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2017 WCIRB Geo Study

A Report on California Regional Differences

Interactive Report

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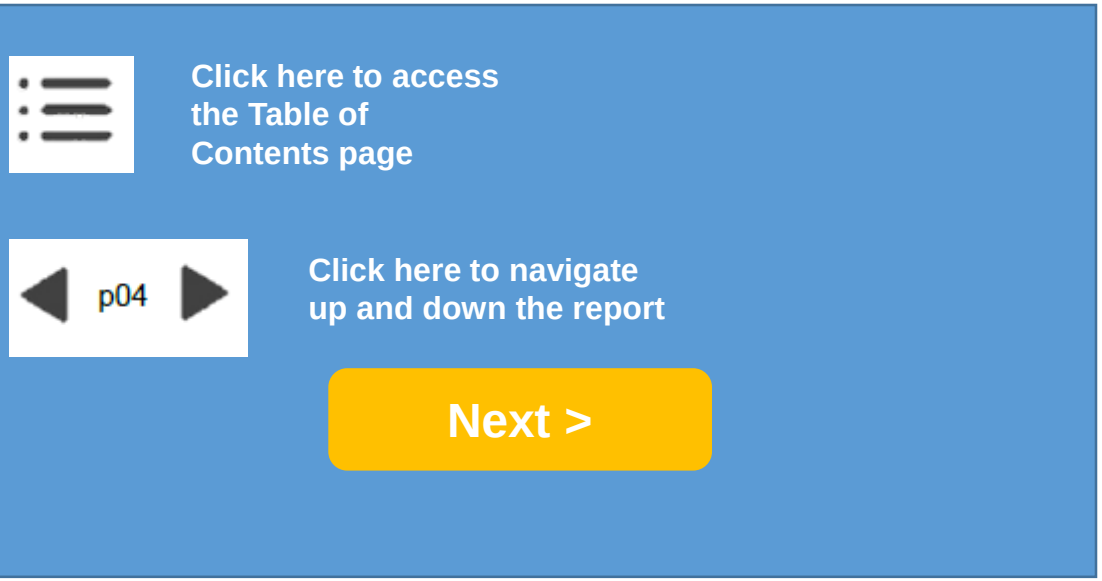
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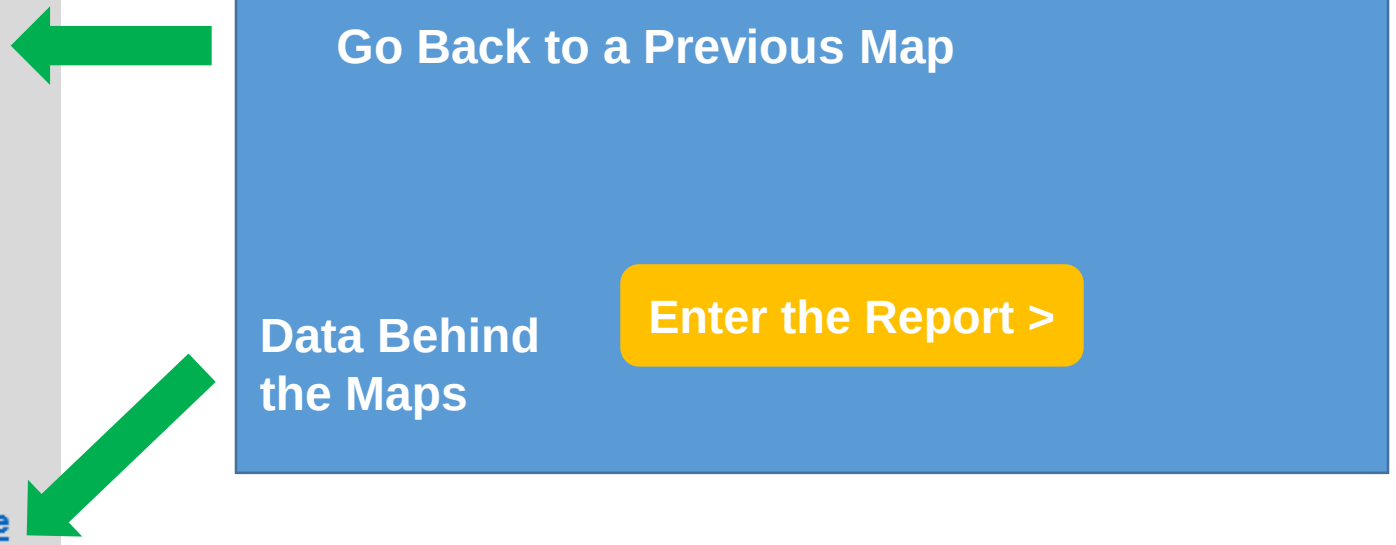

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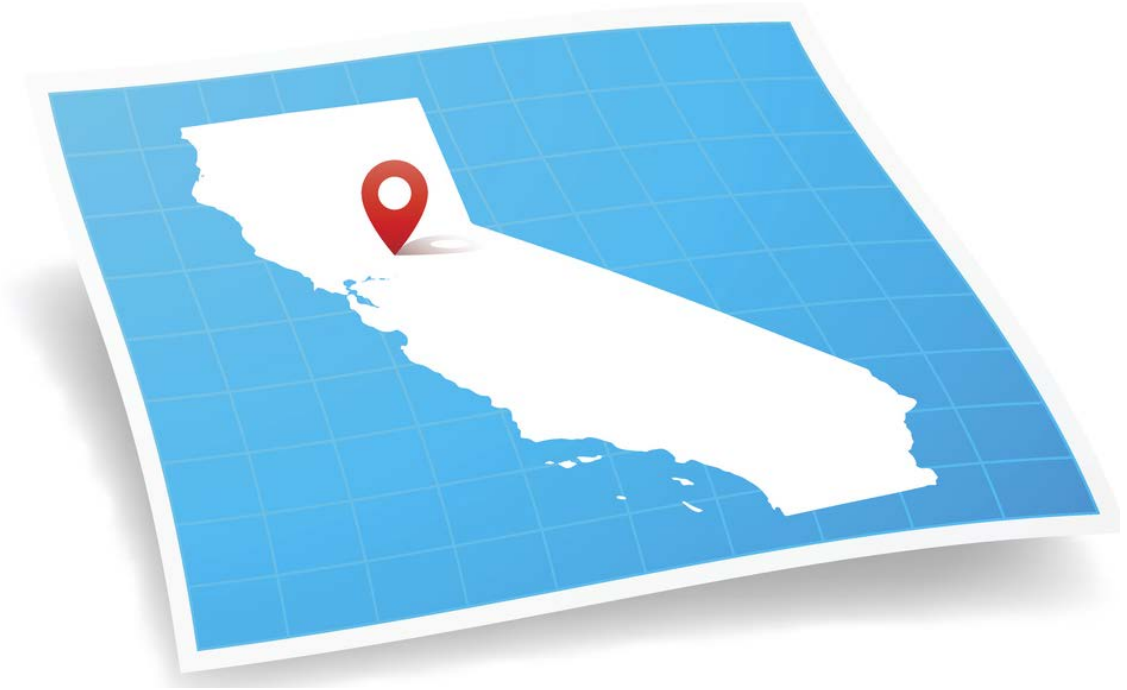

About the Workers' Compensation Insurance Rating Bureau of California (WCIRB)

For over 100 years, the WCIRB has been California's trusted, objective provider of actuarially-based information and research integral to a healthy California workers' compensation system.

As a licensed rating organization and the California Insurance Commissioner's designated statistical agent, the WCIRB performs a number of functions including collection of premium and loss data on every workers' compensation insurance policy, examination of policy documents, inspections of insured businesses, and test audits of insurer payroll audits and claims classifications. This data is used to advise the Insurance Commissioner and other stakeholders of the costs of providing workers' compensation benefits.

The WCIRB is a California unincorporated, private, nonprofit association comprised of all companies licensed to transact workers' compensation insurance in California, and has over 400 member companies. No state money is used to fund its operations.

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Executive Summary

The California workers' compensation system is established, administered and interpreted on a statewide basis. Nevertheless, there are sharp differences in cost characteristics across regions of the state. This report highlights those differences.

