Reconsidering the Appropriate Region for MCERA Cost of Living Adjustments

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Introduction

The MCERA Board authorizes an annual Cost of Living Adjustment (COLA) for many retirees based on a Consumer Price Index for All Urban Consumers (CPI-U) produced by the United States Department of Labor, Bureau of Labor Statistics (BLS). The guiding statute directs the Board to use the CPI-U for the region in which the County Seat is located.

The provision for a COLA was adopted for MCERA in 1970. From 1971 to 2016, MCERA utilized the CPI-U for the San Francisco-Oakland-San Jose region. In 2016, the Board of Retirement directed staff to conduct an analysis and recommend the appropriate region on which to base the MCERA COLA. The results of that analysis showed the BLS defined Western Region of the United States to be a better fit for Mendocino County in determining the annual COLA. The Board adopted the Western Region CPI-U as the basis for determining the COLA beginning in 2016.

In late 2017, the Bureau of Labor Statistics released information regarding a substantive update to the geography definitions of the BLS. This change in geography definitions provides new opportunities for MCERA that did not exist in 2016. As a result of these changes, the MCERA Board directed staff to re-evaluate the 2016 analysis, the results of which are set forth in this paper.

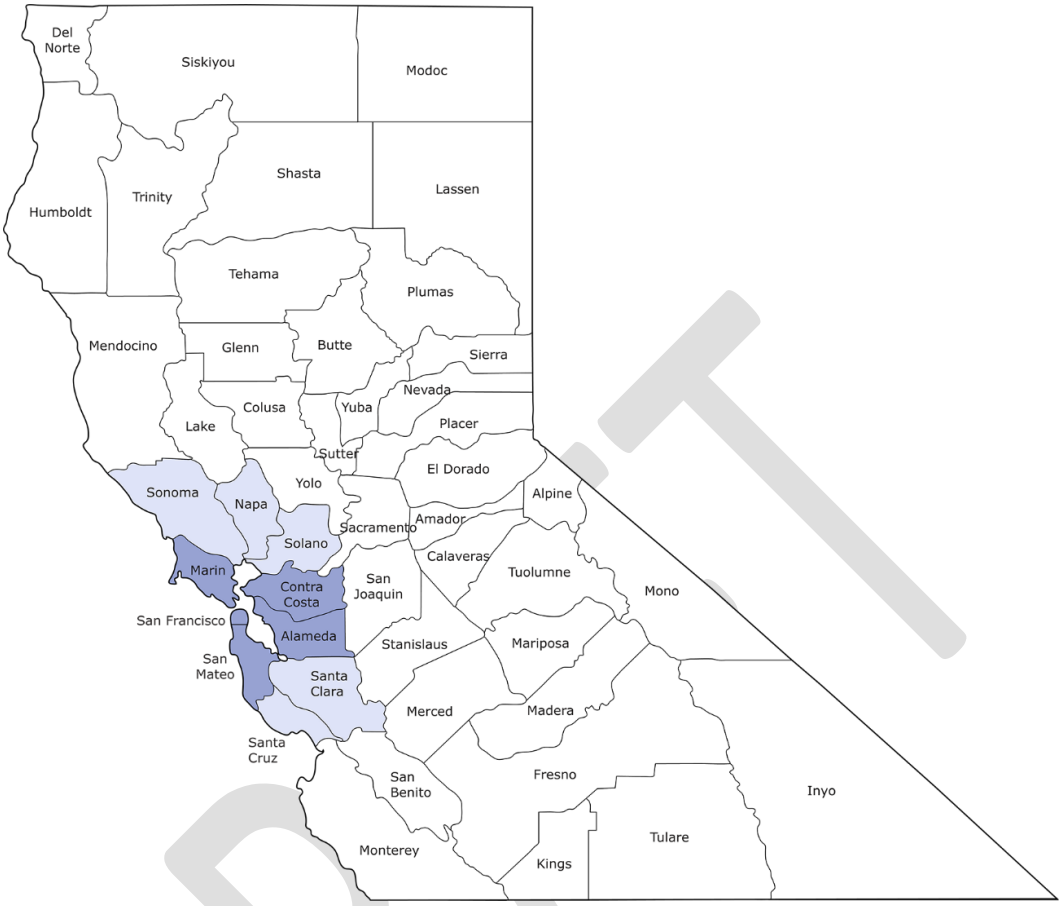
In addition to the changes in BLS geographies, one additional region is available for consideration that was not included in the 2016 analysis. Since completing the 2016 analysis we learned that the State of California, Department of Industrial Relations (DIR) produces a California Consumer Price Index (CCPI).

