002
- “Control Group”
  - Zip codes that experienced no change in the supply of state beds between 1998-2002
- “Intent to treat”
  - Allow attrition of psych units/other facilities
- Stable sample
  - Only use zip codes with stable community care

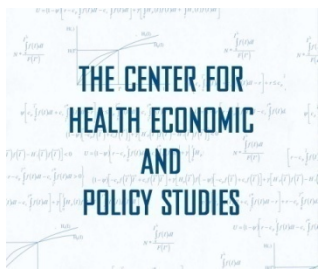


# Access to Care

- Measured spatially based on the patient's zip code:
  - Indicate whether a hospital-based ED, Psychiatric Unit, Outpatient or Stabilization Unit is within 10 miles
  - Number of long term/state beds within 100 & 200 miles
  - Indicate whether freestanding outpatient or freestanding MHSA Residential is within 10 miles

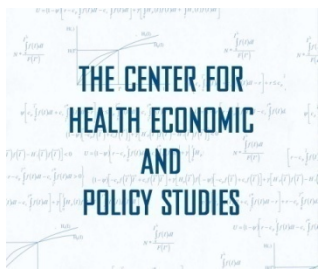
# Design





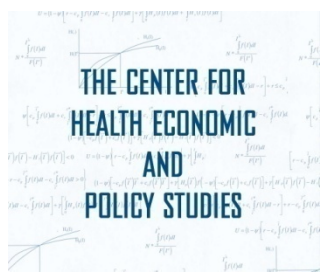
# Advantages of the approach

- Control for contemporaneous trends
  - Increases in emergency admissions in all areas
- Control for access to community care
  - Measure how better access attenuates the effect of downsizing
- Based on where the patient lives not where they were admitted



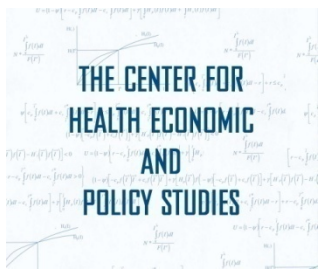
# Results

	State Downsized beds	Acute psychiatric unit	Hospital Outpatient	Hospital Stabilization	N	Zip code (N)
Market 1	Yes	Yes	Yes	Yes	1028	257
Market 2	Yes	Yes	No	Yes	380	95
Market 3	Yes	No	No	No	496	124
Market 4	No	Yes	Yes	Yes	3664	916
Market 5	No	Yes	No	Yes	468	117
Market 6	No	No	No	No	2376	594



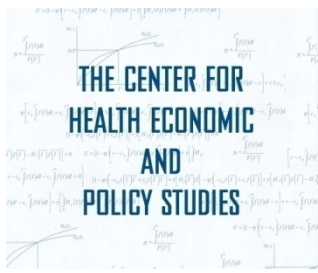
# Results: >50% reduction, 200 miles

	State Beds Reduced, 1998-2002			State Beds Constant		
Year	All	Pysch Unit + Stabilization	None	All	Pysch Unit + Stabilization	None
1998	4.172	4.047	3.183	4.092	3.921	3.105
2002	7.236	4.919	5.886	5.399	6.088	3.906
<b>2003</b>	<b>7.526</b>	<b>5.293</b>	<b>5.152</b>	<b>6.231</b>	<b>6.162</b>	<b>4.173</b>
2004	8.586	6.875	5.992	5.733	6.091	4.496
<b>Change since 1998</b>						
2002-1998	3.064	0.872	2.703	1.307	2.167	0.802
<b>2003-1998</b>	<b>3.354</b>	<b>1.246</b>	<b>1.969</b>	<b>2.139</b>	<b>2.241</b>	<b>1.069</b>
2004-1998	4.414	2.827	2.809	1.641	2.169	1.391
	<b>All: Diff in Diff</b>		<b>Ph+St: Diff in Diff</b>		<b>None: Diff in Diff</b>	
2002-1998	1.757		-1.295		1.902	
<b>2003-1998</b>	<b>1.215</b>		<b>-0.995</b>		<b>0.901</b>	
2004-1998	2.773		0.658		1.418	



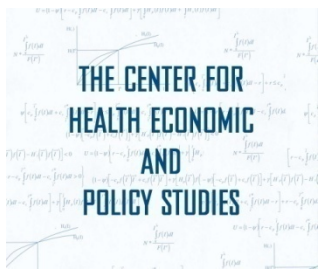
# Results in Words

- The % increase in ED admissions due for zip code within 200 miles of a bed closure and within 10 miles of:
  - All types of facilities was:
    - About 5 %
  - Only psych unit w/ stabilization unit
    - 0%
  - No psych facilities
    - About 8 %
- Over 200 admissions per year could have been averted with access to a stabilization unit in areas where a closure occurred.



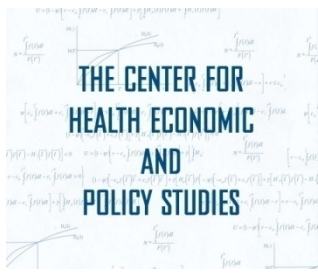
## Other Results

- If all State beds had been reduced by 50% between 1998-2002, zip codes with access to:
  - All types of facilities:
    - 7-8% increase in ED admissions
  - Only psych unit w/ stabilization unit
    - 0-3% of the increase in ED admissions
  - No psych facilities
    - 10-15% increase in ED admissions
- Note the percentages are based on all types of patients



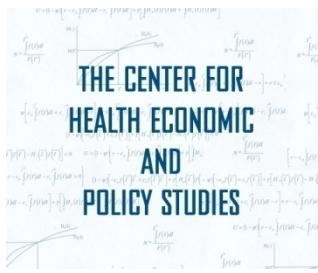
# Conclusions

- Stabilization units are an effective way to mitigate the effect of state bed reductions on ED admissions
- The results consistently show almost no adverse effects of bed closure if there is access to a stabilization unit at an acute psych hospital.
- State bed closures explain a significant % of the increase in ED admissions but not all of the increase.



# Research ongoing....

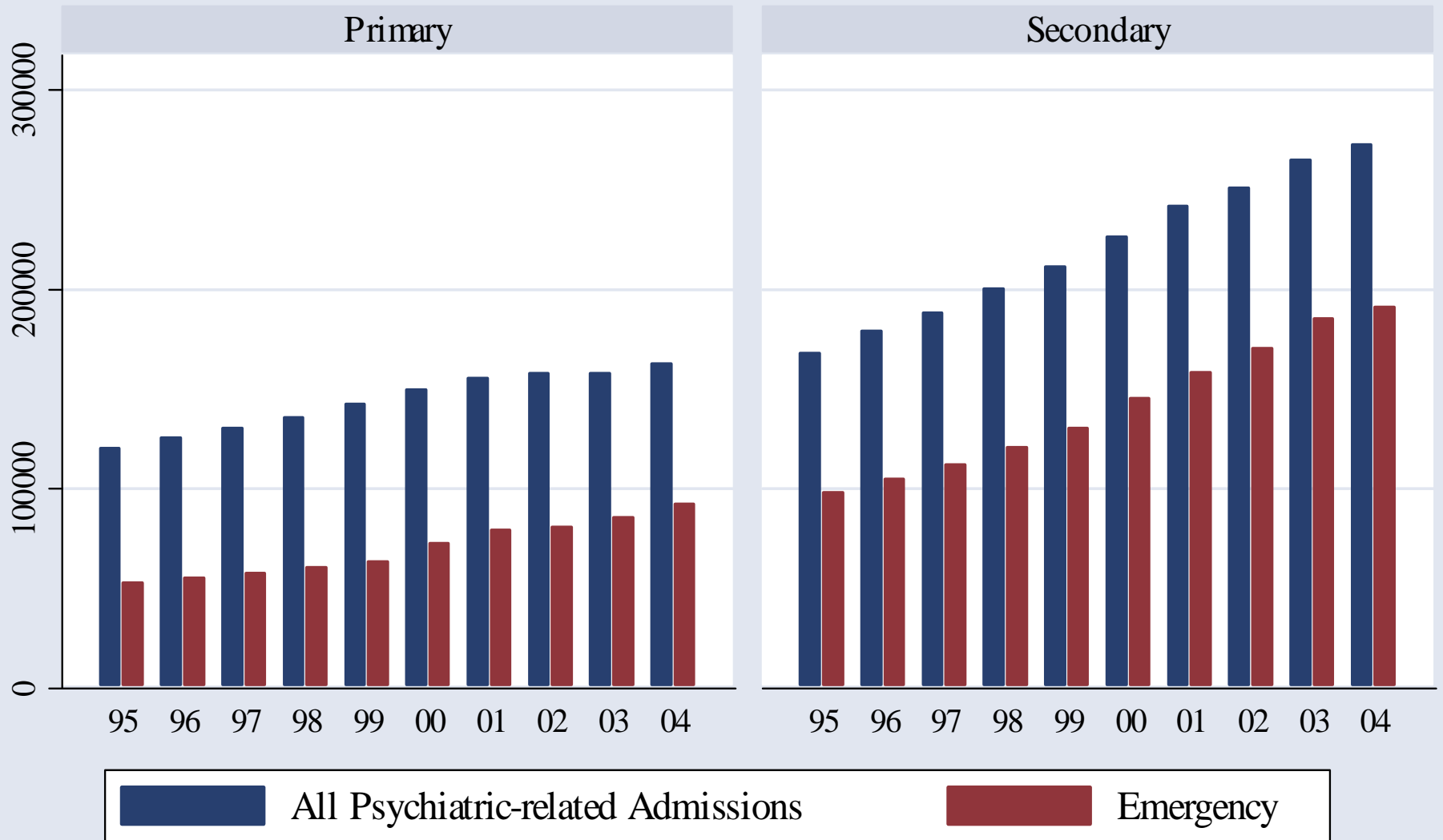
- Next steps:
  - Add more states and years
  - Use drive times instead of distance
  - Redefine radii
  - Sub-analysis of site visit markets
- Examine Closure/Downsizing of:
  - Acute Units
  - Outpatient facilities
  - Stabilization units