Key findings include:

- Even after controlling for regional differences in wages and industrial mix, indemnity claim frequency is significantly higher in the Los Angeles Basin and significantly lower in the San Francisco Bay Area.
- Differences in regional indemnity claim frequency range from almost 28% higher than average in the Los Angeles/Long Beach region to almost 20% lower than average in the San Francisco Peninsula/Silicon Valley region.
- Regional differences in indemnity claim severity are more muted than frequency differences. In 2015, the highest indemnity claim severity was 9% above the average in the Yuba City/Redding/Far North region. The lowest was 4% below average in the San Bernardino/Riverside region.
- The share of cumulative trauma claims in Southern California is much higher than the rest of the state with a high of almost 10% in the Los Angeles/Long Beach region. Conversely, most regions in Northern California have shares in the 3% to 4% range.
- Pharmaceutical costs throughout the state have dropped over the last several years with the largest reductions occurring in Southern California.
- Both medical legal costs and paid allocated loss adjustment expenses are significantly higher in the Bakersfield and Los Angeles Basin regions than in the remainder of the state.

What's New

Three new maps and other supplementary data are provided in this year's study including:

A mapping of nine-digit zip codes and regional wage differentials to the study regions shown in Exhibit 1 are available in the Research and Analysis section of the WCIRB website. More information about the development of the maps and the data underlying the maps is included in the Technical Appendix to this report.

Basis of Analysis

WCIRB staff have developed a dataset that allows estimates of the incidence of exposures and claims by classification and region. The dataset was developed by linking the WCIRB's unit statistical and medical transactional datasets with external data that complements the WCIRB's unit statistical data by providing refined geographical information.

External data was used to control for regional wage differentials, industrial mix and the number of workers at each location. WCIRB staff developed geographic regions that reflect high degrees of medical provider commonality while at the same time being robust, credible and independent of the claim cost measures under study. The Technical Appendix describes the methodologies used in the study in greater detail.

This enriched dataset comprises three policy years of data. For this study, the WCIRB used the experience of policy years 2013 to 2015, which covers policies incepting January 1, 2013 through December 31, 2015 and includes injuries occurring over calendar years 2013 and 2016.

Results

This study is based on first report level unit statistical data for policy year 2015 that was linked with the WCIRB's medical transactional data and Dun and Bradstreet's Hoover's (Hoover's) data. The Hoover's data was used to geolocate exposures by classification.

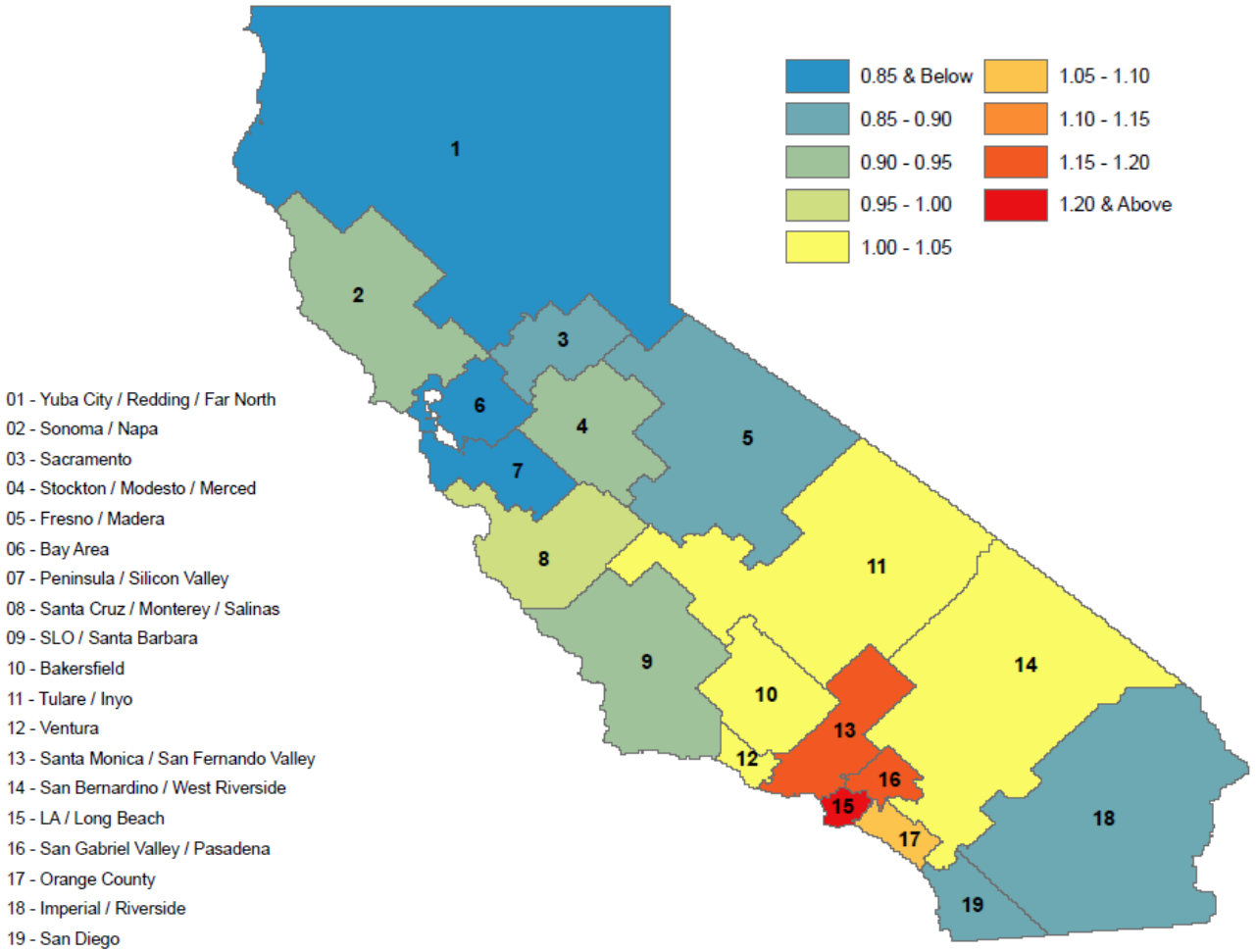
The WCIRB's medical transactional data was used to geolocate claims. The methods used in this study are discussed in greater detail in the Technical Appendix.

Geographic Regions

Description

- This map of the regions was developed by WCIRB staff.
- A mapping of nine-digit zip codes to the study regions is available in the Research and Analysis section of the WCIRB website.
- The mapping also provides the regional wage relativities used to normalized payrolls across regions.

Indemnity Claim Frequency Relative to Statewide



Insights

- For policy year 2015, claim frequencies for the Los Angeles area continue to be higher than the statewide average while claim frequencies for the Bay Area are lower even after controlling for industrial mix and wage level differences.
- The LA/Long Beach (15) region has the highest claim frequency, almost 28% above the average.
- The Peninsula/Silicon Valley (07) region has the lowest, almost 20% below average claim frequency.

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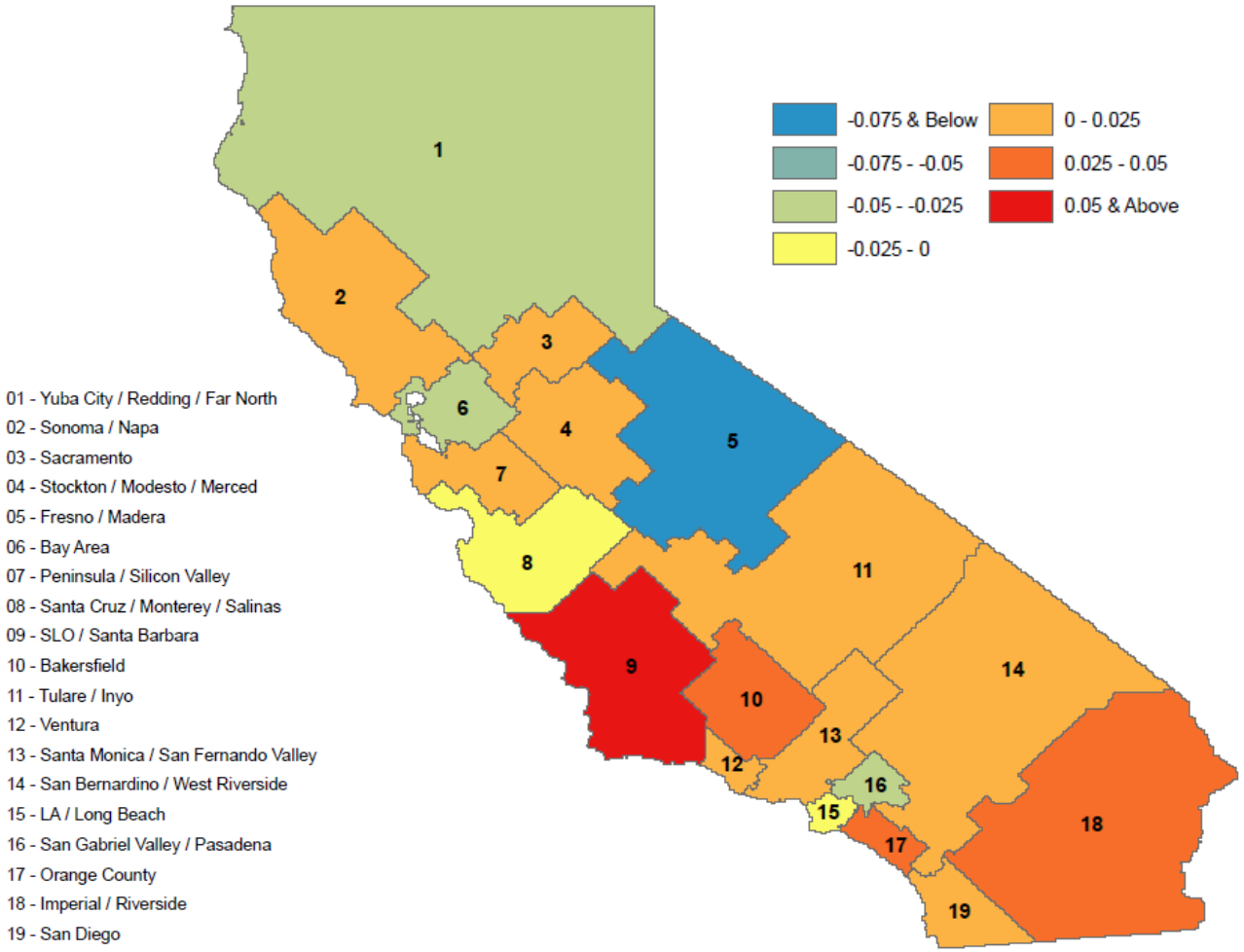
PY 2014 to 2015 Change in Indemnity Claim Frequency Relativity