While the CCPI is not produced by the BLS, it is calculated based on BLS produced CPI-U figures. After consultation with legal counsel, it appears reasonable for the MCERA Board to consider the CCPI as the basis for the MCERA COLA. Thus, the CCPI is included in the analysis below.

Changes to Bureau of Labor Statistics Defined Geographic Areas

There were a number of changes to the geography definitions of interest to MCERA. The first change involves a reduction in the number of counties included in the Bay Area. Figure 1 below compares the previous Bay Area to the Bay Area after January 1, 2018 as defined by the BLS.

Figure 1. BLS Defined Bay Area Geography, Pre-2018 vs. 2018



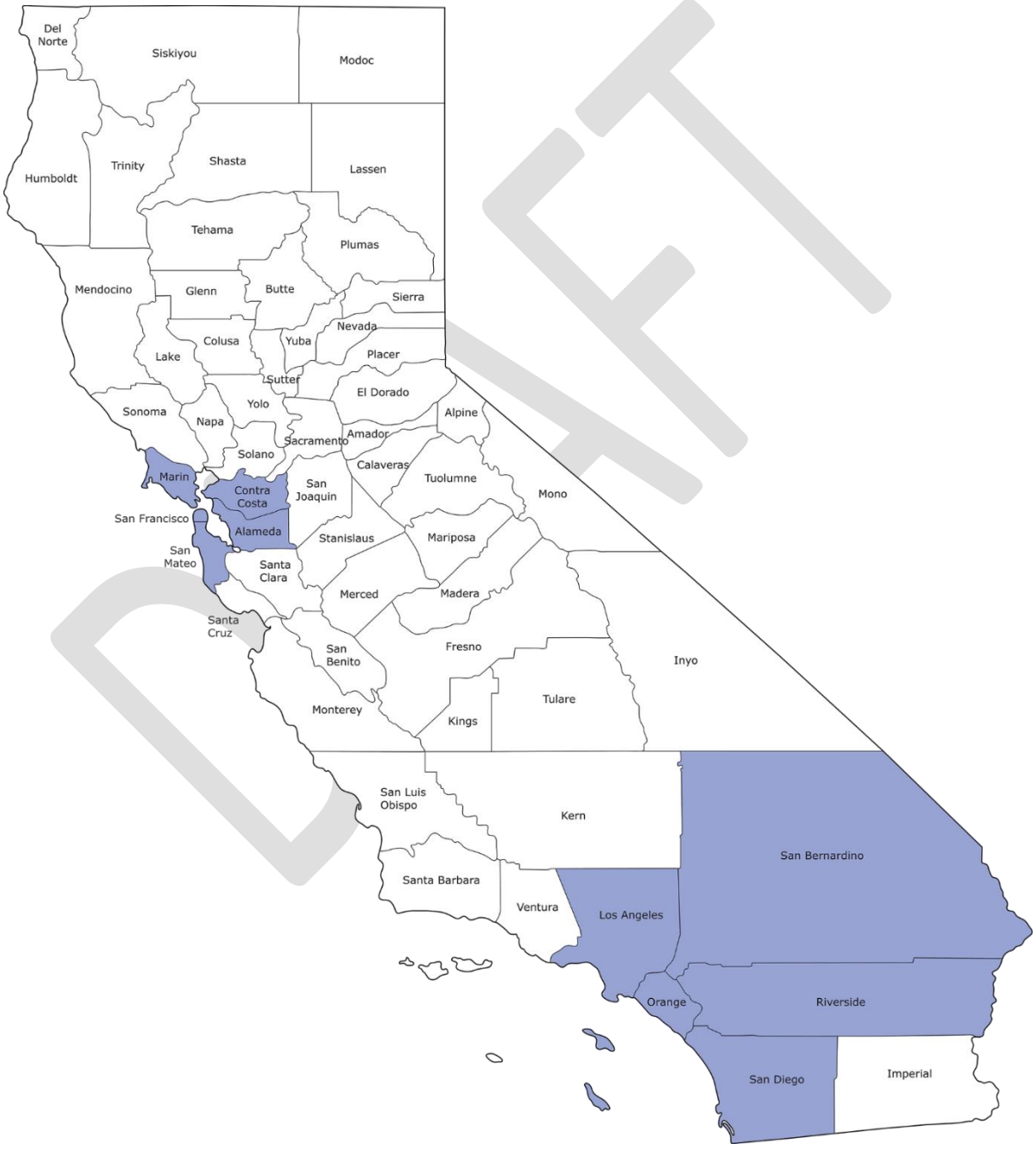
The lighter shaded counties were included in the BLS defined Bay Area geography previously, but were removed from the geography effective January 1, 2018. The darker shaded counties in the figure are those that remained in the BLS Bay Area geography after January 1, 2018.