# Research ongoing....

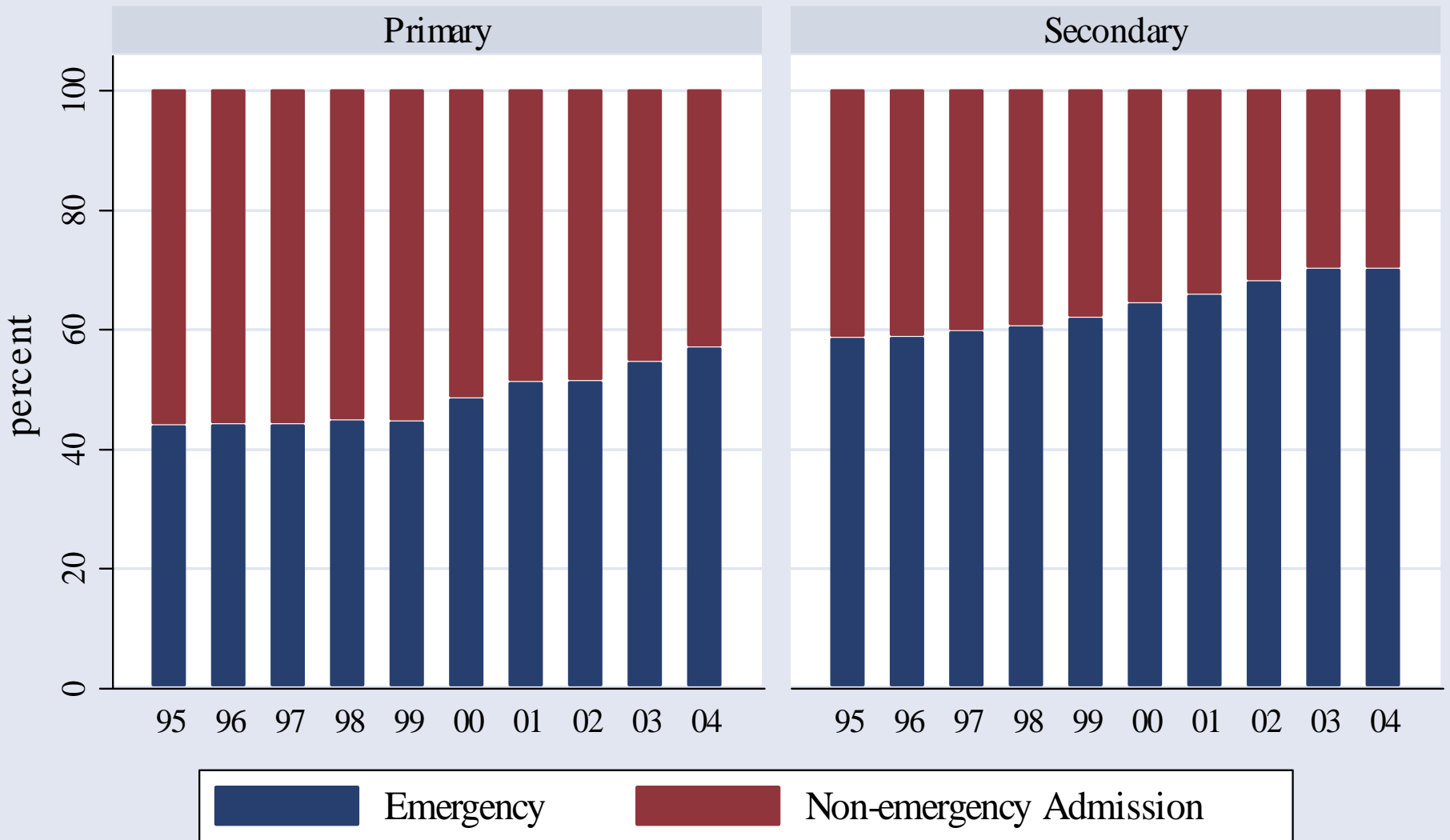
- Next steps:
  - Predict Closure/Downsizing:
    - First-stage of IV
      - Instruments:
        - Political Variables (State and acute care )
        - Catchment Area Land prices (Acute care)
        - Moment conditions
    - Stand-alone analysis

# Figure 1.1. Trends in Admissions by Primary and Secondary Diagnoses



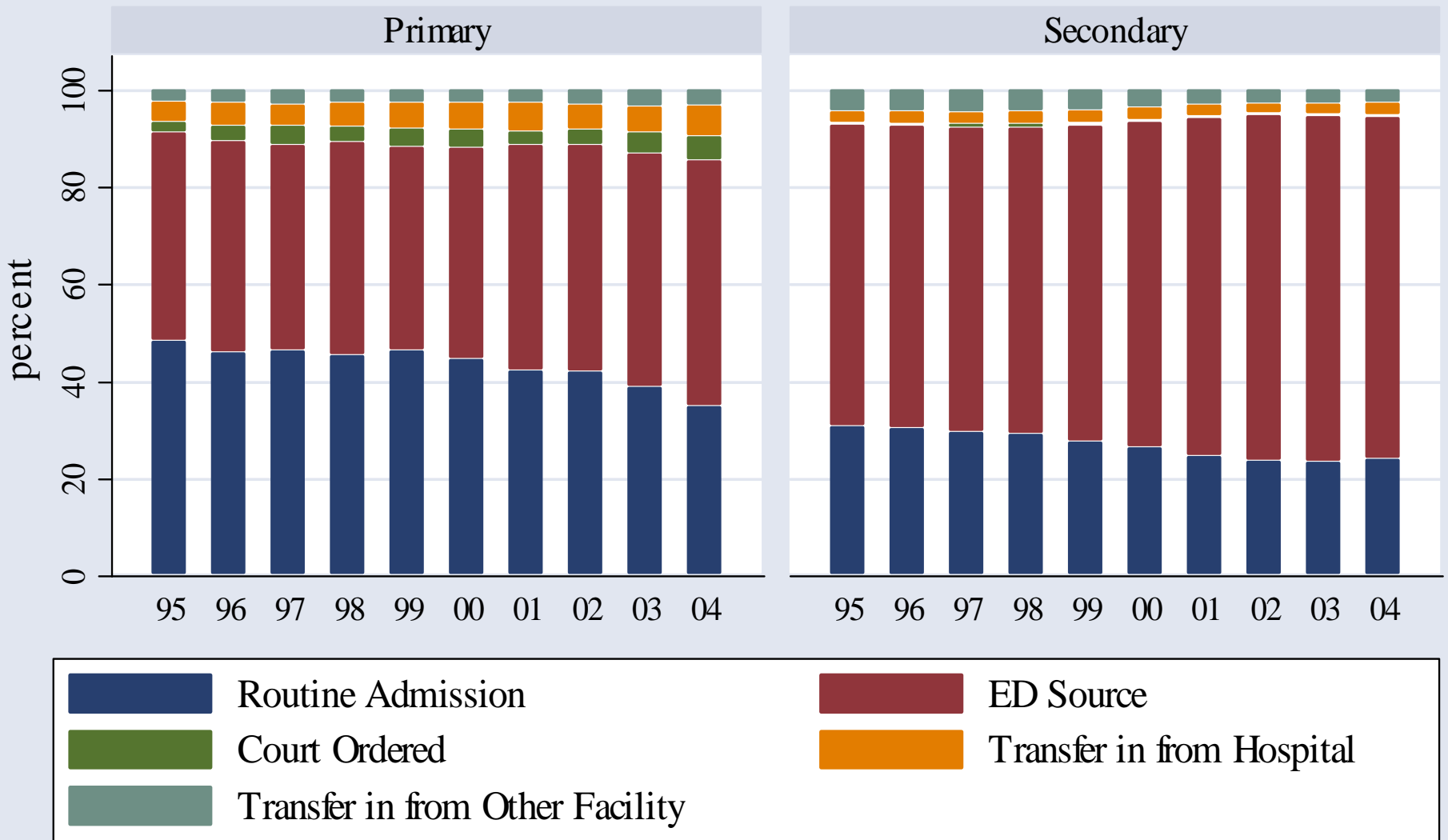
Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
 Source: Health Care Cost and Utilization Project State Inpatient Database