Insights

- The LA/Long Beach (15) and San Gabriel Valley/Pasadena (16) regions' indemnity claim frequency relativities improved modestly in policy year 2015 while the surrounding regions relativities deteriorated slightly.
- The SLO/Santa Barbara (09) region shows the greatest deterioration, while the Fresno/Madera region shows the greatest improvement.

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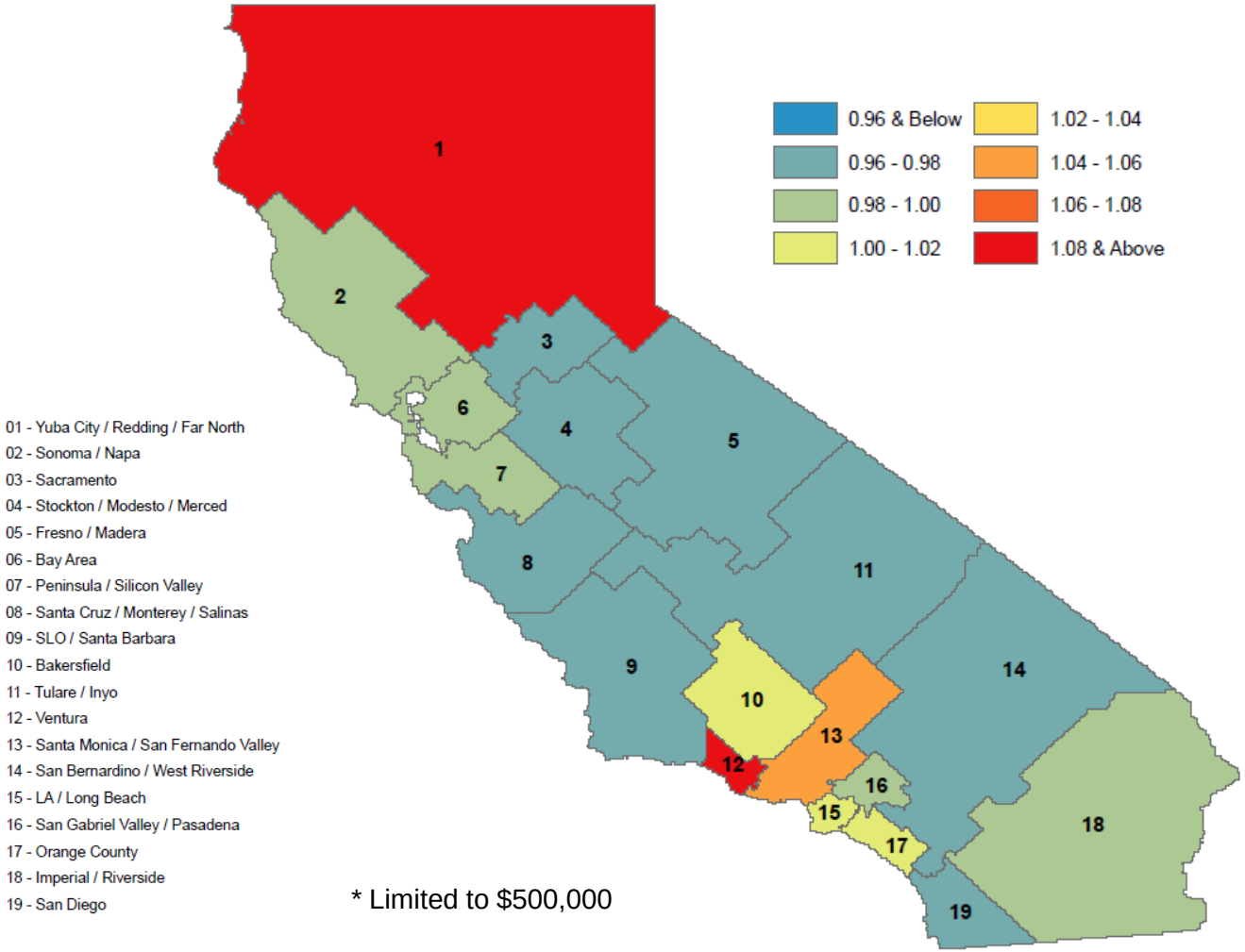
Limited* Incurred Severity on Indemnity Claims Relative to Statewide



* Limited to $500,000

Insights

- Regional differences in indemnity claim severity are more muted than for claim frequency.
- The highest severity cost region in the state is the Yuba City/Redding/Far North (01) Region.
- The lowest severity costs are in the San Bernardino/West Riverside (14) region.

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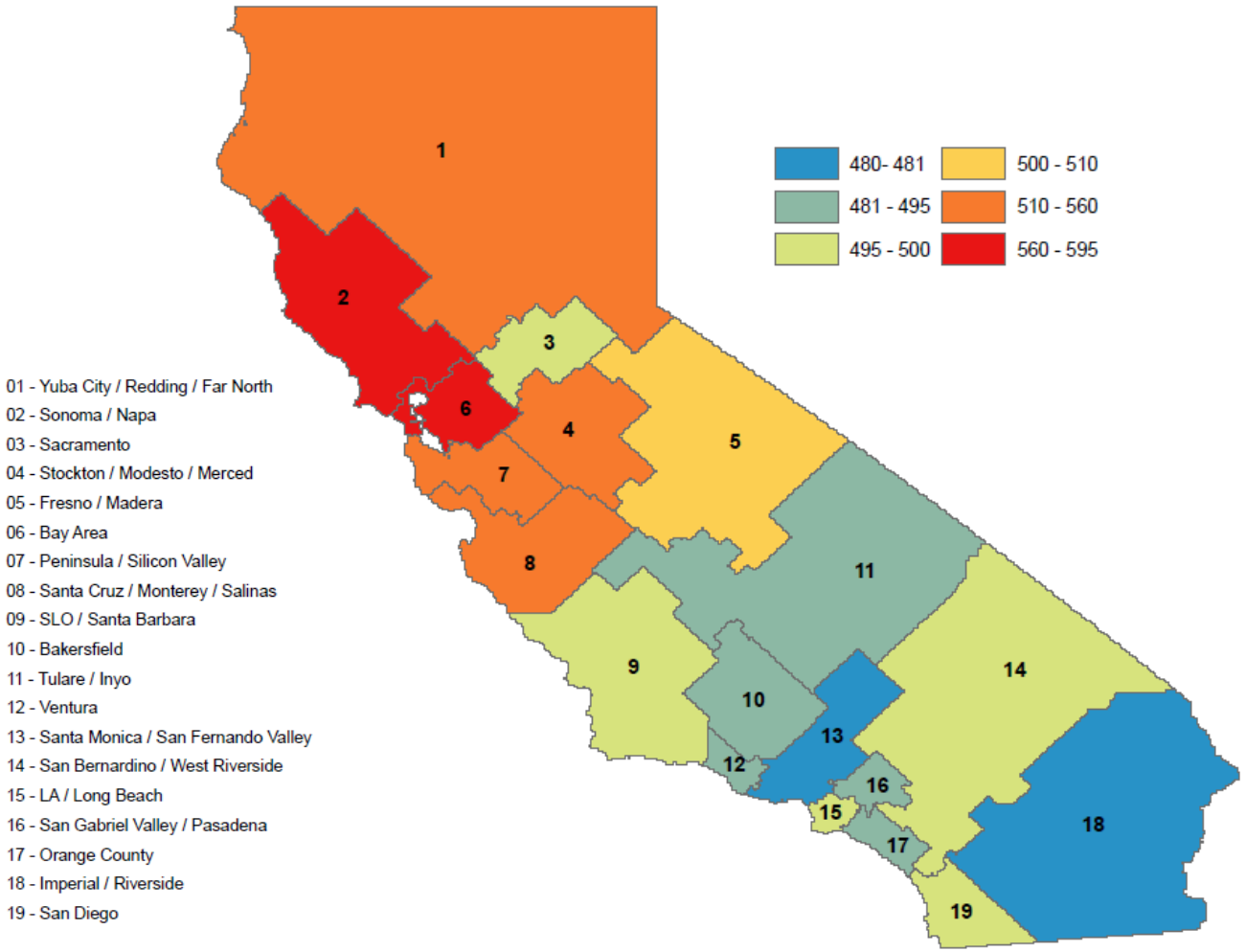
Median Injured Worker's Average Weekly Wage