As you can see, the number of counties in this geography decreased from 10 to 5. The counties removed from the Bay Area as defined by the BLS are: Napa, Santa Clara, Santa Cruz, Solano and Sonoma. The BLS also renamed the Bay Area Geography from San Francisco-Oakland-San Jose to San Francisco-Oakland-Hayward.

The next geography change implemented by the BLS involves changes to geographies in Southern California. These changes are relevant since they impact the California CPI (CCPI) produced by the California Department of Industrial Relations (DIR).

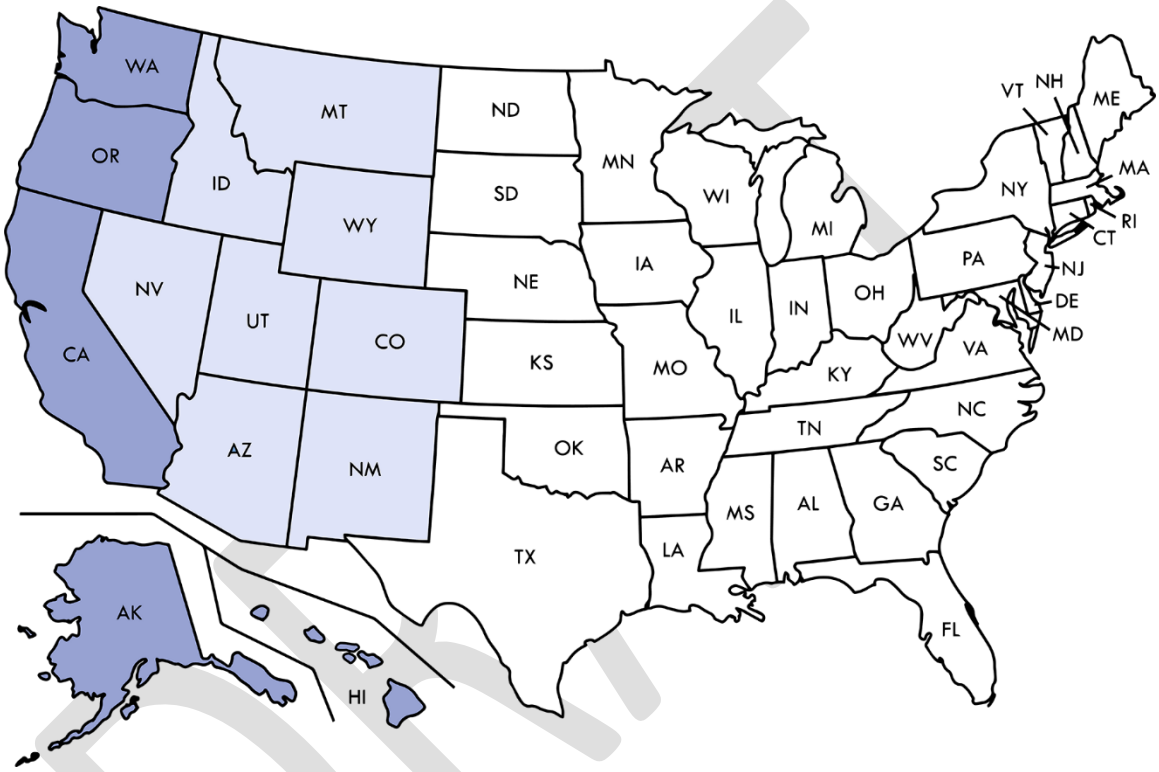
The CCPI is estimated by DIR as an average of the CPI across the geographies provided by BLS. Since the CCPI was not considered previously, here we only discuss the current geographies that compose the CCPI. Figure 2 outlines the four geographies included in the CCPI. Specifically the areas are: Los Angeles-Long Beach-Anaheim, San Francisco-Oakland-Hayward, San Diego-Carlsbad, and Riverside-San Bernardino-Ontario. The CCPI is calculated as a population weighted average across these geographies.