# Figure 1.2. Trends in Share of Admissions by Primary and Secondary Diagnoses



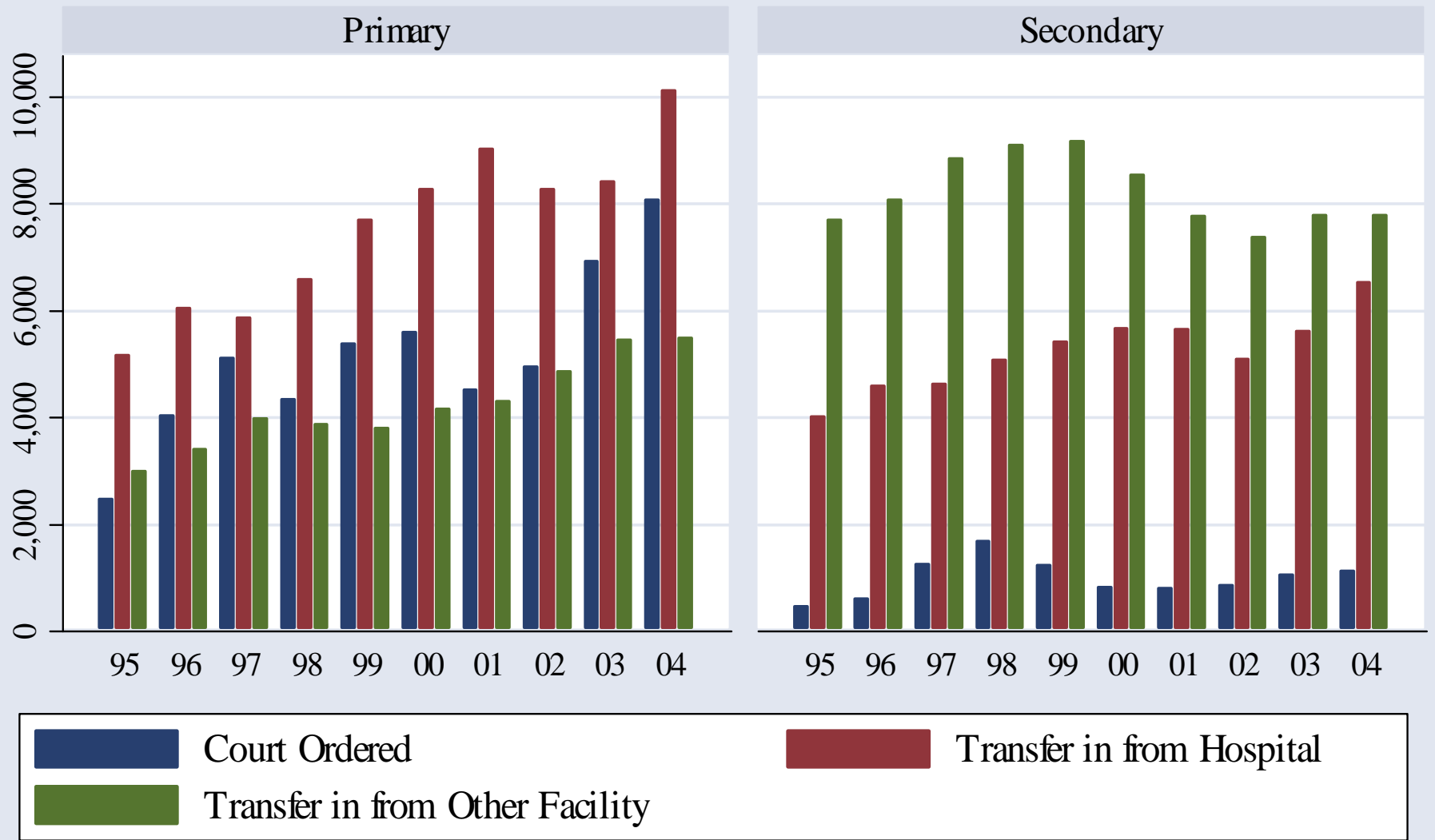
Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
 Source: Health Care Cost and Utilization Project State Inpatient Database

# Figure 2.1. Trends in Share of Admission Source by Primary and Secondary Diagnoses



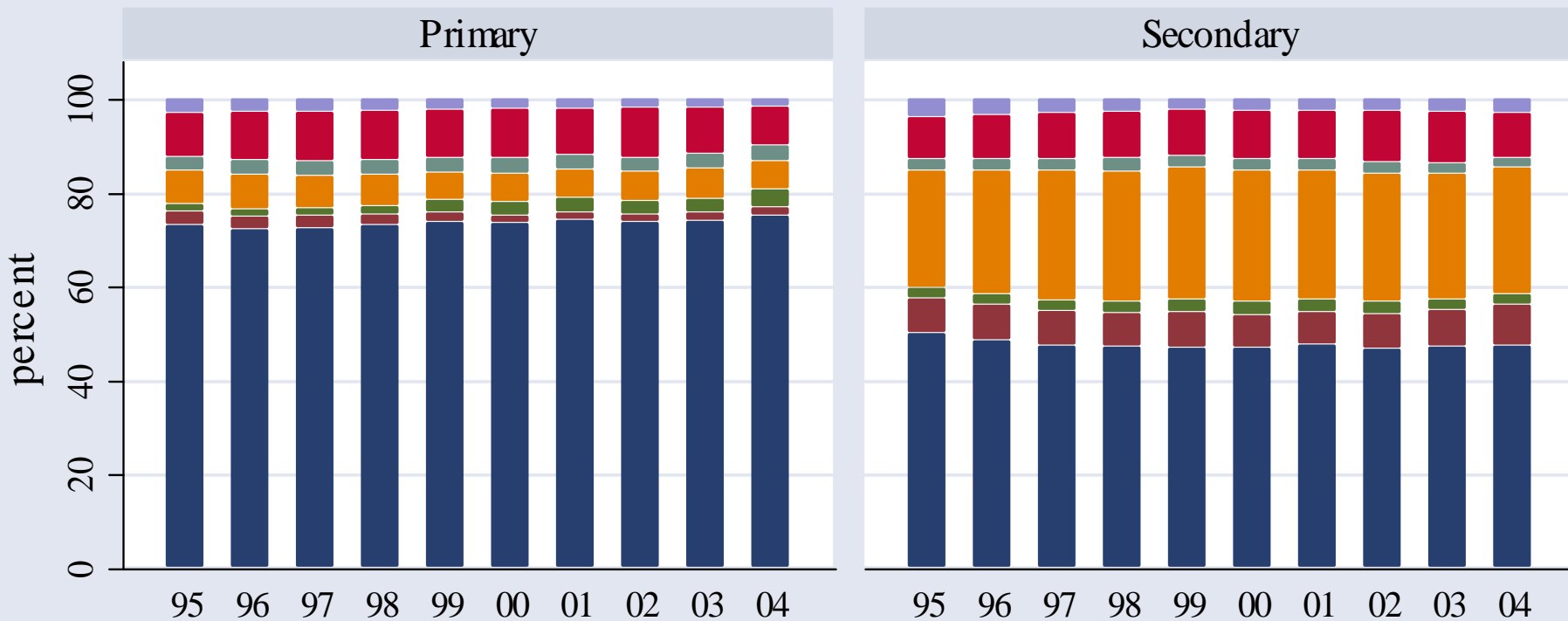
Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
 Source: Health Care Cost and Utilization Project State Inpatient Database

# Figure 2.2. Trends in Share of Admission Source by Primary and Secondary Diagnoses



Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
 Source: Health Care Cost and Utilization Project State Inpatient Database