Insights

- The San Francisco Bay Area (06) has the highest wages in the state.
- The Imperial/Riverside (18) region has the lowest wages.

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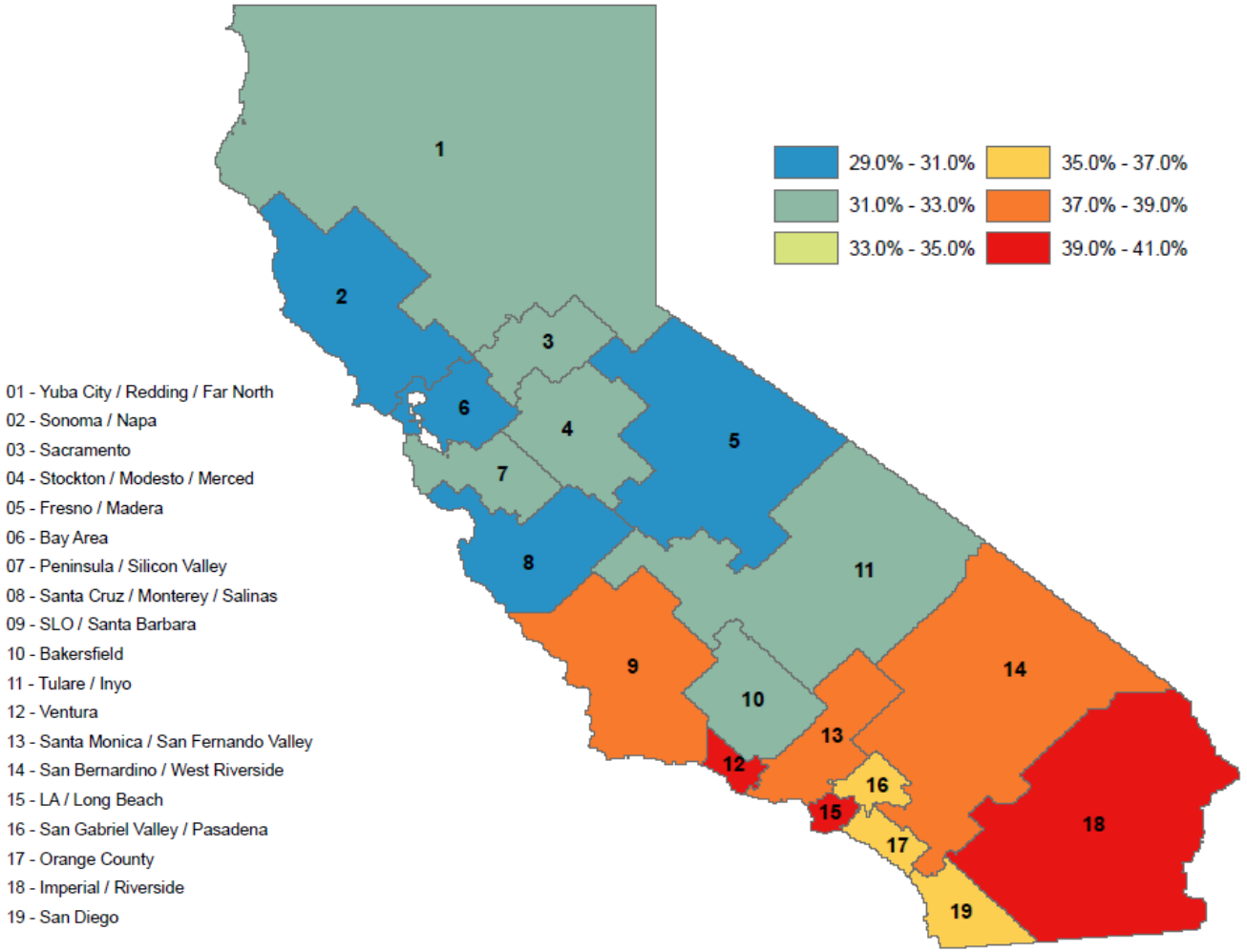
Permanent Disability Claims as a Share of Indemnity Claims



Insights

- The shares of indemnity claims that are permanent disability claims are higher in Southern California than in Northern California.
- In the LA/Long Beach (15) and Ventura (12) regions more than 40% of indemnity claims involve permanent disability, while some Northern California regions involve 30% or less.
- As permanent disability claims are more costly than temporary indemnity claims, regional differences in their shares explain some of the regional cost differences.

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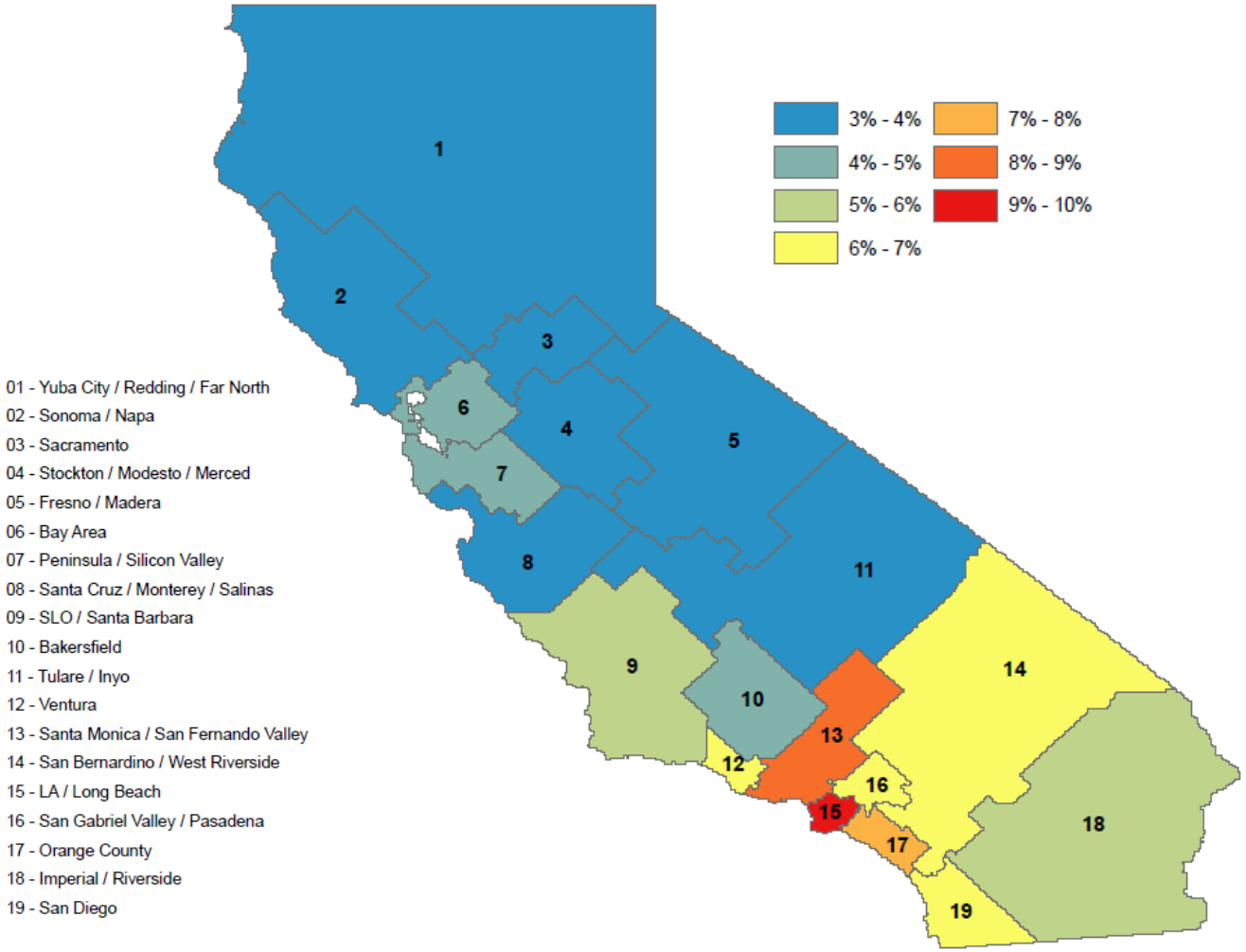
Cumulative Trauma Claims as a Share of Total Claims