Figure 2. California CPI Region, 2018



The final change in geography implemented by the BLS was to create sub-regions. Mendocino County is located in the BLS Western Region which is comprised of 13 states. The BLS created two sub-regions in the Western Region, the Mountain Sub-Region and the Pacific Sub-Region. The Pacific Sub-Region includes Alaska, California, Hawaii, Oregon and Washington. Figure 3 below identifies the states in the Western Region, with the Pacific Sub-Region states shaded darker.

Figure 3. BLS Western Region, Pacific Sub-Region vs. Mountain Sub-Region, 2018



All of these changes provide four choices of geography when selecting the basis for the MCERA COLA. These options are, in increasing size of population and geography: Bay Area, California, Pacific Sub-Region and Western Region. The next section outlines the results of the analysis of these four regions as a fit for the cost of living in Mendocino County using the same methodology outlined in the 2016 report. The 2016 report can be found here: www.mendocinocounty.org/home/showdocument?id=19904.

COLA Region Re-Evaluation

The figures and tables below update the analysis of the appropriate region for determining the MCERA annual COLA. This re-evaluation relies on the U.S. Department of Housing and Urban Development (HUD) Fair Market Rent (FMR) data as it speaks to the cost of housing and better addresses the question.

Table 1 below shows the simple correlation coefficient of the FMR data between the identified pairs of geographies from 1997 through 2017. Additionally, Figure 4 shows the correlations from 1997 through the end year shown on the horizontal axis. This figure shows how the correlation coefficient changes over time.

Table 1. Correlation Coefficient of FMR for Geographies

Geographies	Correlation Coefficient
Mendocino –Bay Area	0.6756
Mendocino –California CPI	0.9165
Mendocino – Pacific Sub-Region	0.9337
Mendocino – Western Region	0.9349

