2015 Annual Issues Symposium

State Differences in the Treatment of Joint Injuries—Preliminary Results

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Overview

- Our Approach
  - How we select joint injury cases
  - How we measure utilization
- Preliminary Findings
  - Knee injuries
  - Shoulder injuries
  - Shoulder arthroscopy
- Observations

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Cost, Price, and Utilization

- **Cost**—the total dollars paid per claim
- **Price**—what is paid for individual services
- **Utilization**—the intensity of services provided per claim
  - Mix of services (e.g., X-ray vs. MRI)
  - Number of services
- **Cost = Price × Utilization**
- This study focuses on the utilization of medical services for comparable injuries across states

How We Select Joint Injury Cases

- We select joint injury claims based on groups of diagnoses:*
  - Shoulder—includes sprain/strain and rotator cuff injuries
  - Elbow—includes tennis elbow
  - Knee—includes sprain/strain and torn ligament
  - Ankle—includes sprain/strain and broken ankle
- We include cases where 85% or more of the cost during the first 90 days post injury goes to treat a condition in one of the groups
- This results in four distinct cohorts of cases, one for each joint
- Today we look at the “Shoulder Cohort” and the “Knee Cohort”

*The four groups of ICD9 diagnosis codes, with descriptions, are in the Appendix

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How We Measure Utilization

- We use a common fee schedule for all states to control for price differences among states*
- Utilization is measured as the **Cost at Common Fees** for treatments during the first 24 months after the injury. We refer to this as the CCF for initial care
- The CCF is the dollar cost assuming all services are reimbursed at the common fee schedule

* The need to control for price differences by state is highlighted in the recent paper *Hospital Outpatient Cost Index for Workers' Compensation, 4th Edition*, WCRI, January 2015, which notes large differences among the states in the reimbursement for knee and shoulder surgeries; see Appendix B for how the common fee schedule is constructed

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How We Measure Utilization

- The CCF is also adjusted for age and gender mix
- We require the full two-year window post injury in the Medical Data Call (MDC)
- We look at cases with dates of injury from 7/1/2010 to 12/31/2011
  - For some types of joint cases, the date of injury is not clearly defined
  - Musculoskeletal disease cases (e.g., tennis elbow or bursitis) are more problematic than trauma cases (e.g., contusions or fractures)
  - The impact of ambiguity in the date of injury is an ongoing area of study, but is not expected to vary by state

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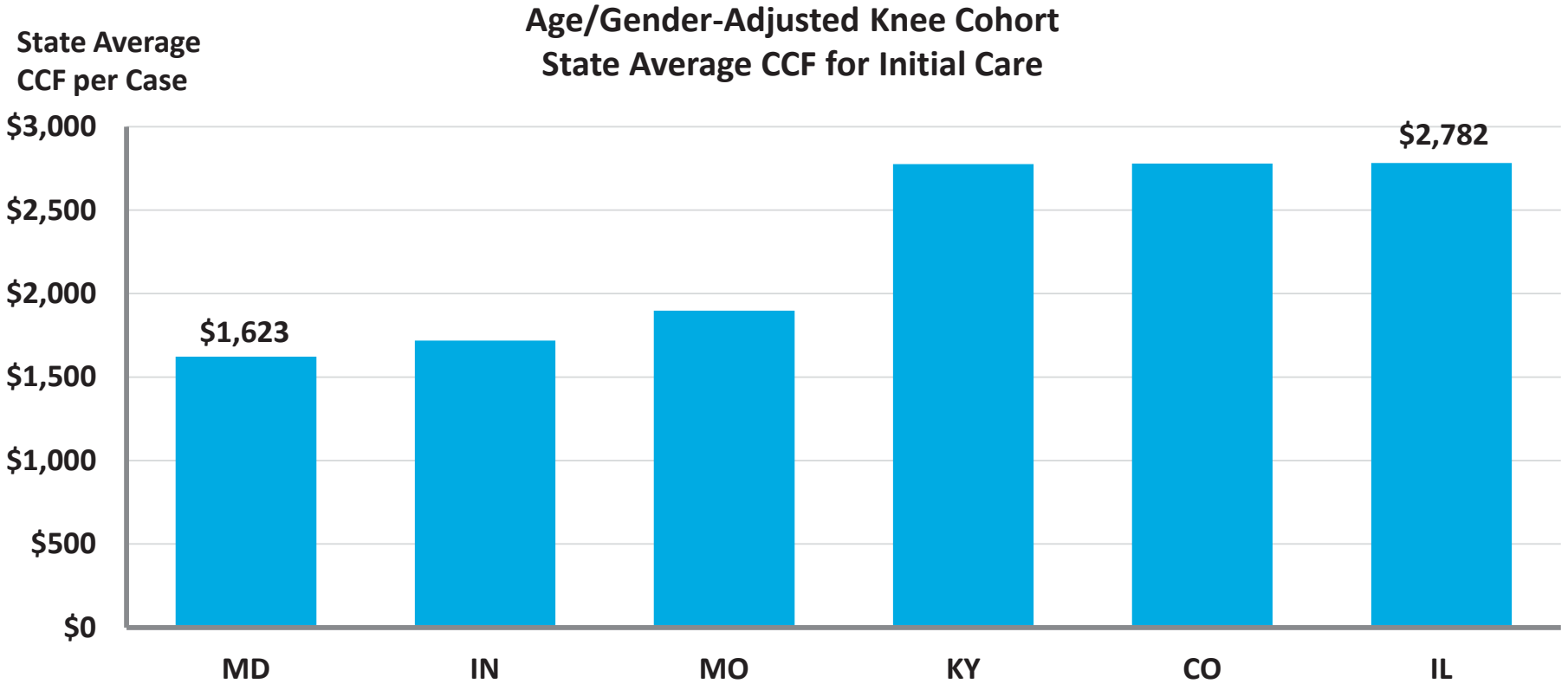
Knee: States Vary Significantly in Their Average CCF Per Case



- We chose three high- and three low-utilization states for knee cases
- The CCF indicates considerable variation in utilization among the six states, ranging from $1,623 to about $2,782—a difference of 71%
- We will use these six states to illustrate utilization differences according to the diagnosis and treatment of the knee cohort cases