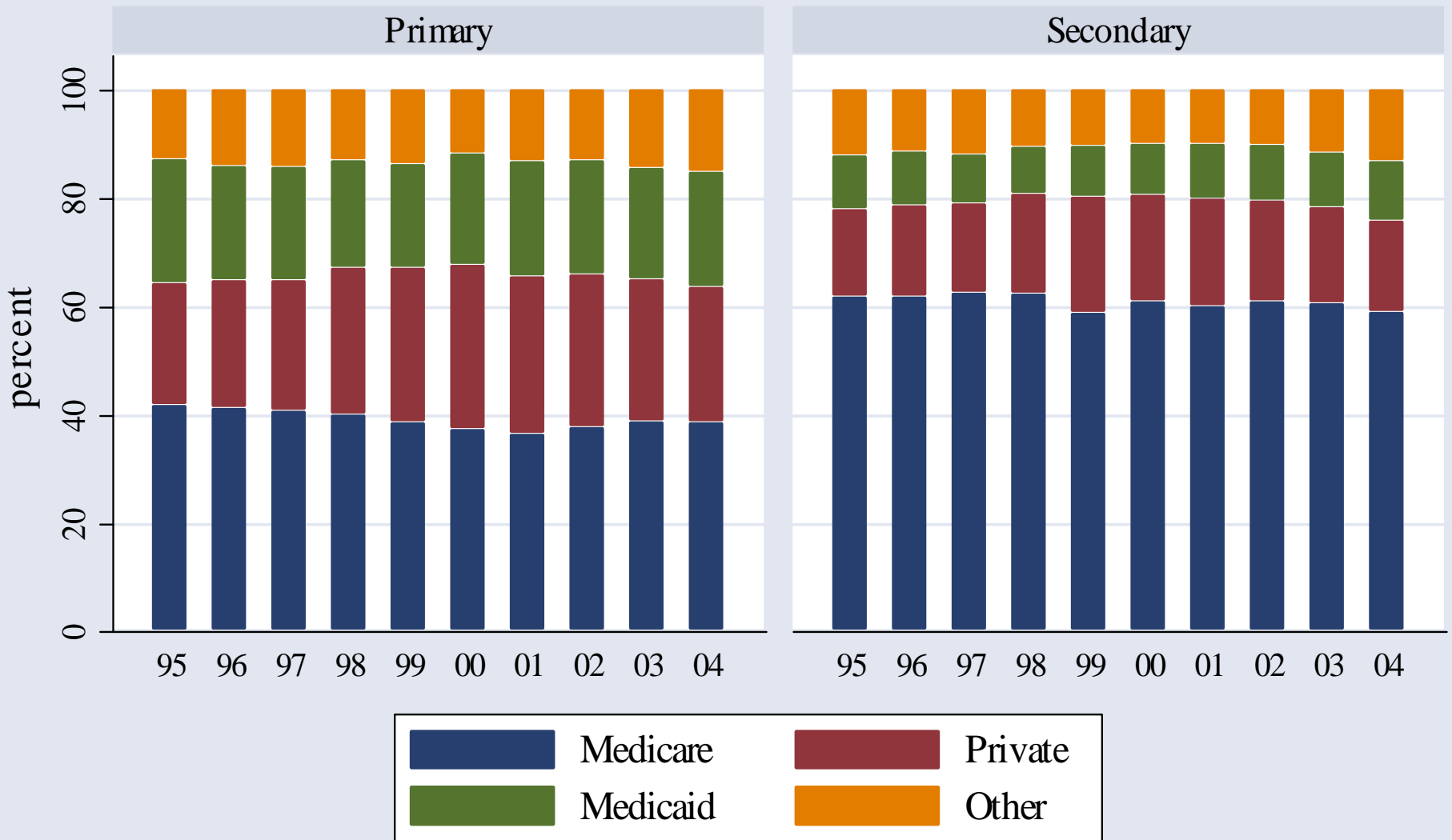
# Figure 3. Trends by Discharge Destination by Primary and Secondary Diagnoses



Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
 Source: Health Care Cost and Utilization Project State Inpatient Database