Figure 4 HUD-FMR Correlations, 1997 to End Year

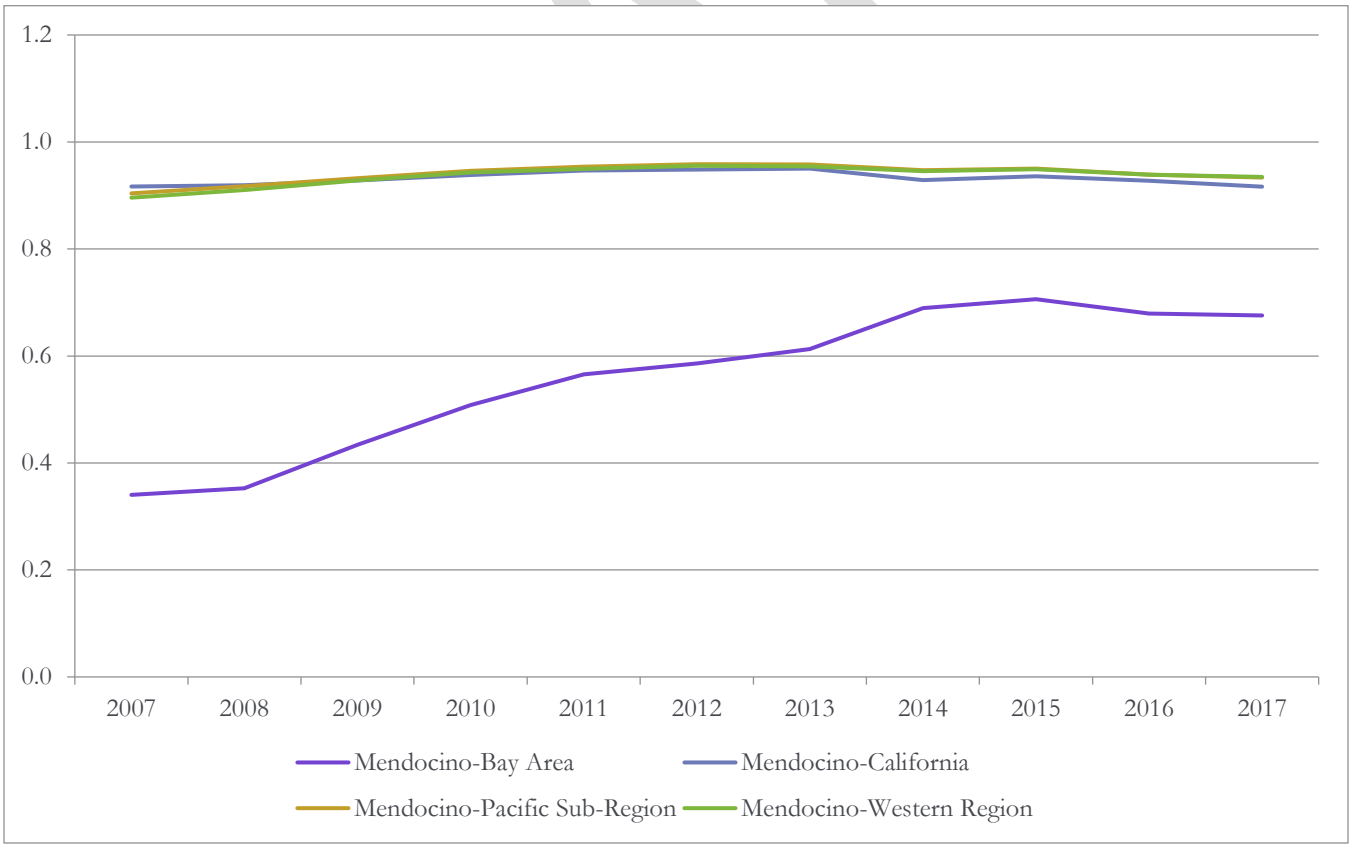
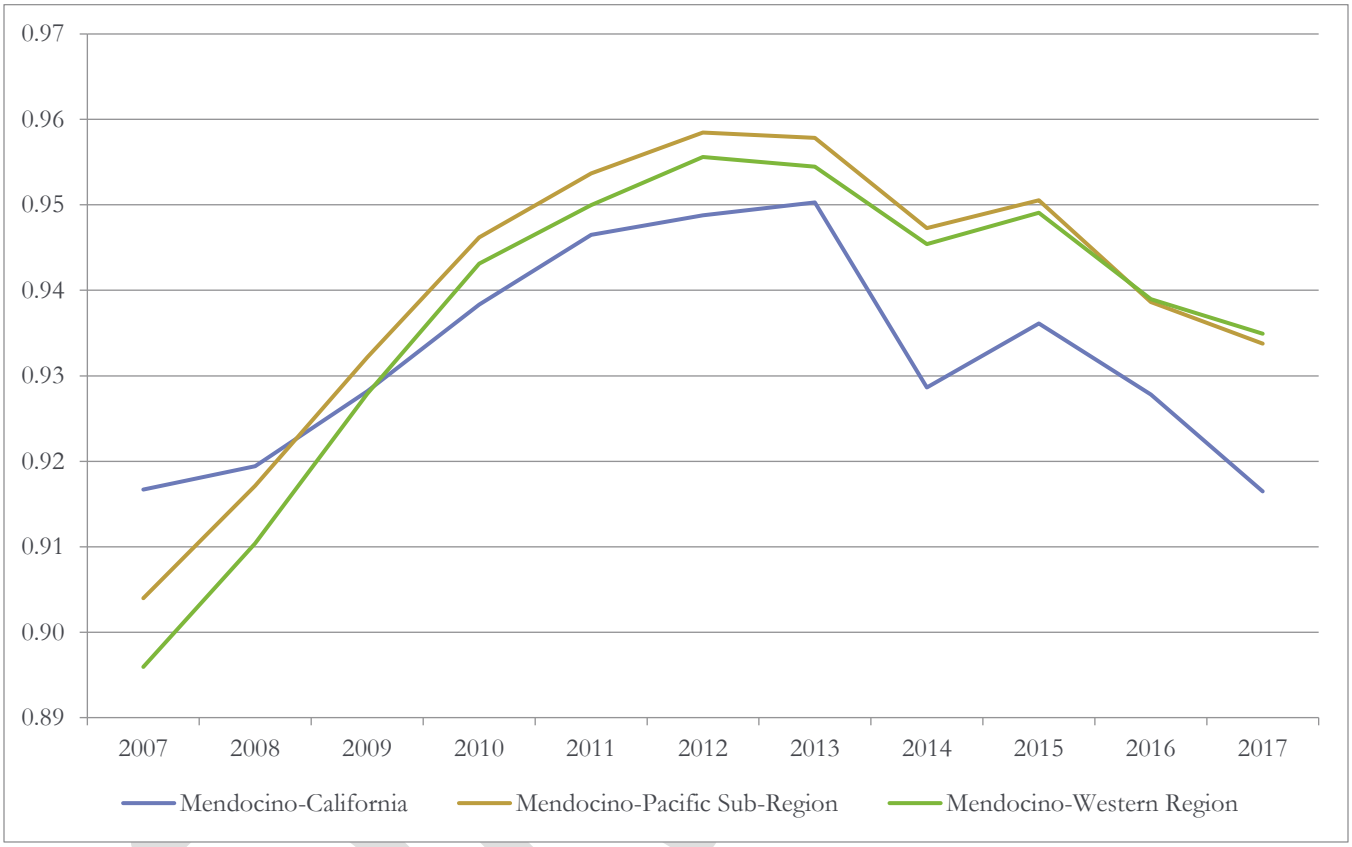