Source: NCCI Medical Data Call

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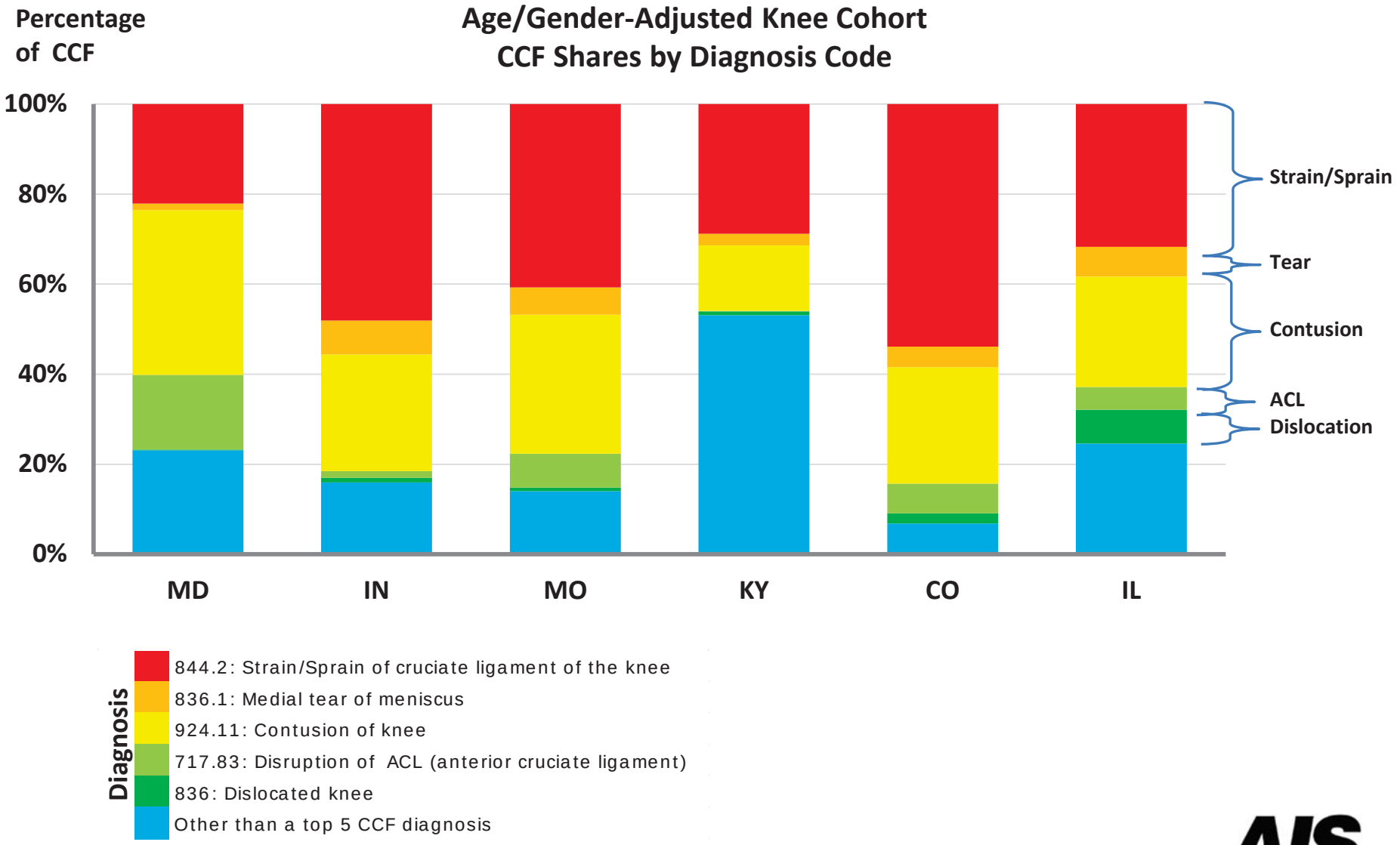
Knee: Significant Differences Among States in Shares of CCF by Case Diagnosis