Insights

- The incidence of cumulative trauma claims is significantly higher in the Los Angeles area and most other parts of Southern California.
- WCIRB research has shown that cumulative trauma claims frequently involve multiple body parts or a specific injury, are litigated, are initially denied in part or in whole and are often filed on a post termination basis.

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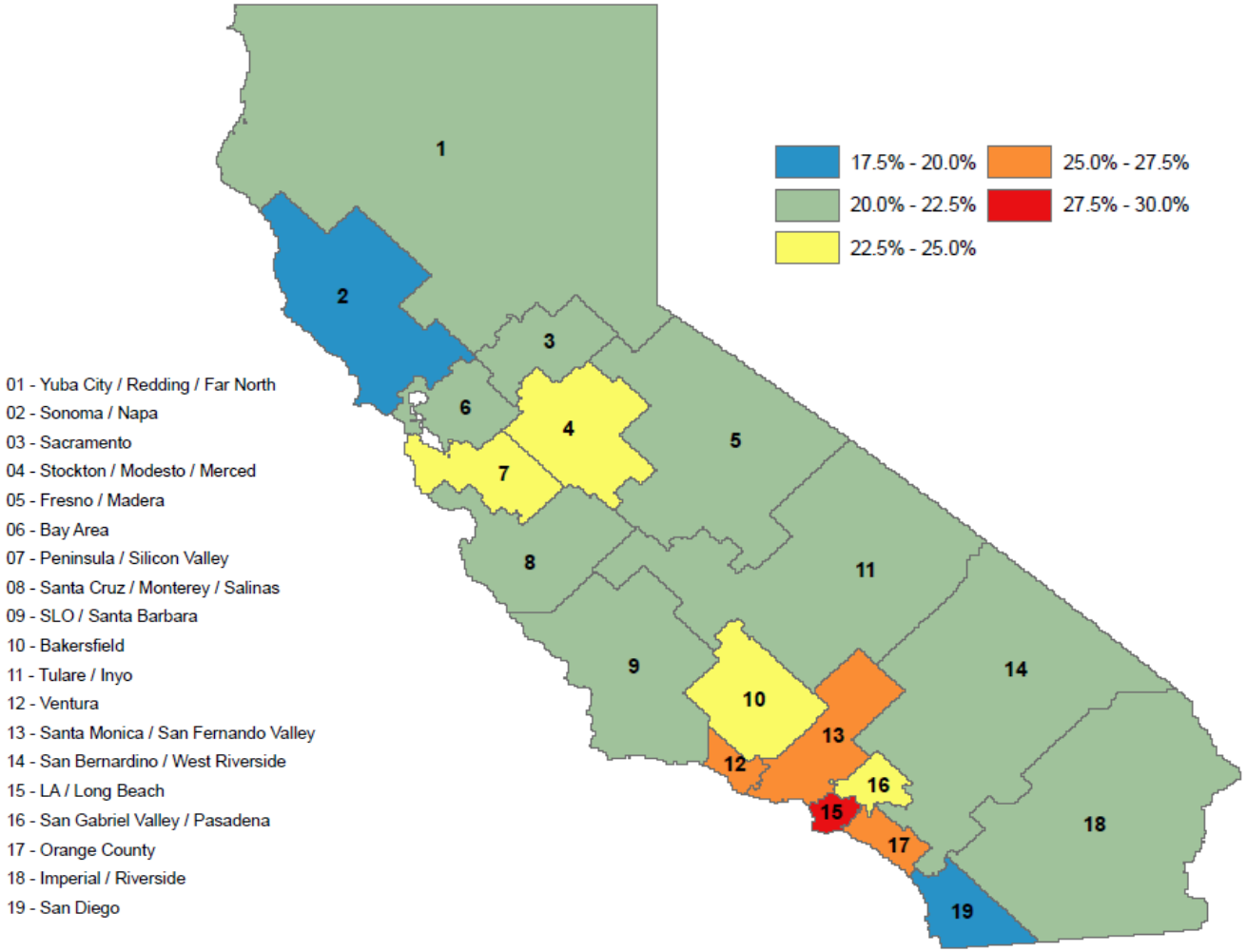
Share of Indemnity Claims with a Medical Legal Report



Insights

- Medical legal reports in the Los Angeles Basin are significantly more frequent than in the rest of the state.

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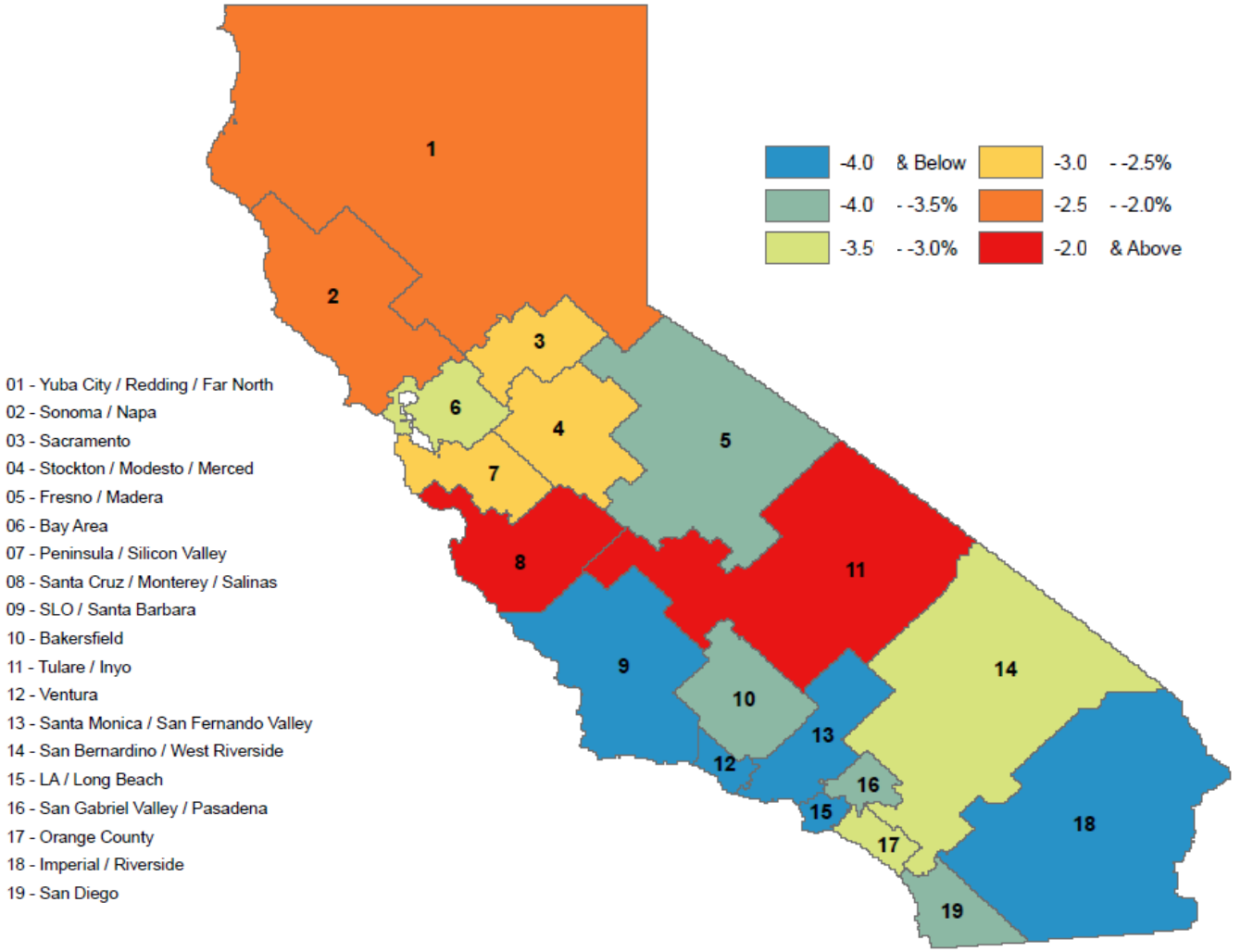
PY 2013 to 2015 Percentage Point Change in Pharmaceutical Share



Insights

- Pharmaceuticals' shares of paid medical have fallen in all regions over the past two years.
- The decline has been greatest in Southern California.