Figure 4 is somewhat difficult to evaluate since the three series seem nearly identical with the given scale. To highlight the differences between these three series, Figure 5 below removes the outlier (Mendocino-Bay Area) and adjusts the scale.

Figure 5 HUD-FMR Correlations Subset, 1997 to End Year



While the correlations are relatively close in absolute terms, Figure 5 shows that the correlation of the Pacific Sub-Region and the Western Region to Mendocino County have been higher than the California correlation to the County over the past 9 years.

Next we turn to two estimates of the average annual rate of growth in the FMR by geography. Table 2 below presents the average annual growth rate as calculated by both the geometric mean methodology and the log-linear regression methodology. As a reminder, the log-linear regression growth estimate is less impacted by end point issues than is the geometric mean growth estimate.

Table 2. FMR Average Annual Growth Rates by Geography, 1998-2017

Region	Geometric Mean	Log-Linear Regression
Mendocino County	2.68%	3.24%
Bay Area	5.32%	3.72%
California CPI	4.47%	3.92%
Pacific Sub-Region	3.74%	3.48%
Western Region	3.39%	3.16%

Table 2 shows, once again, that the Pacific Sub-Region and the Western Region are closer to Mendocino County than either the Bay Area or the California geographies. Further, the Western Region average annual growth in the FMR is markedly closer than the Pacific Sub-Region to the average annual growth in Mendocino County.

Finally, we turn to the log-log regression results to determine the elasticity of the Mendocino County FMR to the FMR in each comparable geography. These results are shown below in Table 3.

Table 3. Log-Log Regression Results of Mendocino FMR on Region FMR

Measure	Bay Area	California CPI
Observations	21	21
R^2	0.9997	0.9999
ANOVA F Value (Significance)	35,377.37 (1.549×10^{-32})	127,900.02 (7.747×10^{-38})
β_1 (Std Error)	0.9169 (0.0049)	0.9451 (0.0026)
β_1 t Stat (p Value)	188.089 (5.844×10^{-34})	357.631 (1.538×10^{-39})

Table 3. Log-Log Regression Results of Mendocino FMR on Region FMR (Continued)

Measure	Pacific Sub-Region	Western Region
Observations	21	21
R^2	0.9999	0.9999
ANOVA F Value (Significance)	199,594.24 (1.130×10^{-39})	204,726.91 (8.882×10^{-40})
β_1 (Std Error)	0.9625 (0.0022)	0.9753 (0.0022)
β_1 t Stat (p Value)	446.760 (1.796×10^{-41})	452.468 (1.394×10^{-41})

The critical component from Table 3 for this analysis is the estimate of β_1. These estimates are shown in Table 4 below for ease of comparison.

Table 4. Elasticity Estimates from Log-Log Regression of Mendocino County FMR on Region FMR (Summary Comparison of Table 3)

Geographies	Elasticity Estimate
Mendocino –Bay Area	0.9169
Mendocino –California CPI	0.9451
Mendocino – Pacific Sub-Region	0.9625
Mendocino – Western Region	0.9753

The pertinent question regarding these elasticity estimates is which elasticity is nearest to the value of 1. This value is important as it indicates that the percentage change in FMR for Mendocino County equals the percentage change in FMR for the corresponding geography. Table 4 clearly shows the elasticity moves closer to the critical value as one moves down the table. Once again, the Bay Area and California estimates are dominated by the Pacific Sub-Region and the Western Region. Further, while not as large in absolute terms, the Western Region produces an elasticity estimate closer to 1 than does the Pacific Sub-Region.

We conducted an additional statistical test of the difference between the elasticity estimates of Mendocino – Pacific Sub-Region and Mendocino County – Western Region. The test assumes the true elasticity figures are equal, then determines the likelihood of observing the above estimates given that assumption. This test shows there is a 0.04% likelihood of observing the difference in elasticity estimates between the Pacific Sub-Region and the Western Region if the true values are the same. In short, the statistical evidence suggests the Western Region elasticity is significantly closer to the critical value of 1 than is the Pacific Sub-Region elasticity.

Conclusion

The above results show that as an indicator of the rate of inflation in Mendocino County, the Bay Area geography is dominated by the California geography. That is, the California geography is a better fit for Mendocino County than is the Bay Area geography. Next, we see that the California geography is dominated by the Pacific Sub-Region which is, in turn, dominated by the Western Region. That is to say, the Western Region is a better indicator of Mendocino County than the other three geographies with a higher long-term correlation, average annual growth rates in housing prices closer to those in Mendocino County, and an elasticity estimate that is closer to the critical value of 1.

Recommendation

Based on the analysis above, I recommend the Mendocino County Employees Retirement Association continue using the Western Region Consumer Price Index for granting Cost of Living Adjustments to its retirees. Additionally, I recommend the Board revisit the matter every five years with the next review scheduled by the end of 2023.