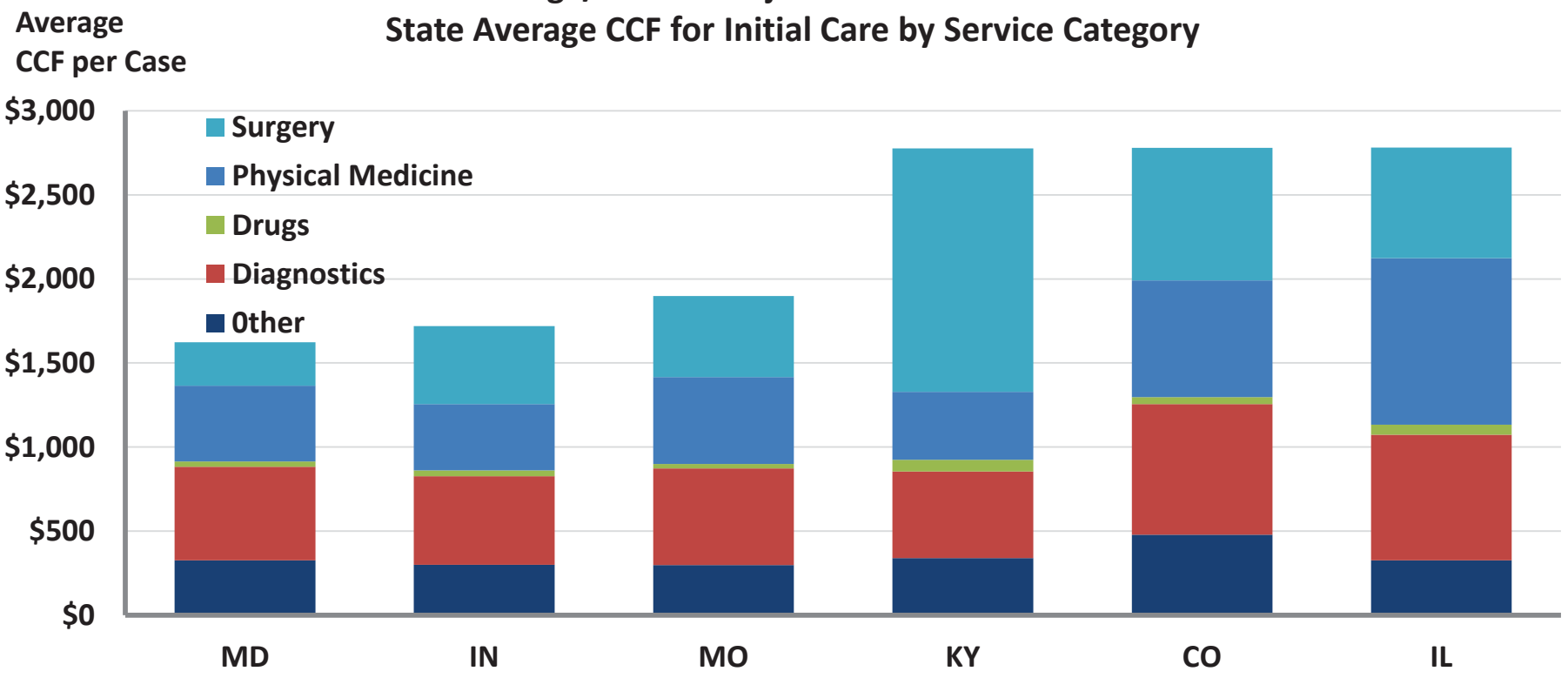


Source: NCCI Medical Data Call

Knee: Expenditures on Surgery and Physical Medicine Distinguish the High-Utilization States

Age/Gender-Adjusted Knee Cohort

State Average CCF for Initial Care by Service Category



- The CCF dollars per case for surgery and physical medicine vary more by state than the CCF dollars for diagnostics
- The difference in the CCF between the low and high states for surgery and physical medicine is $2,417; this is more than five times the difference for drugs and diagnostics, which is $460

Source: NCCI Medical Data Call

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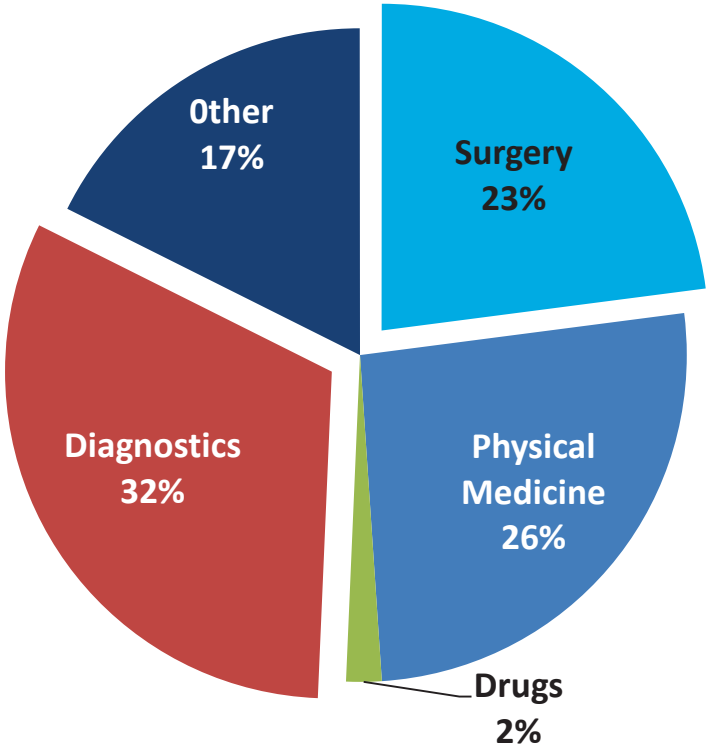
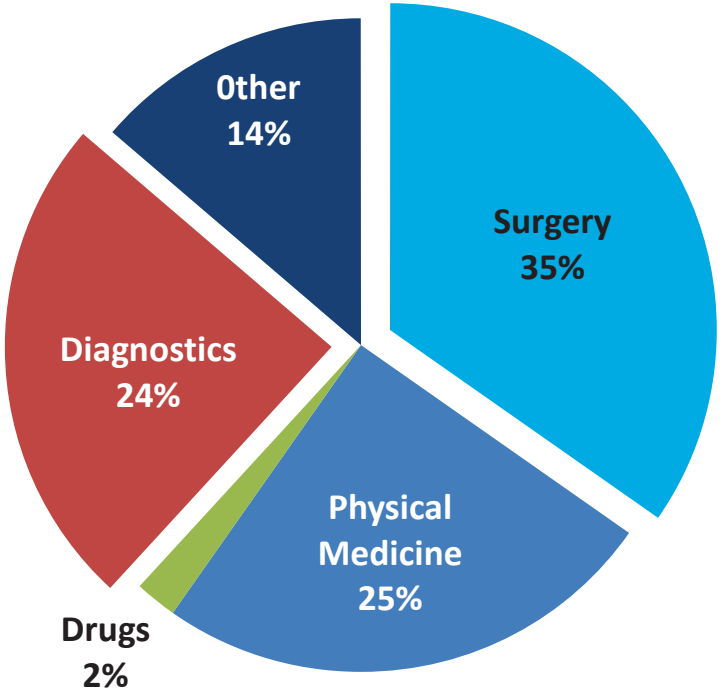
Knee: Greater Share of CCF for Surgery Corresponds to Higher Utilization