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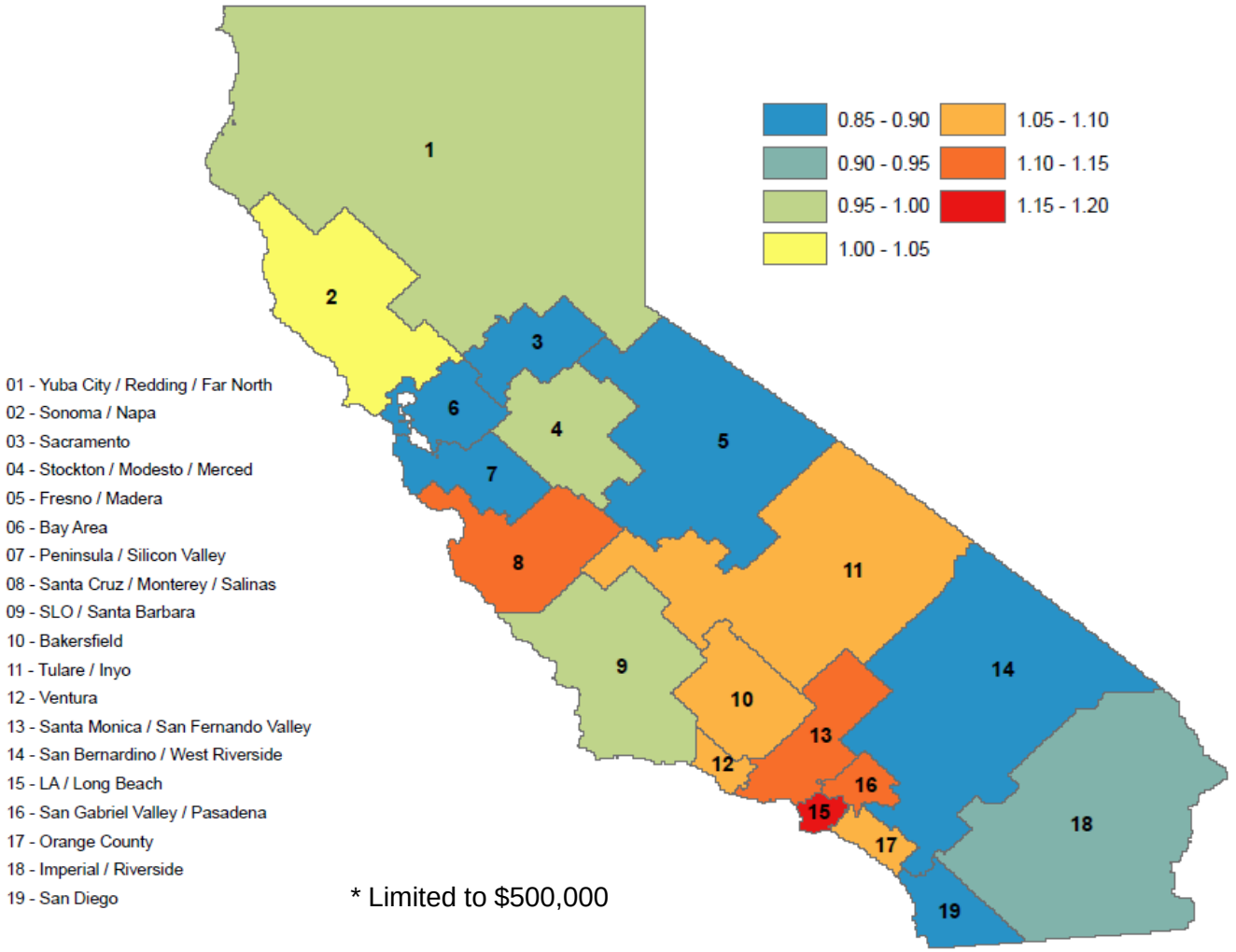
Ratio of Limited* Losses to Modified Pure Premium



01 - Yuba City / Redding / Far North
02 - Sonoma / Napa
03 - Sacramento
04 - Stockton / Modesto / Merced
05 - Fresno / Madera
06 - Bay Area
07 - Peninsula / Silicon Valley
08 - Santa Cruz / Monterey / Salinas
09 - SLO / Santa Barbara
10 - Bakersfield
11 - Tulare / Inyo
12 - Ventura
13 - Santa Monica / San Fernando Valley
14 - San Bernardino / West Riverside
15 - LA / Long Beach
16 - San Gabriel Valley / Pasadena
17 - Orange County
18 - Imperial / Riverside
19 - San Diego

* Limited to $500,000

Insights

- Loss ratios are highest in the LA/Long Beach (15) region and lowest in the Sacramento (03) region.

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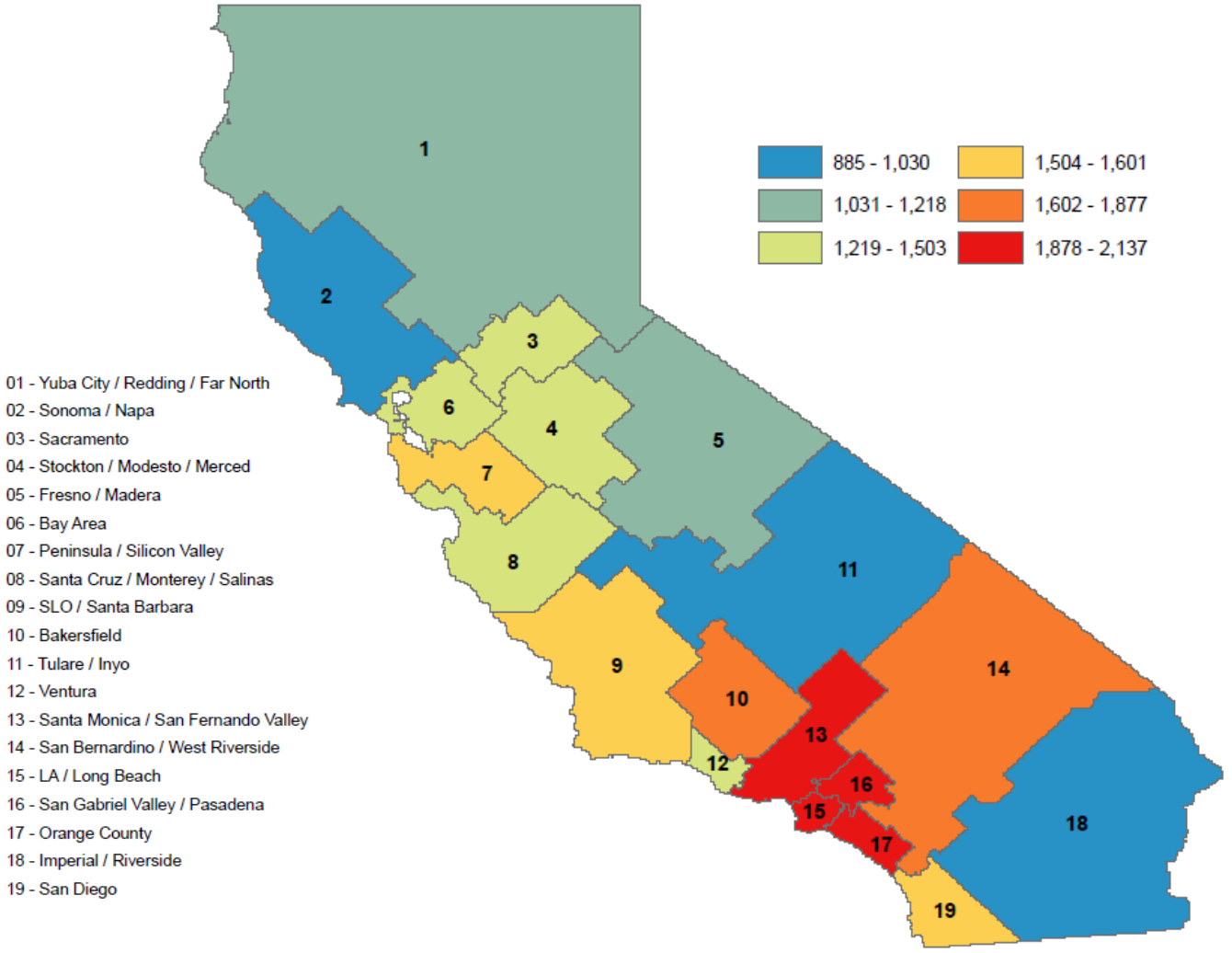
Median Paid ALAE on Permanent Disability Claims



Insights

- Paid ALAE is significantly higher in the Los Angeles Basin. The lowest ALAE costs tend to be in the more rural areas of the state.