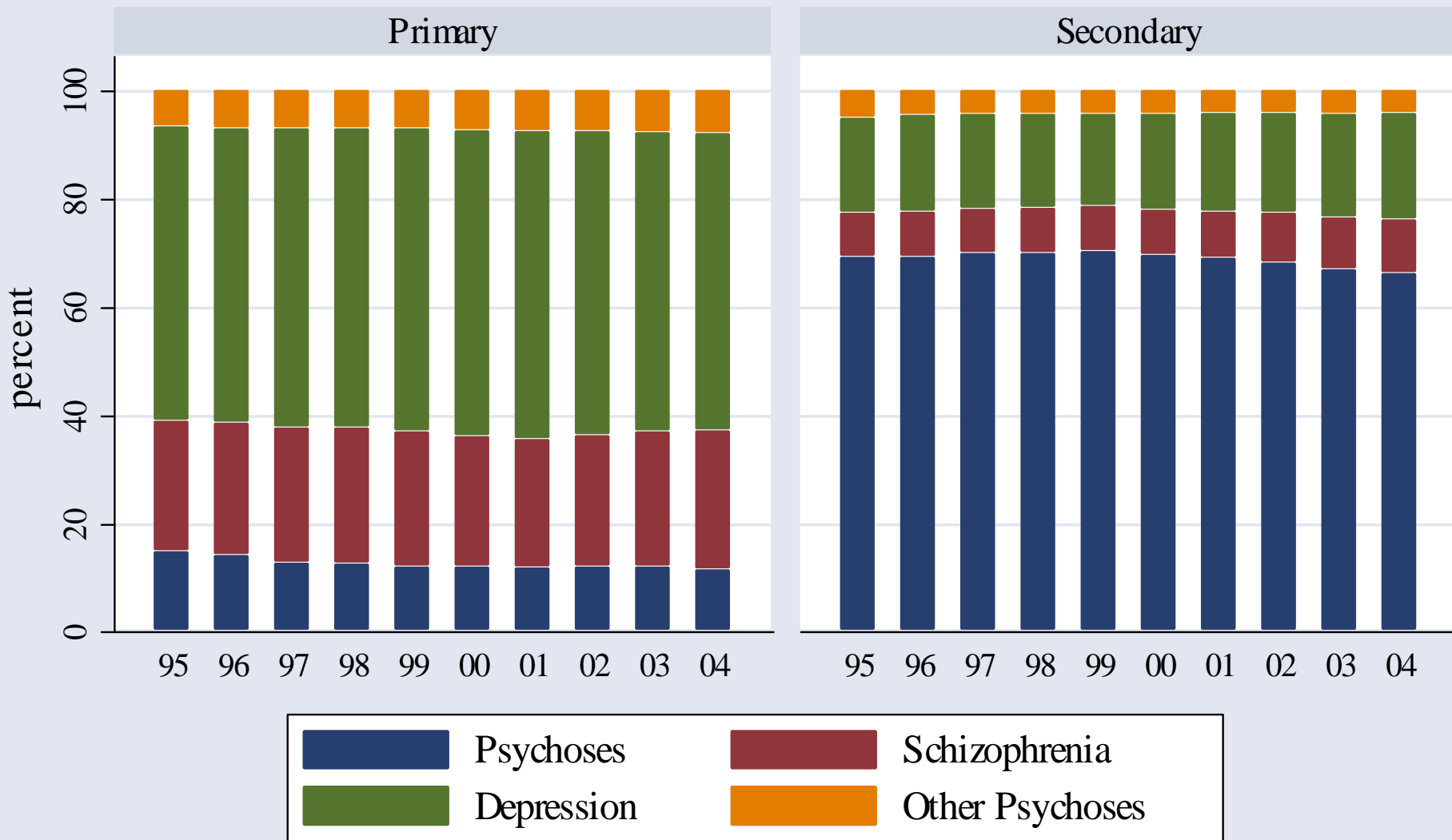
# Figure 4. Trends by Payer

## by Primary and Secondary Diagnoses



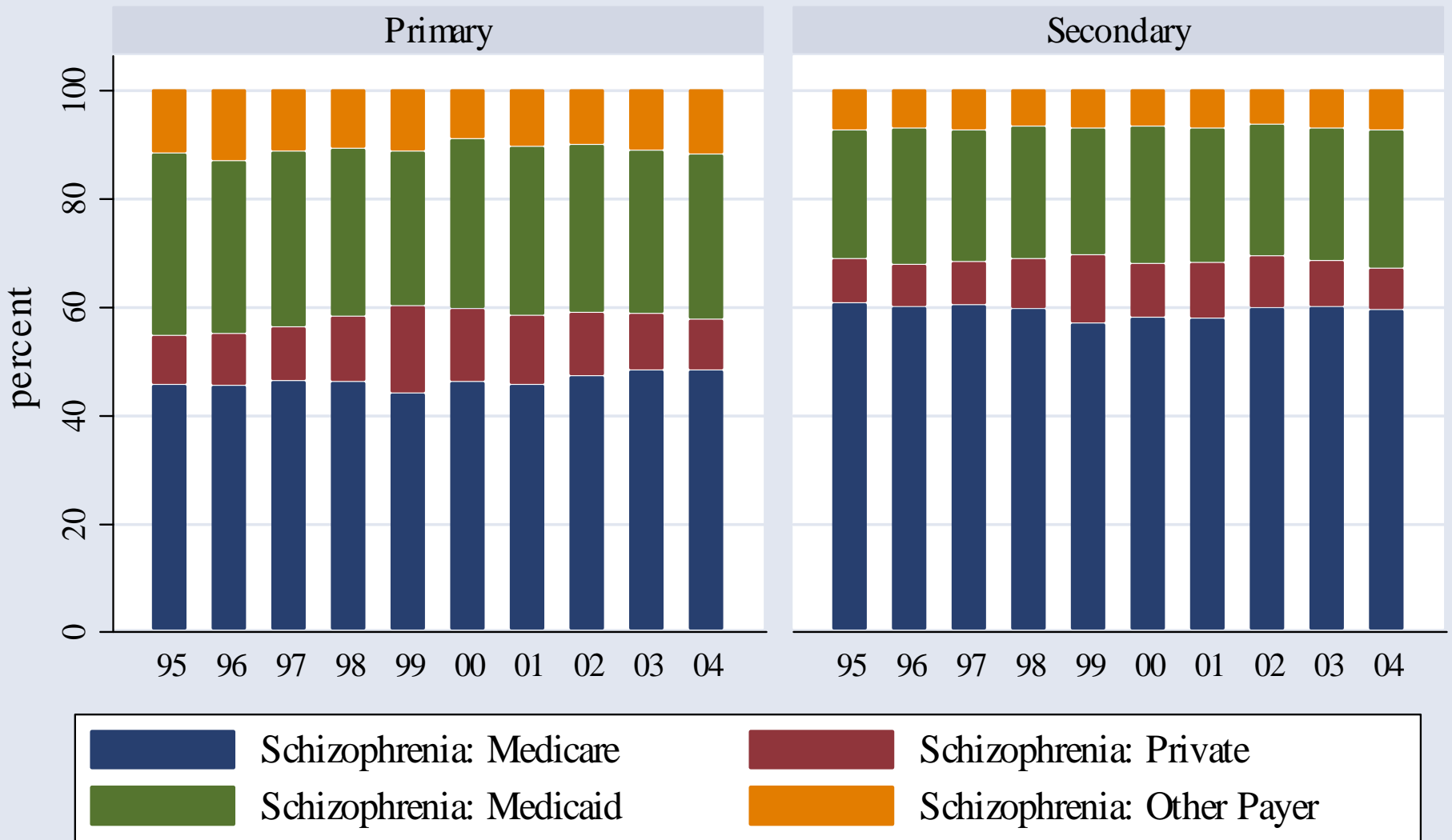
Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
 Source: Health Care Cost and Utilization Project State Inpatient Database

# Figure 5. Trends by Diagnosis by Primary and Secondary Diagnoses



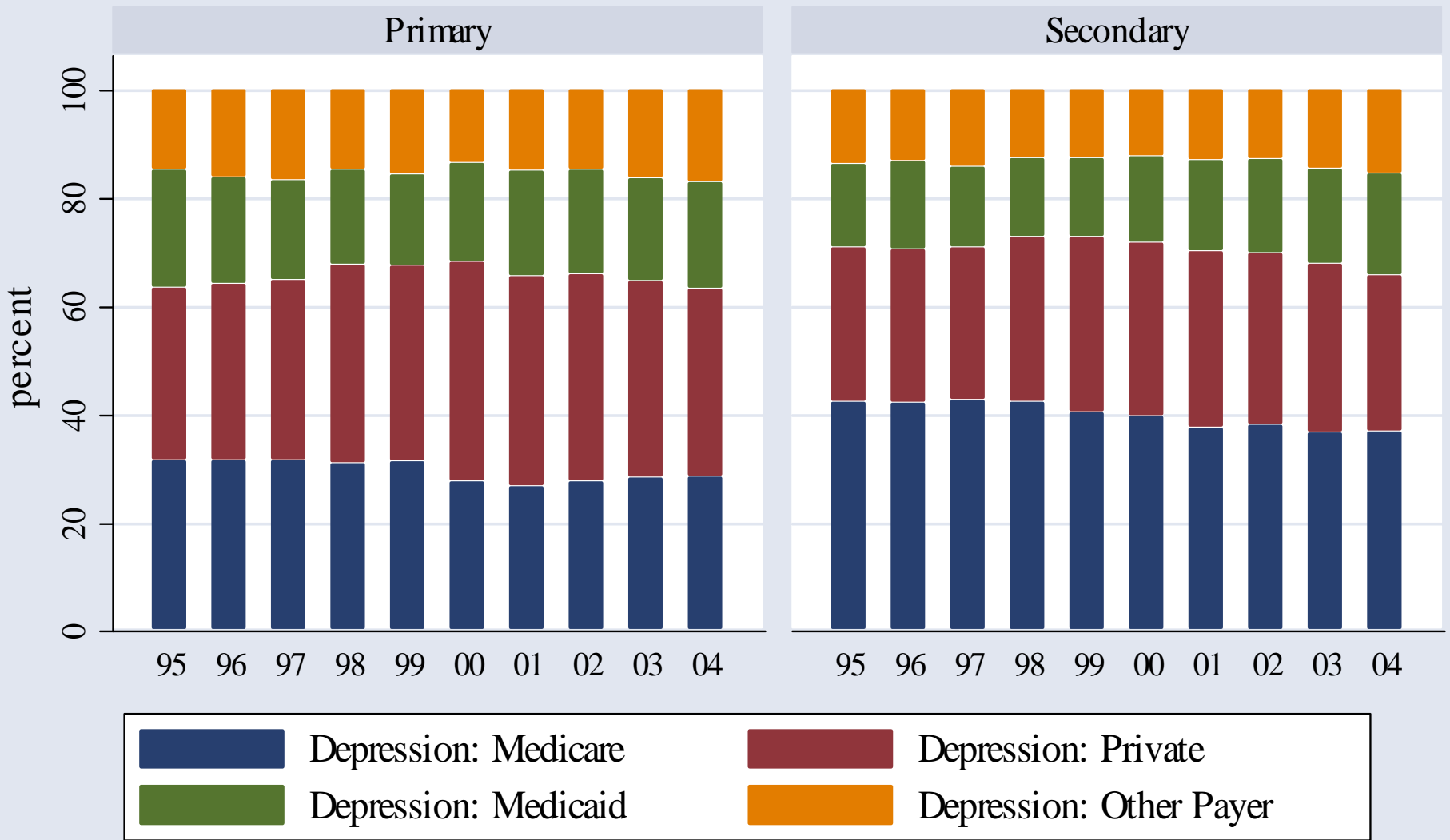
Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
 Source: Health Care Cost and Utilization Project State Inpatient Database

# Figure 6. Trends by Payer: Schizophrenia by Primary and Secondary Diagnoses



Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
 Source: Health Care Cost and Utilization Project State Inpatient Database

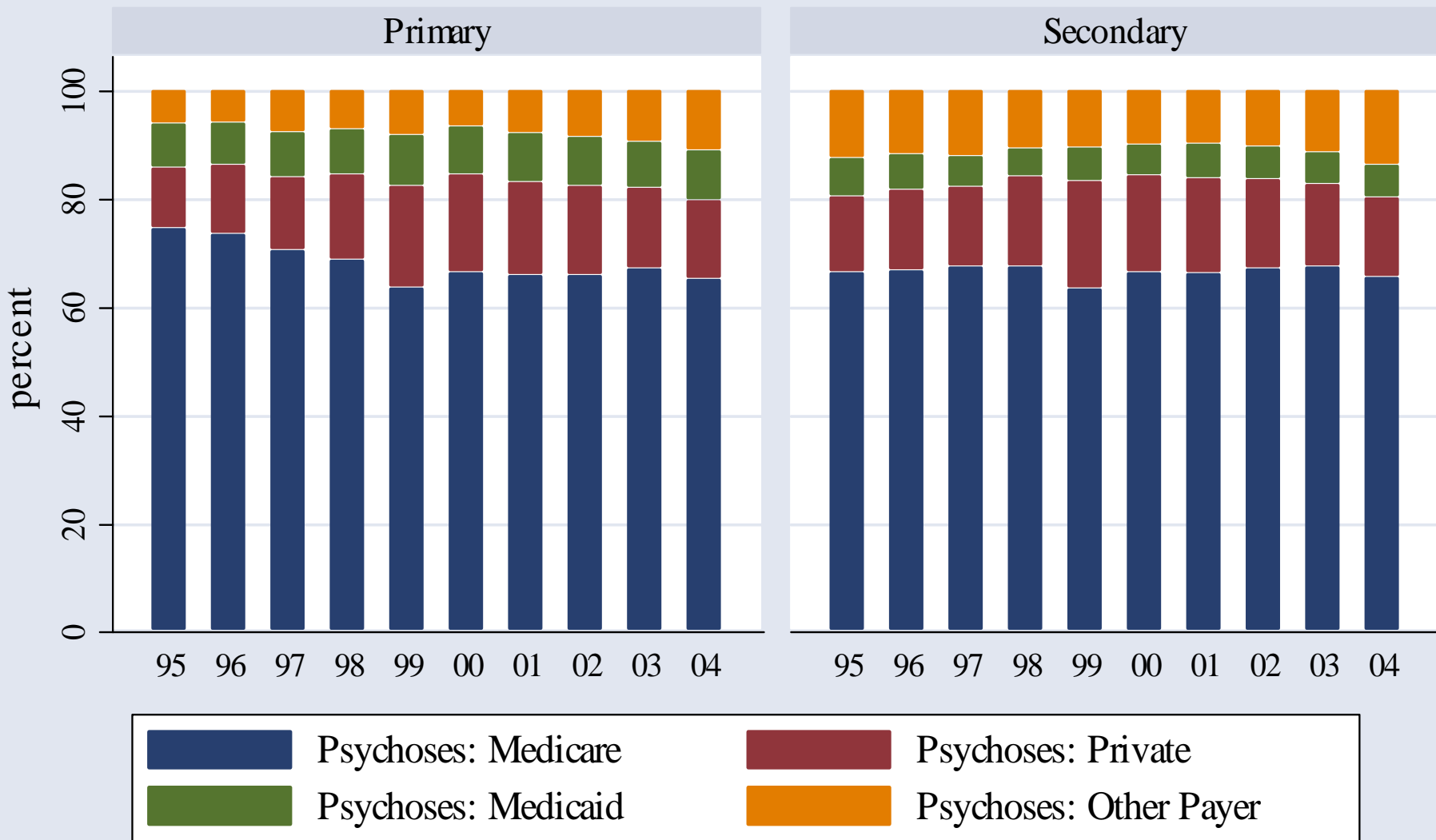
# Figure 7. Trends by Payer: Major Affective Disorders by Primary and Secondary Diagnoses



Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
 Source: Health Care Cost and Utilization Project State Inpatient Database

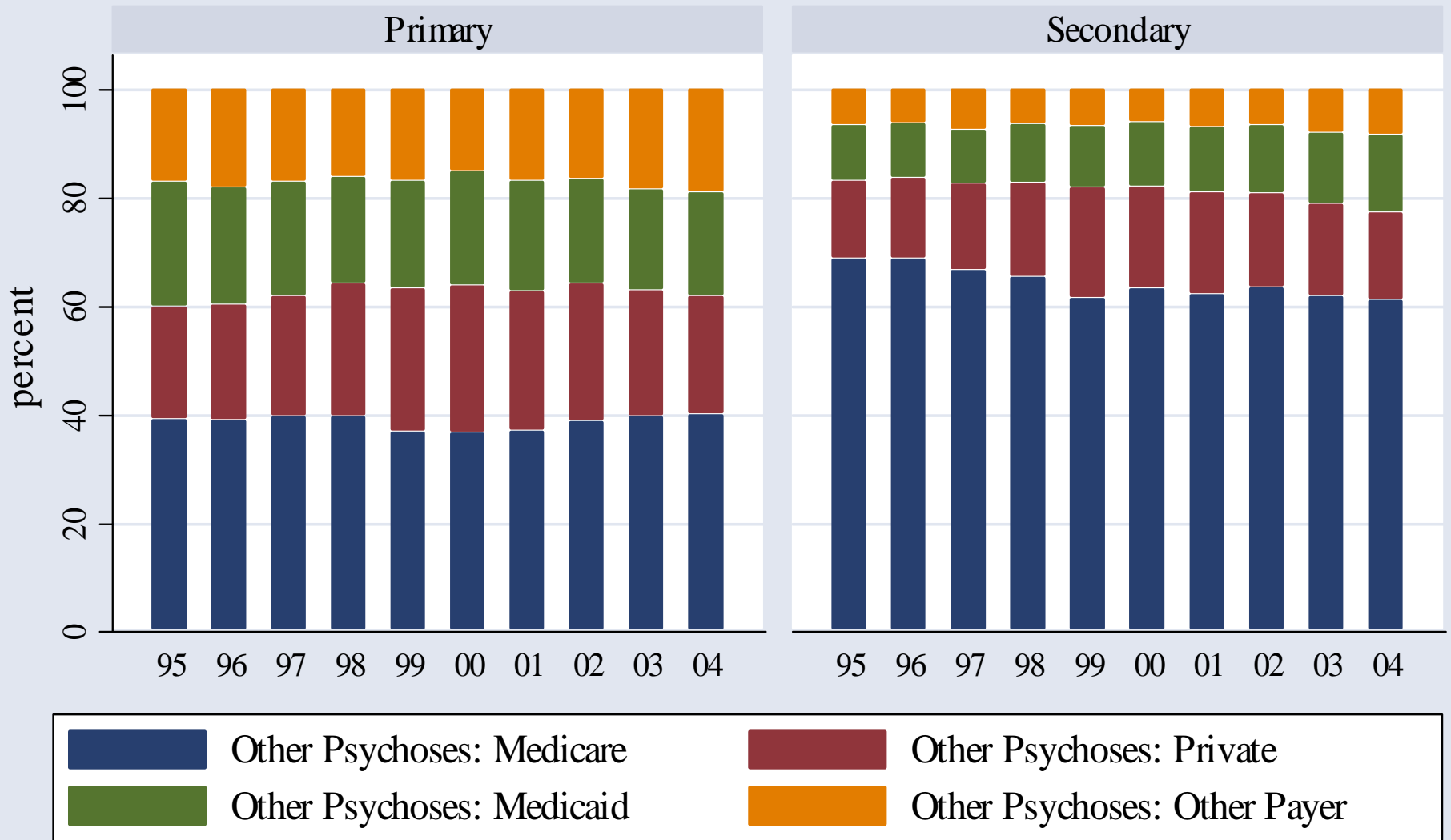
# Figure 8. Trends by Payer: Psychoses

## by Primary and Secondary Diagnoses



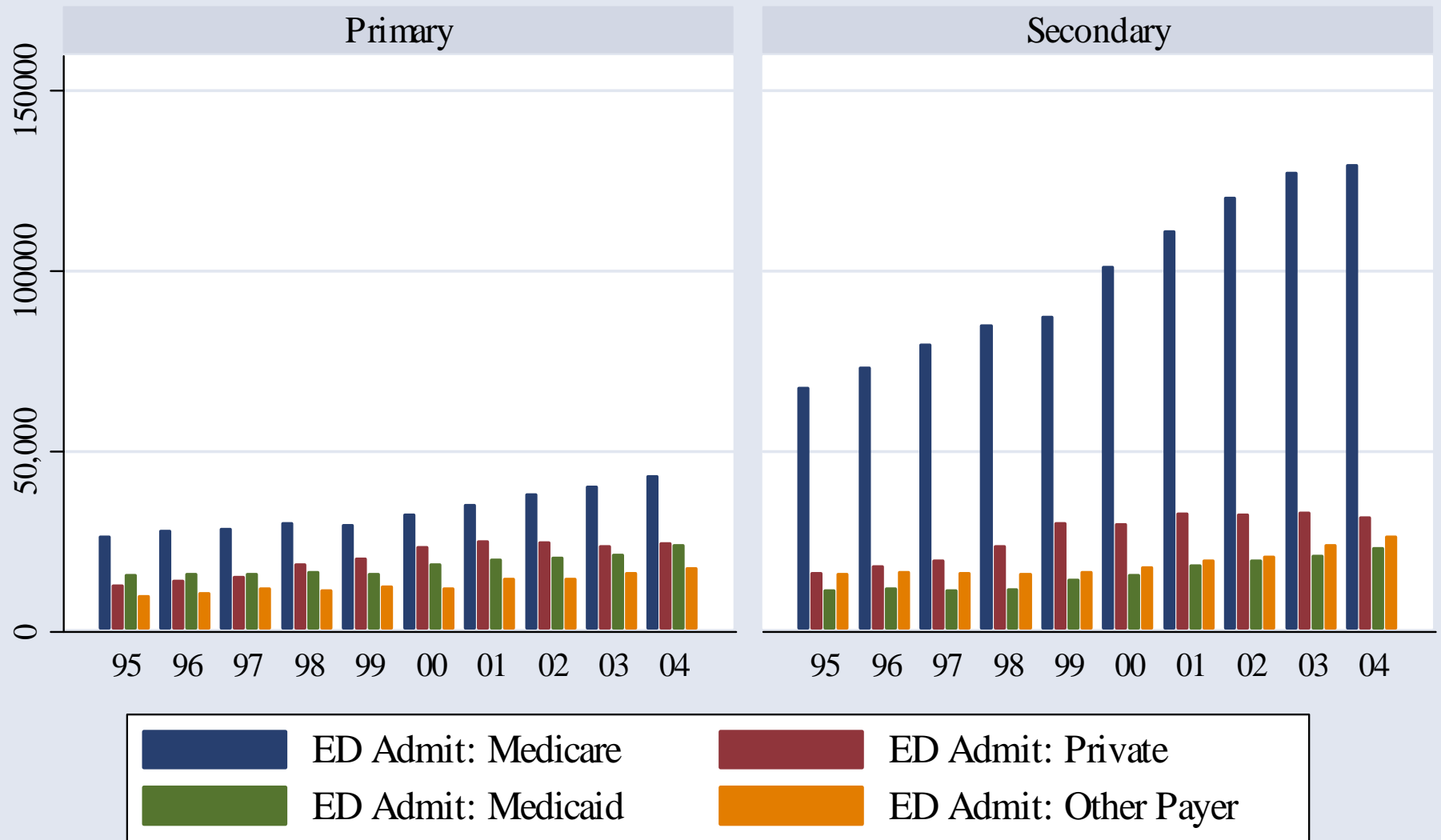
Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
 Source: Health Care Cost and Utilization Project State Inpatient Database