Age/Gender-Adjusted Knee Cohort
3 Low CCF States
Maryland - Indiana - Missouri



Age/Gender-Adjusted Knee Cohort
3 High CCF States
Kentucky - Colorado - Illinois



Source: NCCI Medical Data Call

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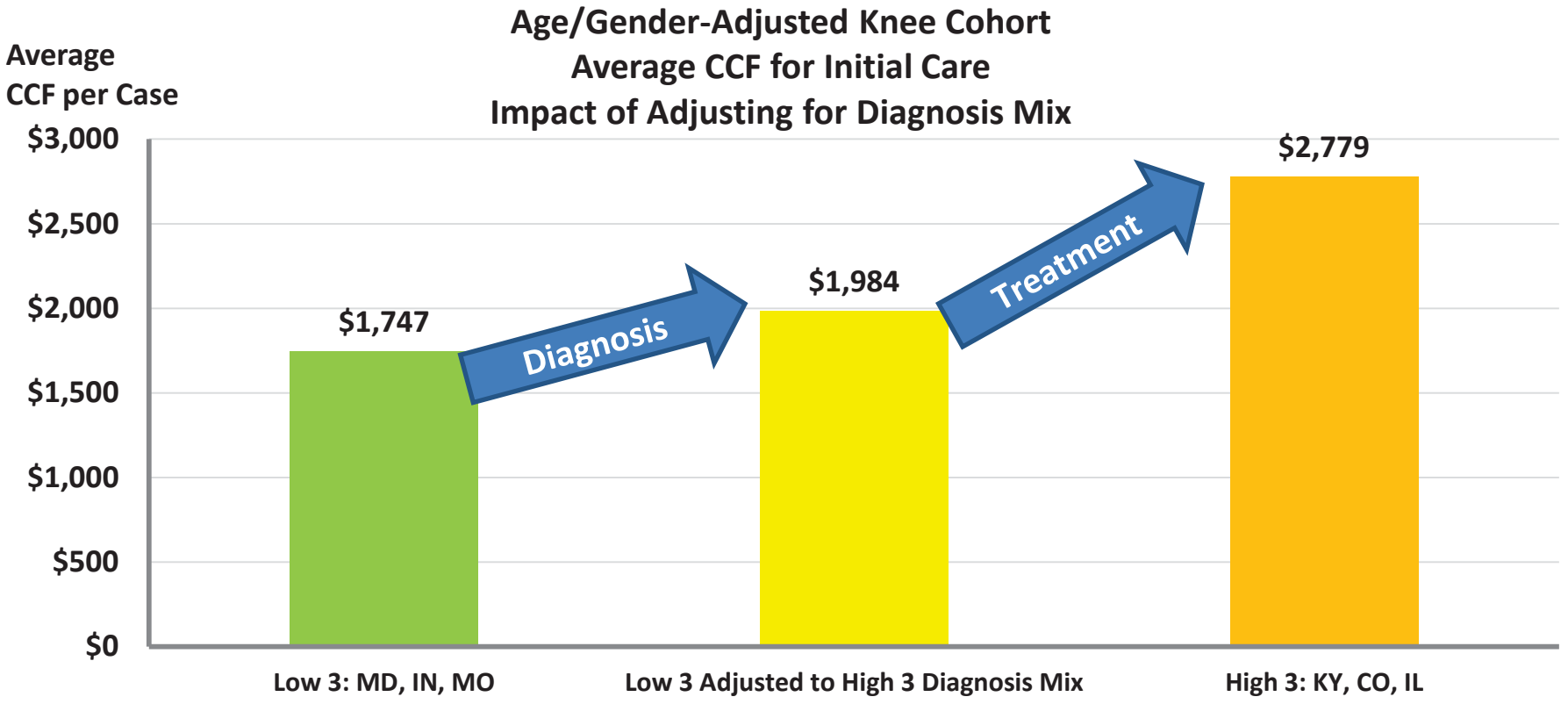
Knee: Diagnosis and Treatment Combine to Drive Utilization



- Diagnosis: Adjusting the low three states to the diagnosis mix (more sprain, strain and tear cases) of the high three states explains 23% of the difference in CCF between the two groups of states
- Treatment: Higher utilization for the treatment of specific medical conditions in the three high states accounts for the remaining 77% of the difference

Source: NCCI Medical Data Call

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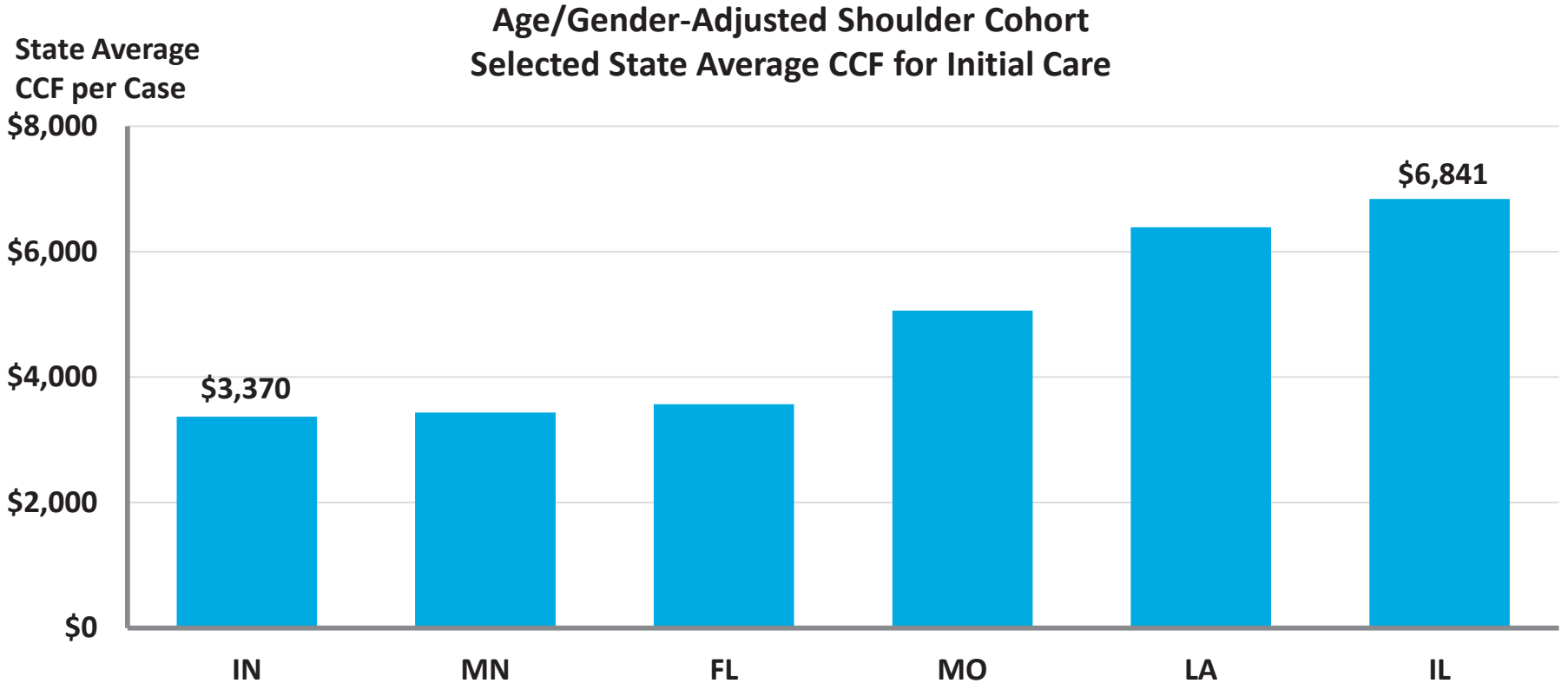
Shoulder: States Vary Significantly in Their Average CCF Per Case