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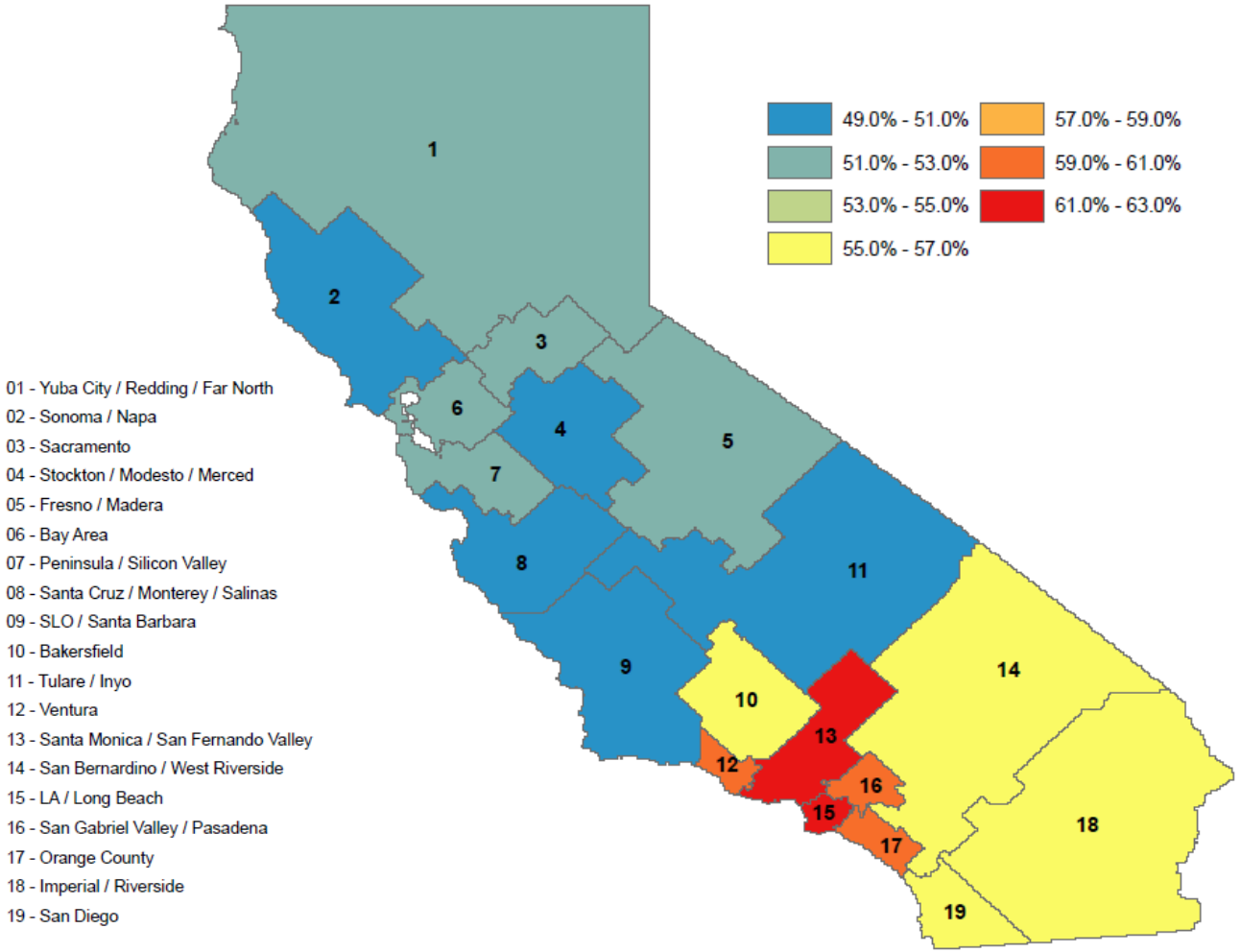
Open Share of Indemnity Claims



Insights

- The share of indemnity claims that are open at first report level is significantly higher in the LA/Long Beach (15) region and higher generally in the rest of Southern California relative to the rest of the state.

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Technical Appendix

Increasing anecdotal evidence of geographical differences in California workers' compensation claim costs led WCIRB staff to develop a database that could provide refined estimates of regional claim frequencies and other claim cost differentials. This database resolves two problems with unit statistical report (USR) data, which does not provide geographic information for exposures or claims.

The first problem is determining the appropriate allocation of USR exposures by classification to geographic locations. This problem was resolved by linking the WCIRB's USR data to Hoover's data, which provides information on employer locations, including the industries at each location and estimates of the number of employees at each location. The second problem is determining the appropriate allocation of claims to employer locations. This problem was resolved by using the geographic information for select data available in the WCIRB's medical data call (MDC). The resulting triple-linked database—USR, MDC and Hoover's—provides an enriched database that allows for more refined analyses of geographical differences across California.

The exposure and claim geolocating protocols benefited greatly from the voluntary participation of several insurers who reviewed samples of exposure and claim allocations for their policies.

In addition to the three primary data sources used to form the triple-linked database, WCIRB staff also utilized the following sources:

- WCIRB policy and inspection report data (for names and addresses)
- Occupational Employment Survey (to develop regional wage adjustments)
- Self-Insurance Rosters of the Division of Workers Compensation's Self Insurance Program

Methods of Linkage—USR to Hoover's
Multiple methods were used to link USR and Hoover's data. Linkages were established using employer names (including owner/proprietor, Doing Business As, and parent company names), addresses, and Federal Employer Identification Numbers. A protocol was established among linkage methods to avoid ambiguity. Ambiguously matched data was excluded from the study.

In prior studies, there was a significant temporal mismatch between the WCIRB's policy year USR data and the Hoover's data, which was as of January 5, 2015. This mismatch was not immaterial. Hoover's identifies newly founded employer locations. In the 2016 study, approximately 3.5% of Hoover's records were identified as founded after the USR inception dates included in the study. A comparable share of USR data was likely associated with employers that went out of business between the study period and the timing of the Hoover's data capture. Additionally, employers move, which can prevent matching on employer addresses. In spite of these obstacles, staff was able to develop a credible database that represented approximately 92% of the target policy year's data. The missing data was evaluated for its potential to bias regional differentials and no significant biases were found.

Technical Appendix (Continued)

Over time, the availability of contemporaneous Hoover's and USR data has ameliorated many of these problems and allowed for enhanced USR-Hoover's match rates. In the 2017 study, approximately 94% of the target policy year's data was successfully matched.

In parallel with linking the USR and Hoover's data, WCIRB staff also matched Hoover's data to the self-insurance rosters published by the California Division of Workers' Compensation's Self Insurance Program. Self-insured employers identified in the Hoover's data were then excluded from matching with USR data to increase the overall quality of the matching.

Methods of Linkage—USR to MDC

The USR data was linked with MDC data using insurer, policy and claim number matching. While more straightforward, the linkages between these datasets are not complete. Not all insurers participate in MDC. For the study period, approximately 11% of insured data was not in MDC because the insurer did not participate in MDC. Matching was done, and employer experience included, at the policy level. For example, for an employer insured by two insurers, one of which participated in MDC while the other did not participate in MDC, only the experience of the insurer that participated in MDC was included. Further, only claims that were medically active and for which data was submitted to MDC are available in MDC. USR claims for which there were no medical payments captured in MDC will not be available to match with MDC. Settlements paid directly to injured workers, for example, typically would not be captured in MDC. The claim experience captured in the study, therefore, represents a subset of all claim experience. No regional biases were detected due to excluding this data.

Geolocating Exposures

Exposures were allocated to locations recognizing regional wage differentials (developed from the Occupational Employment Survey) and the relative number of employees estimated by Hoover's to be at each location. Each classification's exposures were allocated to locations using the industries at the location provided by Hoover's. Note that the regional wage differentials are by county—not by WCIRB region. The regional wage differentials used in the study are provided in the zip code-to-region mapping.