# Figure 9. Trends by Payer: Other by Primary and Secondary Diagnoses



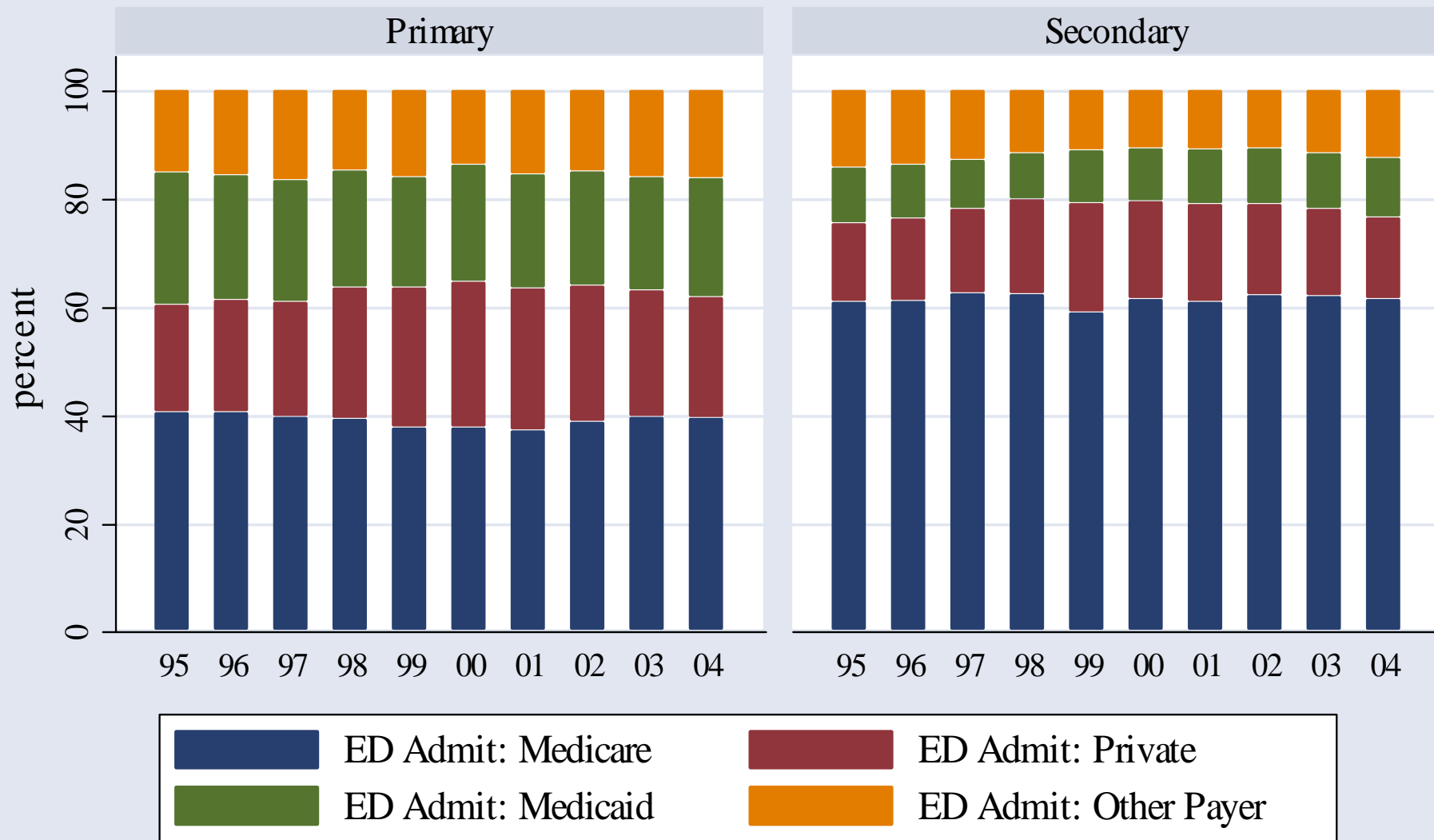
Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
 Source: Health Care Cost and Utilization Project State Inpatient Database

# Figure 10.1 Trends by Payer: Emergency Department by Primary and Secondary Diagnoses



Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
 Source: Health Care Cost and Utilization Project State Inpatient Database

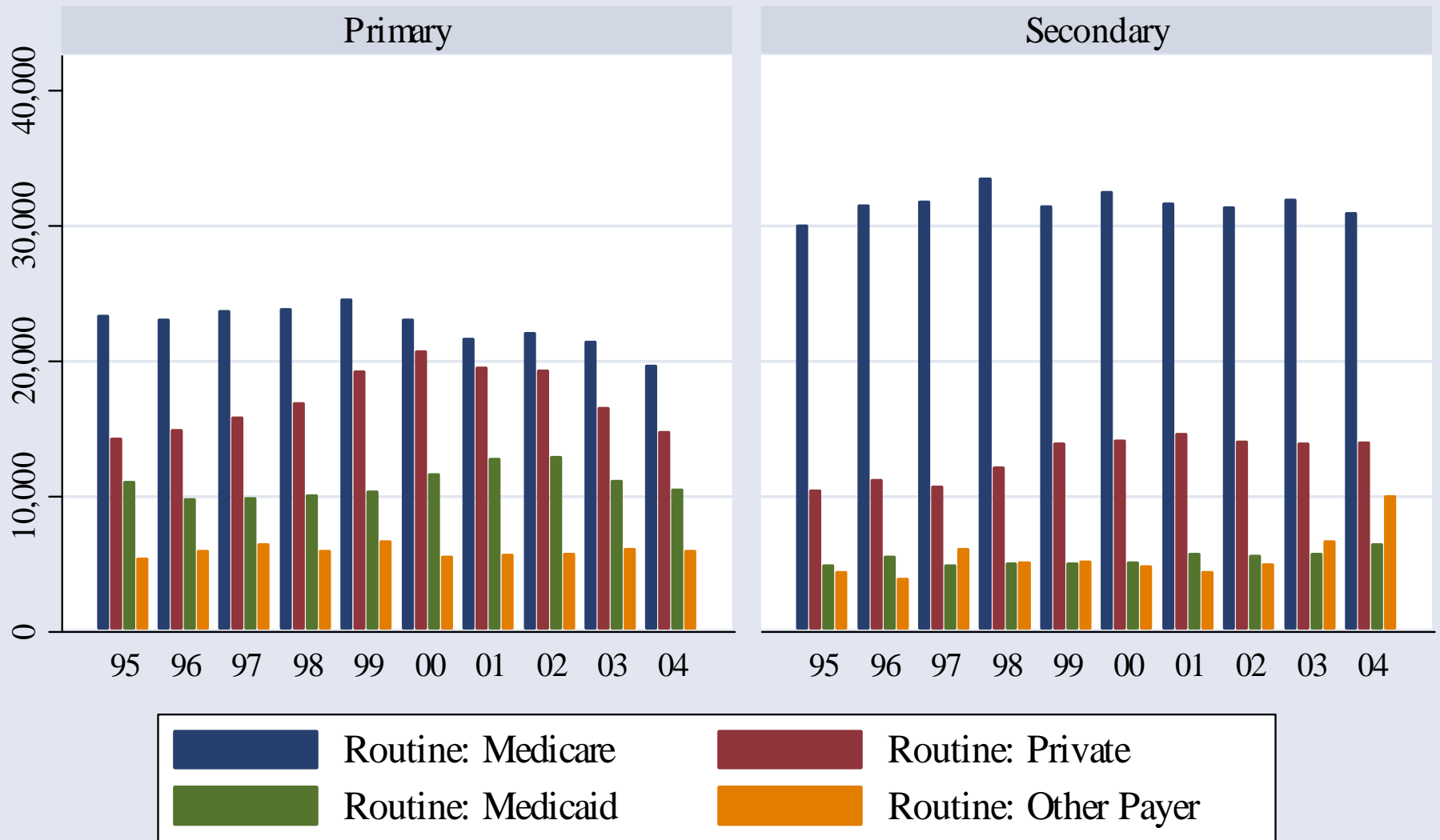
# Figure 10.2 Trends by Payer: Emergency Department by Primary and Secondary Diagnoses



Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
 Source: Health Care Cost and Utilization Project State Inpatient Database

# Figure 11.1 Trends by Payer: Routine

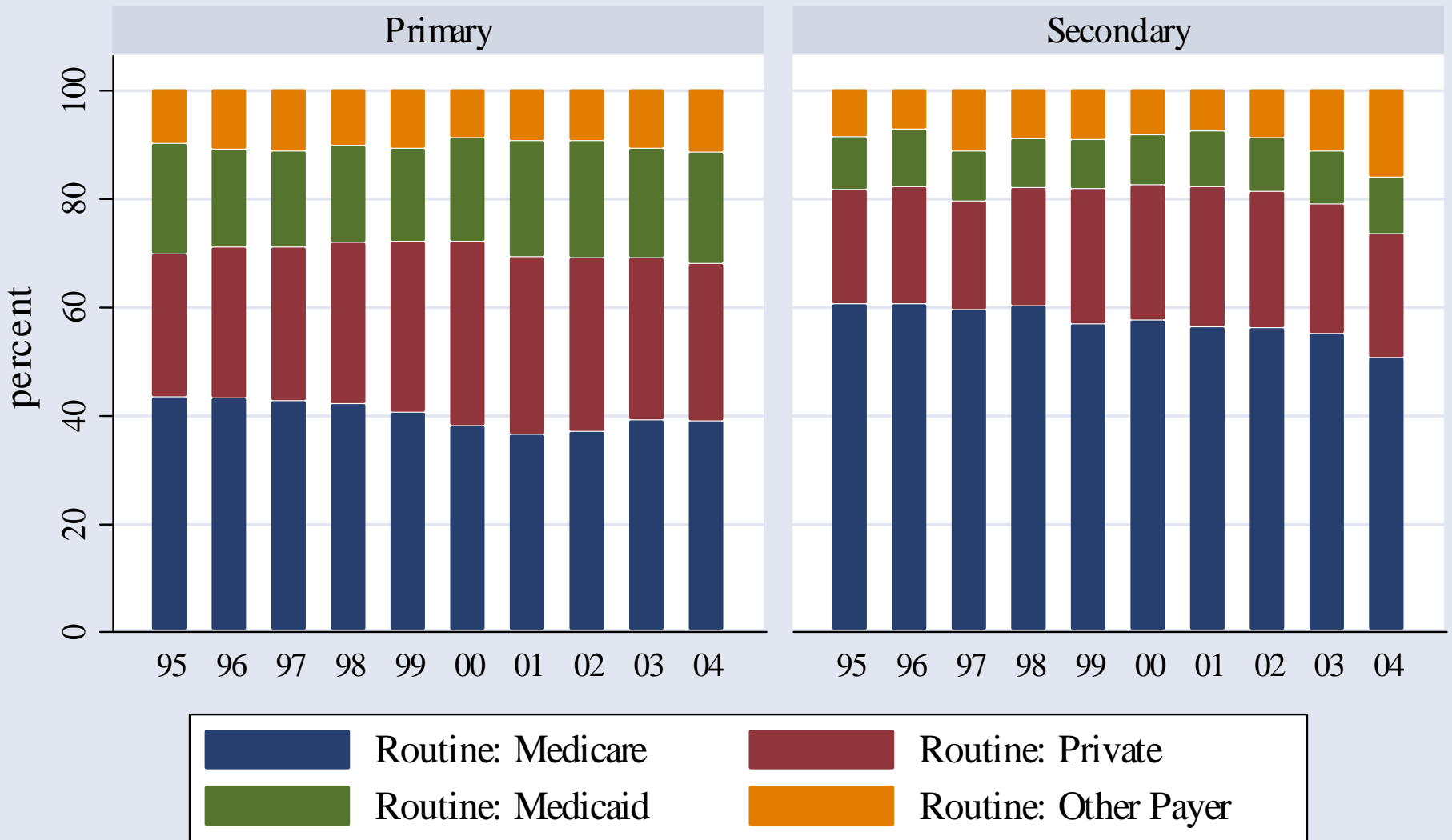
## by Primary and Secondary Diagnoses



Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
 Source: Health Care Cost and Utilization Project State Inpatient Database

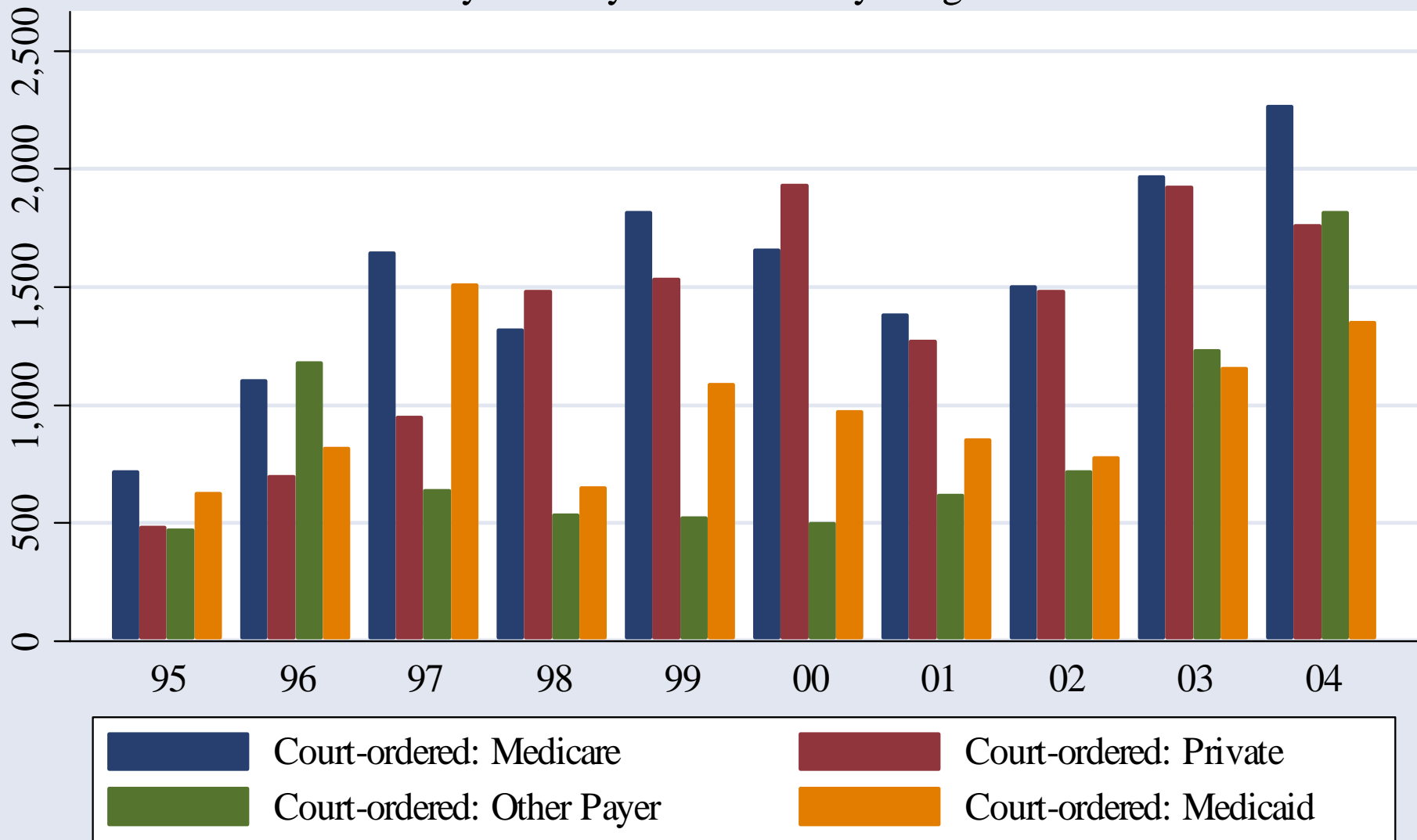
# Figure 11.2 Trends by Payer: Routine

## by Primary and Secondary Diagnoses



Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
 Source: Health Care Cost and Utilization Project State Inpatient Database

Figure 12 Trends by Payer: Court-ordered Admission  
by Primary and Secondary Diagnoses



Sample: All Psychiatric Admissions to General Hospitals in AZ, CO, FL, NJ, WA, WI: 1995-2004  
Source: Health Care Cost and Utilization Project State Inpatient Database