- We chose three high- and three low-utilization states for shoulder cases
- The CCF measure indicates considerable variation in utilization among the six states for shoulder cases, more than doubling from $3,370 to $6,841
- We will use these six states to illustrate utilization differences according to the diagnosis and treatment of the shoulder cohort cases

Source: NCCI Medical Data Call

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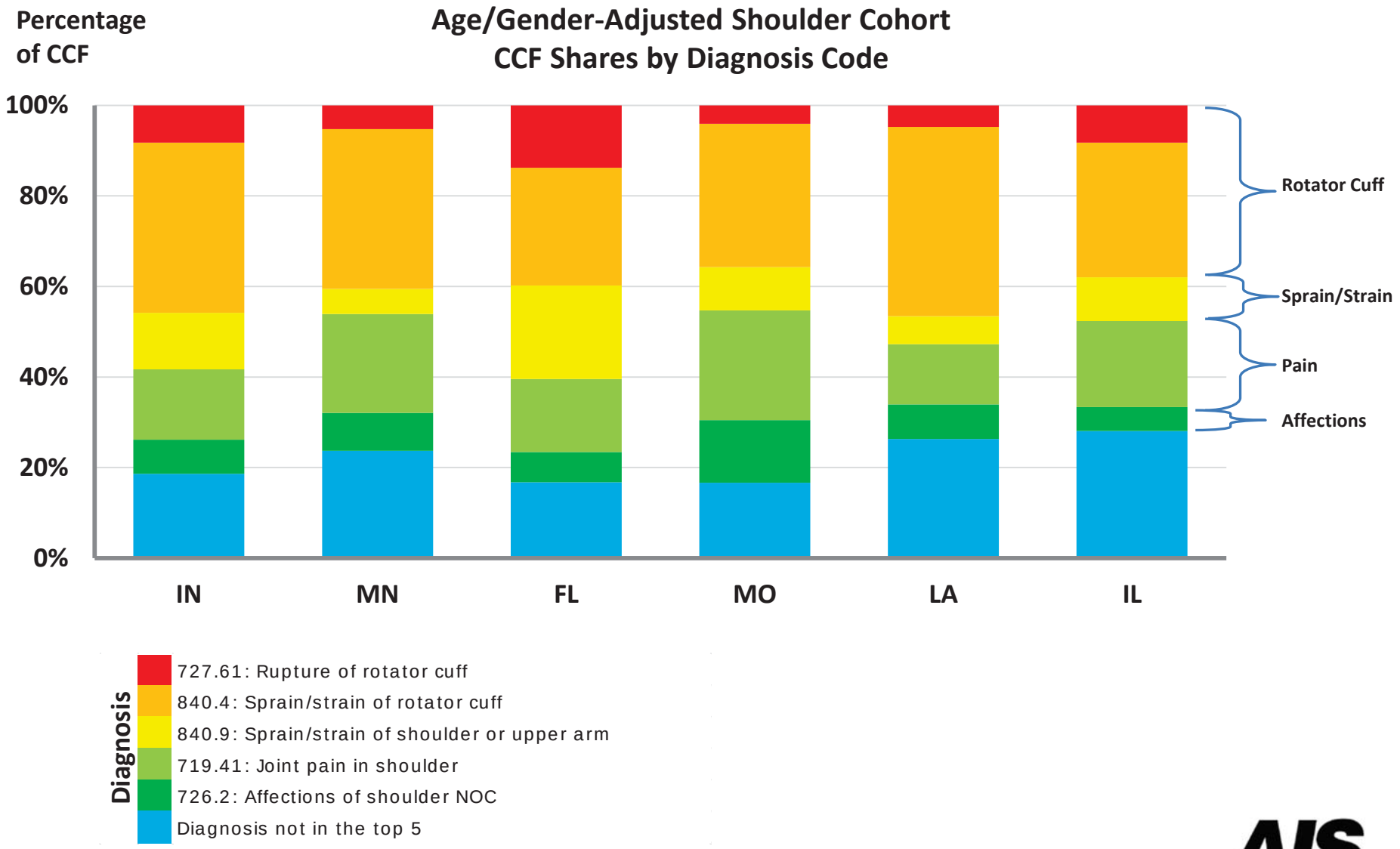
Shoulder: CCF Shares by Case Diagnosis Are Fairly Consistent