Geolocating Claims

Claims were allocated to locations at which the claim's classification had exposure allocated. Claims were located to the nearest such location by calculating the location of each claim's 'center of medical services' determined from MDC observations. All MDC features were used to geolocate claims. Features were weighted in proportion to their accuracy in geolocating so that features that provide good geolocating information receive greater weight than features that provide poor geolocating information. The average number of MDC observations used to geolocate a claim was 33.4.

Identifying Optimal Geographic Units of Analysis

A market area approach was used to identify economically cohesive geographical units. To identify economically cohesive geographical units, WCIRB staff examined the "correlation" of medical providers among geographic units. The idea is that regions utilizing common providers form a more natural geographic unit.

Technical Appendix (Continued)

To identify economically cohesive geographical units, WCIRB staff first identified the minimum number of claims required in a geographic unit for reasonably stable results. A selection of 130 claims was made based on reviewing the clustering patterns for geographical units with greater claim volumes and identifying the volumes below which the ability to detect previously identified and stable clusters deteriorated. The average geolocated claim's number of MDC observations used in geolocating was 33.4, so the expected number of geolocating MDC observations for a geographic unit with 130 claims was 4,342.

Staff then developed a customized grid for the state for which each cell had at least 130 claims. Cells varied in geographic area as required to include at least 130 claims. Cells smaller than 1.3mi^2 in geographic area but with more than 130 claims were not subdivided. The provider "correlation" matrix for the grid was then calculated. If two geographic units had half of the providers in common, then the "correlation" between the two units was 0.50. The provider "correlations" range between zero and unity. The statewide average provider "correlation" across the grid was 0.12.

Unity less the provider "correlation" was used as a measure of dissimilarity between geographic units. Cluster analysis using Ward's 2D linkage criterion was then performed using this measure of dissimilarity. The cluster analysis algorithm first divided the state into two clusters such that the dissimilarity within the clusters is minimized. This process was repeated iteratively for each division until a desired number of clusters was reached. WCIRB staff evaluated a range of clusters and selected 19 as striking a good balance between robustness in the geographic units' results and the level of refinement. The average provider "correlation" for the selected 19 geographic regions is 0.40.

A mapping of U.S. Postal Service nine-digit zip codes to the study regions is available in the Research and Analysis section of the WCIRB website. The mapping includes the regional wage differentials. Note that an accurate mapping requires the use of the nine-digit, or zip plus 4, codes. Regions are not uniquely identified at the five-digit zip code level and five-digit zip codes may map to multiple regions.

Let us know what you think about this study by completing a short survey: Take Survey

More Info

Exhibit 2: Indemnity Claim Frequency Relative to Statewide

- This map shows the regional indemnity claim frequency relative to statewide. The expected statewide frequencies were developed at a classification level.
- The regional indemnity claim frequency relativities for policy years 2013 through 2015 are provided on tab T2 of the Geo Data Table.
- The regional total claim frequency relativities (not mapped) for policy years 2013 through 2015 are provided on tab T3a of the Geo Data Table.

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Exhibit 3: PY 2014 to 2015 Change in Indemnity Claim Frequency Relativity

- This map shows the percentage point change in indemnity claim frequency relativity from policy year 2014 to policy year 2015.
- The data underlying this map as well as for the changes from policy year 2013 to 2014 are provided on tab T3 of the Geo Data Table.

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Exhibit 4: Limited Incurred Severity on Indemnity Claims Relative to Statewide

- This map shows total incurred severity on indemnity claims, controlled for classification mix, relative to statewide.
- These indemnity severities are at first report level, with all losses limited to $500,000, and are not necessarily the indemnity severities ultimately expected as claims mature.
- The regional total incurred severity relativities for indemnity claims for policy years 2013 to 2015 are provided on tab T4 of the Geo Data Table. The regional incurred indemnity severity relativities for policy years 2013 to 2015 are provided on tab T4a of the Geo Data Table.
- The regional medical incurred severity relativities for indemnity claims for policy years 2013 to 2015 are provided on tab T4b of the Geo Data Table

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Exhibit 5: Median Injured Worker's Average Weekly Wage

- This map shows the policy year 2015 median injured worker's average weekly wage for geolocated claims. Each region's median injured worker's average weekly wage for policy years 2013 to 2015 are provided on tab T5 of the Geo Data Table.
- The median injured worker's age for claims with permanent disability for policy years 2013 to 2015 (not mapped) is provided on tab T5a of the Geo Data Table.

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Exhibit 6: Permanent Disability Claims as a Share of Indemnity Claims

- This map shows the policy year 2015, at first report level, regional shares of indemnity claims that are permanent disability.
- Each region's permanent disability share of indemnity claims for policy years 2013 to 2015 are provided on tab T6 of the Geo Data Table. Each region's indemnity claim share of total claims for policy years 2013 to 2015 (not mapped) are provided on tab T6a of the Geo Data Table.
- Higher shares of more costly indemnity claims explain some of the cost differences observed in Exhibit 4.

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More Info (Continued)

Exhibit 7: Cumulative Trauma Claims as a Share of Total Claims

- This map shows the share of all claims including medical only that are cumulative trauma or occupational disease by region for policy year 2015.
- These shares are at first report level and do not reflect the shares ultimately expected. The cumulative injury shares by region for policy years 2013 to 2015 are provided on tab T7 of the Geo Data Table.

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Exhibit 8: Share of Indemnity Claims with a Medical Legal Report

- This map shows the policy year 2015, at first report level, share of indemnity claims with a medical-legal report.
- Medical-legal reports are used to address disputed issues and are expected to be more frequent for permanent disability claims.
- The incidence of medical-legal reports beyond that explained by differences in permanent disability shares suggests a degree of litigiousness.
- The regional shares of indemnity claims with a medical-legal report for policy years 2013 to 2015 are provided on tab T8 of the Geo Data Table. The regional median permanent disability rating for policy years 2013 to 2015 (not mapped) are provided on tab T8a of the Geo Data Table.
- The regional shares of medical legal costs paid on indemnity claims as a share of total incurred for policy years 2013 to 2015 are provided on tab T8b of the Geo Data Table.
- Generally, medical-legal costs are higher in Southern California relative to the rest of the state.

- Generally, medical-legal costs are higher in Southern California relative to the rest of the state.

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Exhibit 9: PY 2013 to 2015 Percentage Point Change in Pharmaceutical Share

- This map shows, by region, the change in medical paid-to-date for pharmaceuticals from policy year 2013 to 2015.
- The year-to-year changes in pharmaceuticals' share of paid medical is provided on tab T9 of the Geo Data Table. Each policy year's share of paid medical that is for pharmaceuticals is provided on tab T9a of the Geo Data Table.

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Exhibit 10: Ratio of Limited* Losses to Modified Pure Premium

- This map shows regional loss ratio relativities after application of experience rating for experience rated employers for policy year 2015.
- Expected losses contemplate a $500,000 per claim limit and are controlled for classification mix and regional wage level differences. Each claim's actual losses are limited to $500,000.
- The limited losses are compared to the modified pure premium for those risks, which is the premium generated at the approved advisory pure premium rates adjusted by the applicable experience modifications
- Exhibit 10 provides the most comprehensive picture of regional cost differentials.
- The regional loss ratio relativities for policy years 2013 to 2015 are provided on tab T10 of the Geo Data Table.

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More Info (Continued)

Exhibit 11: Median Paid ALAE on Permanent Disability Claims

- This map shows the regional median paid allocated loss adjustment expense (ALAE) per permanent disability claim for policy year 2015.
- The regional median paid ALAE per permanent disability claim for policy years 2013 to 2015 is provided on tab T11 of the Geo Data Table.
- The regional average paid ALAE per permanent disability claim for policy years 2013 to 2015 is provided on tab T11a of the Geo Data Table.
- The regional paid ALAE shares of incurred losses on permanent disability claims is provided on tab T11b of the Geo Data Table.
- The regional settlement distribution of closed permanent disability claims is provided on tab T11c of the Geo Data Table.
- The regional median paid ALAE per permanent disability claim by type of settlement is provided on tab T11d of the Geo Data Table.

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Exhibit 12: Open Share of Indemnity Claims

- This map shows each region's share of indemnity claims that were reported as open at first report level for policy year 2015.
- The regional open shares for indemnity claims at first report level for policy years 2013 to 2015 is provided on tab T12 of the Geo Data Table.
- The regional open shares for all claims at first report level for policy years 2013 to 2015 is provided on tab T12a of the Geo Data Table.

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