Source: NCCI Medical Data Call

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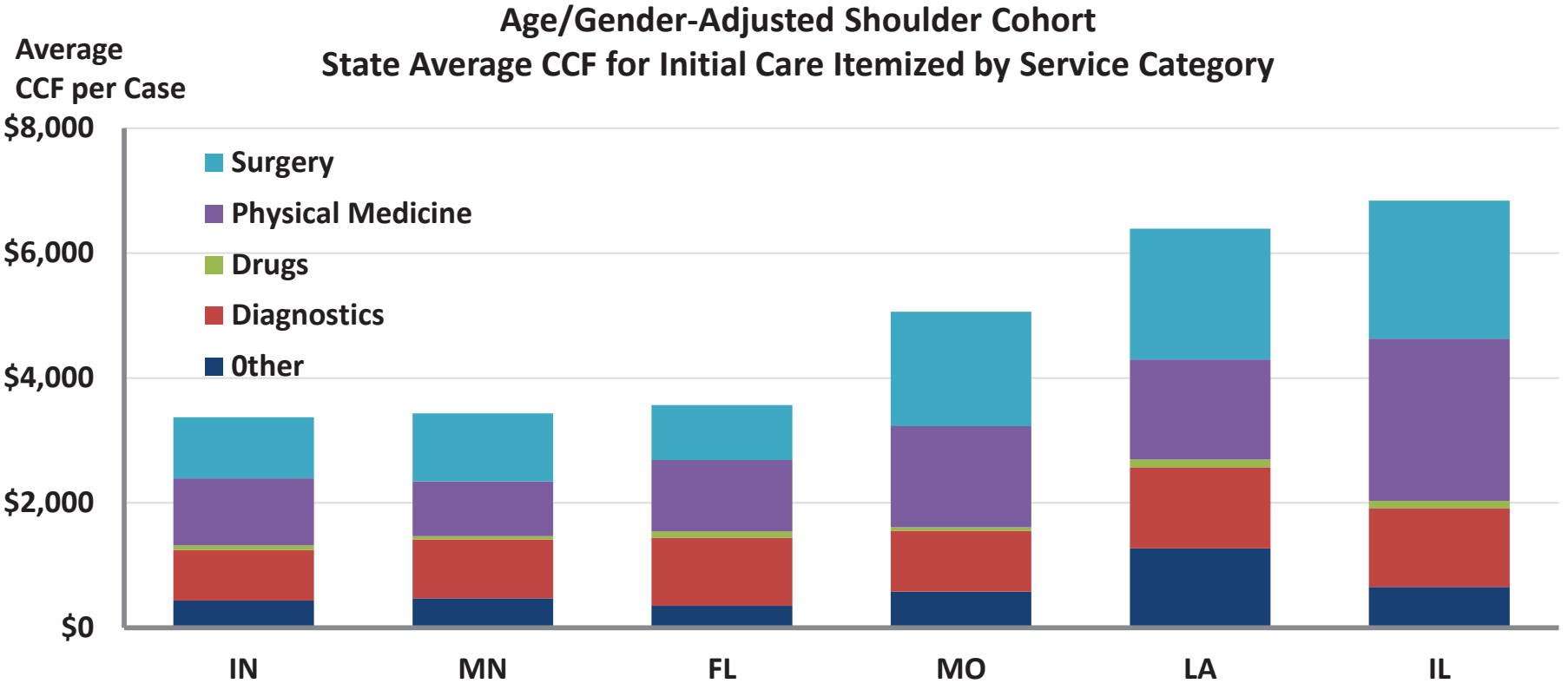
Shoulder: Expenditures on Surgery and Physical Medicine Distinguish the High-Utilization States



- The CCF dollars per case for surgery and physical medicine vary more by state than the CCF dollars for diagnostics
- The difference in the CCF between the low and high states for surgery and physical medicine is $5,916; this is more than seven times the difference for drugs and diagnostics, which is $757

Source: NCCI Medical Data Call

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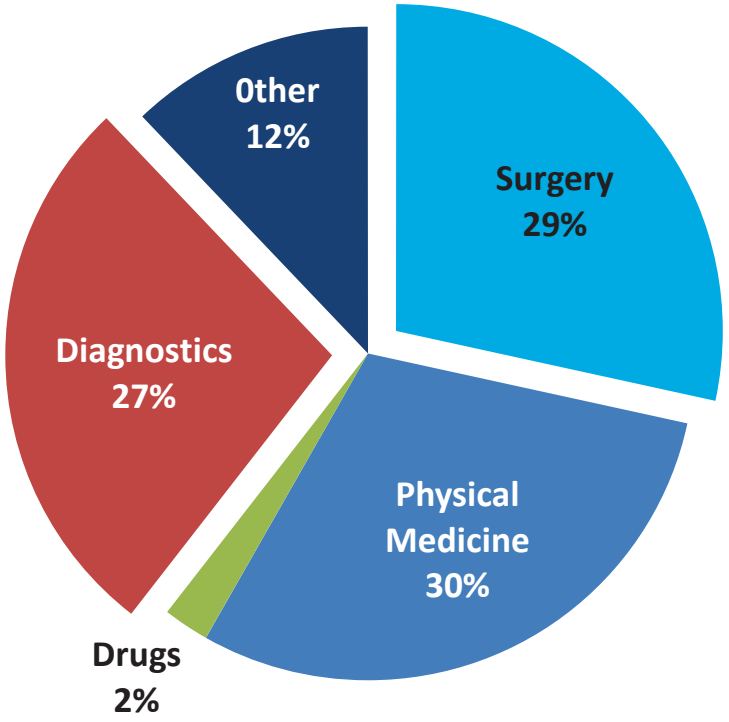
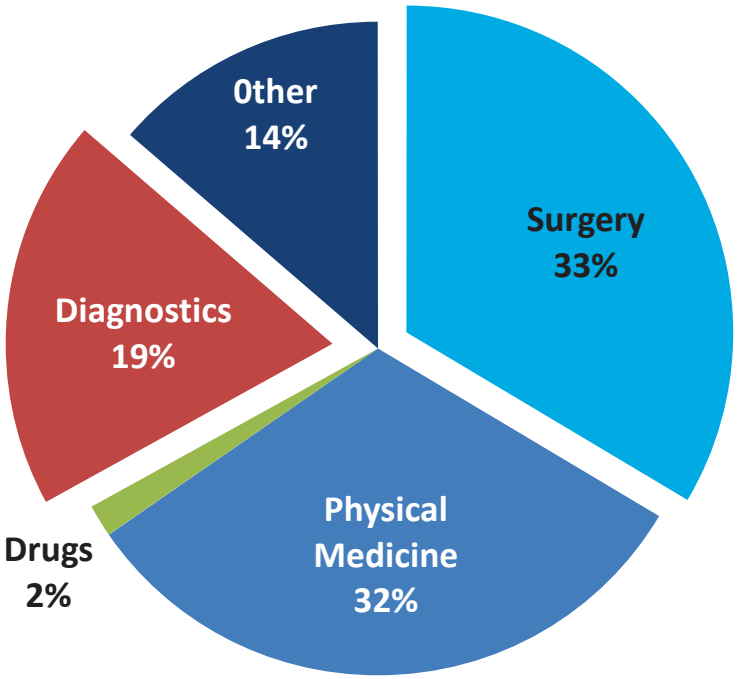
Shoulder: Greater Share of CCF to Surgery Corresponds to Higher Utilization

Age/Gender-Adjusted Shoulder Cohort
3 Low CCF States
Indiana - Minnesota – Florida



Age/Gender-Adjusted Shoulder Cohort
3 High CCF States
Missouri - Louisiana – Illinois



Source: NCCI Medical Data Call

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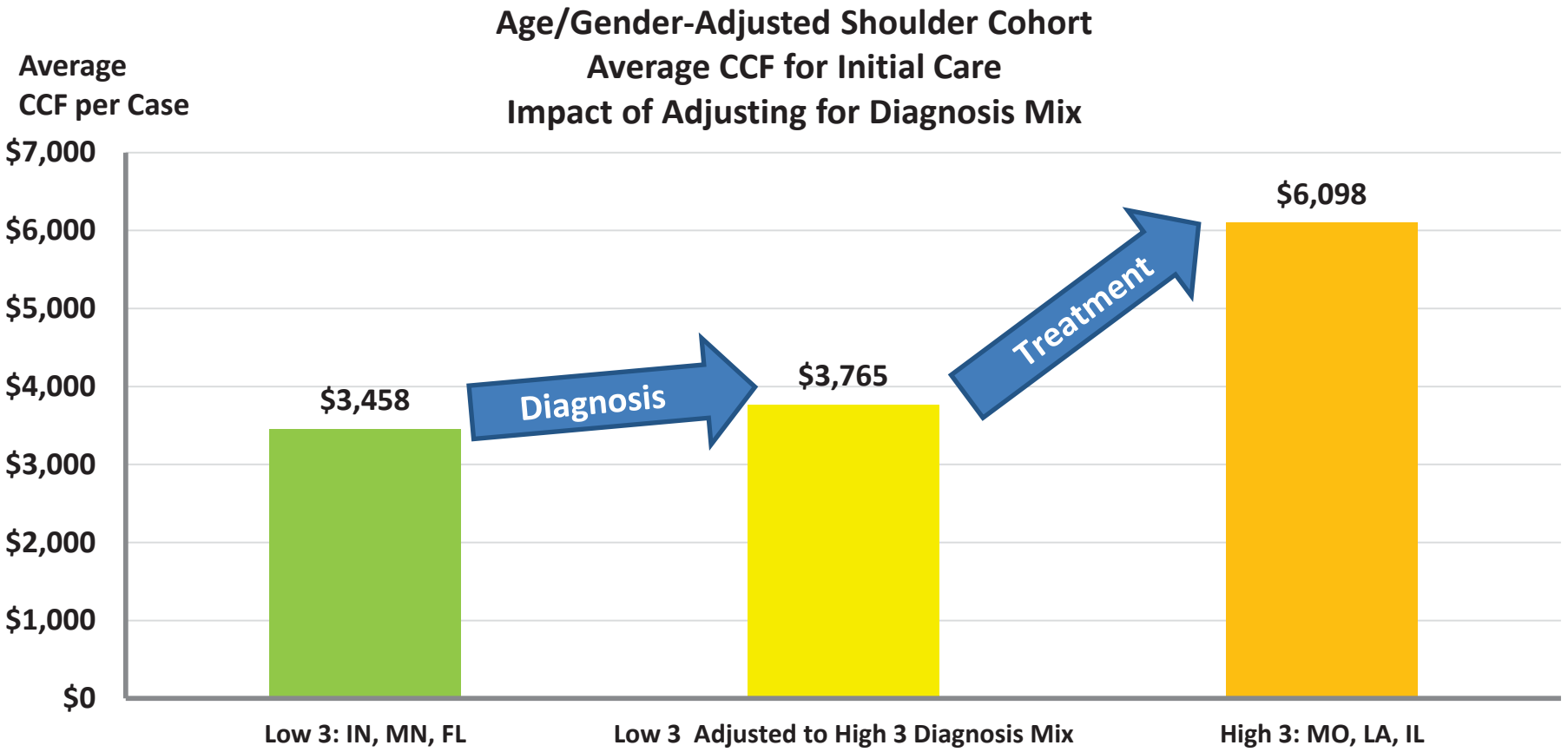
Shoulder Cases: Treatment Drives Utilization



- Diagnosis: Adjusting the low three states to the diagnosis mix of the high three states explains 12% of the difference in CCF between the two groups of states
- Treatment: Higher utilization for the treatment of specific medical conditions in the three high states accounts for the remaining 88% of the difference

Source: NCCI Medical Data Call

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A Look at Arthroscopy

- For shoulder cases we saw:
  - Shift to surgery associated with increased utilization
  - Damaged rotator cuff diagnoses associated with higher utilization
  - Treatment patterns drive utilization
  - Findings that suggest looking at shoulder arthroscopy
- As an alternative to shoulder surgery, treatment guidelines recommend first trying noninterventional therapy
  - For shoulder injuries the time is often from three to six months
  - Reflects evidence-based medicine
- The impact of ambiguity in the date of injury is an ongoing area of study, but is not expected to vary by state

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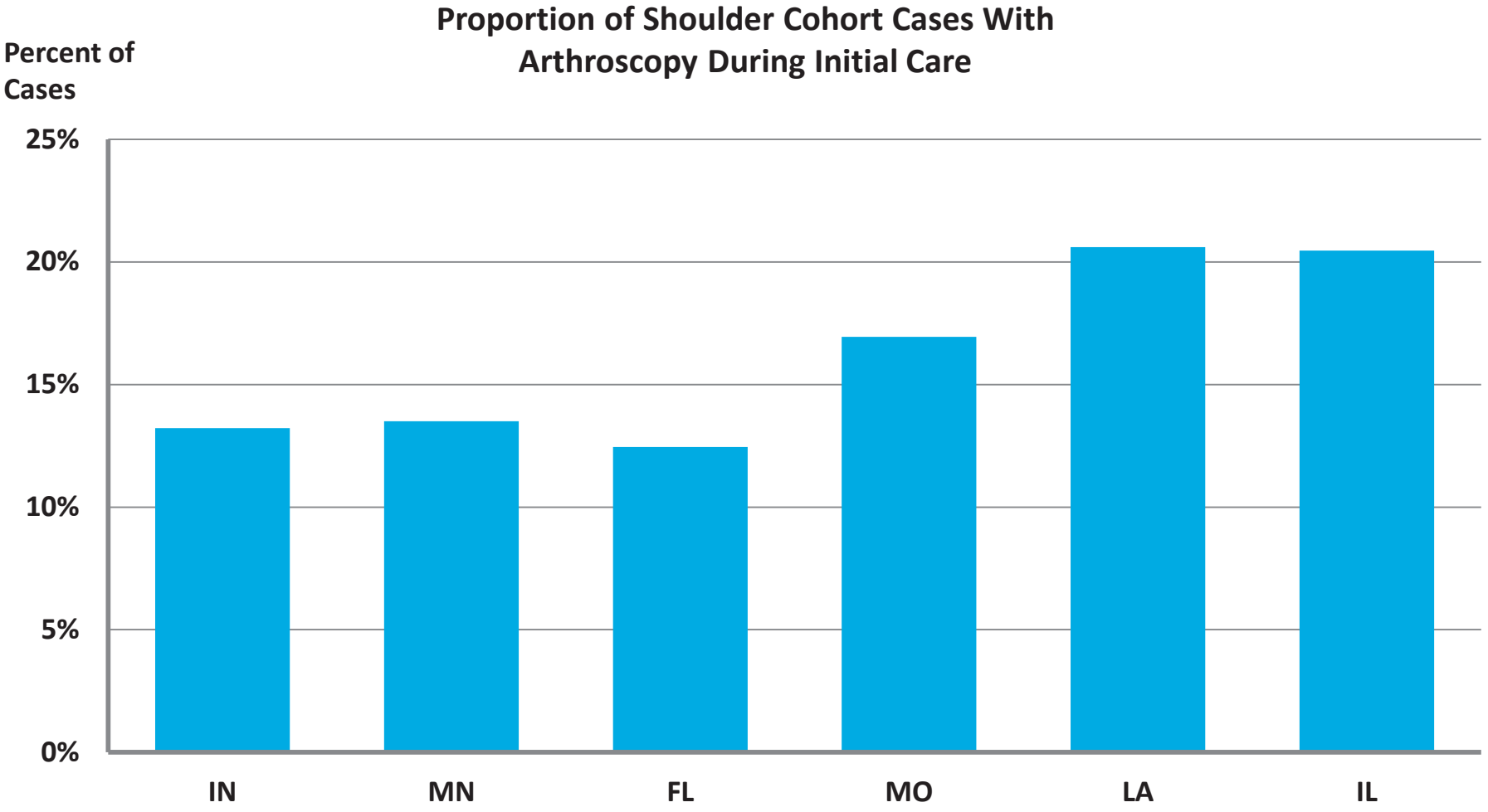
Shoulder: Higher Rates of Arthroscopy Correlate With Higher Utilization



Source: NCCI Medical Data Call

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Observations

- There is a wide variation among states in the utilization of services to treat joint cases
- For both the knee and shoulder cohorts:
  - The average CCF per case is more than 70% greater for the high-utilization states than the low-utilization states
  - Surgery and physical medicine show the greatest variation in CCF across states
  - Diagnostics is fairly consistent across states
  - Utilization differences across our selected states are driven more by differences in the treatment for given diagnoses than to the mix of diagnoses

Appendix A: List of Diagnoses to Identify Cohort Cases

Injured Joint	ICD9 Code	Description
Ankle	845	UNSPEC SITE ANKLE SPRAIN & STRAIN
	824.8	UNSPECIFIED CLOSED FRACTURE ANKLE
	824.2	CLOSED FRACTURE LATERAL MALLEOLUS
	825	CLOSED FRACTURE OF CALCANEUS
	824.6	CLOSED TRIMALLEOLAR FRACTURE
	824.9	UNSPECIFIED OPEN FRACTURE OF ANKLE
	727.67	NONTRAUMAT RUPTURE ACHILLES TENDON
Elbow	726.32	LATERAL EPICONDYLITIS OF ELBOW
	841.9	SPRAIN & STRAIN UNS SITE ELB & FORARM
	923.11	CONTUSION OF ELBOW
Knee	836	TEAR MED CART/MENISCUS KNEE CURRENT
	836.1	TEAR LAT CART/MENISCUS KNEE CURRENT
	717.9	UNSPEC INTERNAL DERANGEMENT KNEE
	924.11	CONTUSION OF KNEE
	717.83	OLD DISRUPTION OF ACL
	717.2	DERANGEMENT POST HORN MED MENISCUS
	844.2	SPRAIN & STRAIN CRUCIATE LIG KNEE
	822	CLOSED FRACTURE OF PATELLA
	836.2	OTH TEAR CART/MENISCUS KNEE CURRENT
	717.3	OTH&UNSPEC DERANGEMENT MED MENISCUS
	717.6	LOOSE BODY IN KNEE
Shoulder	840.4	ROTATOR CUFF SPRAIN AND STRAIN
	726.1	ROTATOR CUFF SYNDROME OF SHOULDER AND ALLIED DISORDERS
	840.9	SPRAIN & STRAIN UNS SITE SHLDR & UP ARM
	719.41	PAIN IN JOINT, SHOULDER REGION
	727.61	COMPLETE RUPTURE OF ROTATOR CUFF
	726	ADHESIVE CAPSULITIS OF SHOULDER
	726.12	BICIPITAL TENOSYNOVITIS
	923	CONTUSION OF SHOULDER REGION
	718.01	ARTICLR CART DISORDER SHLDR REGION
	726.2	OTH AFFECTIONS SHOULDER REGION NEC
	718.31	RECURRENT DISLOC SHOULDER JOINT

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Appendix B: Common Fee Schedule

- We use a common fee schedule for all states
- For each procedure and state, we determine the median fee paid
- For each state, we relate all the median fees to the fee for one base procedure (15 minutes of physical therapy, CPT code 97110)
- For each procedure, a simple geometric average of its state relativities is used to determine its fee