

Business Planning with Caseload Forecasting Models and Spatial Analysis



COUNTY OF RIVERSIDE
CALIFORNIA

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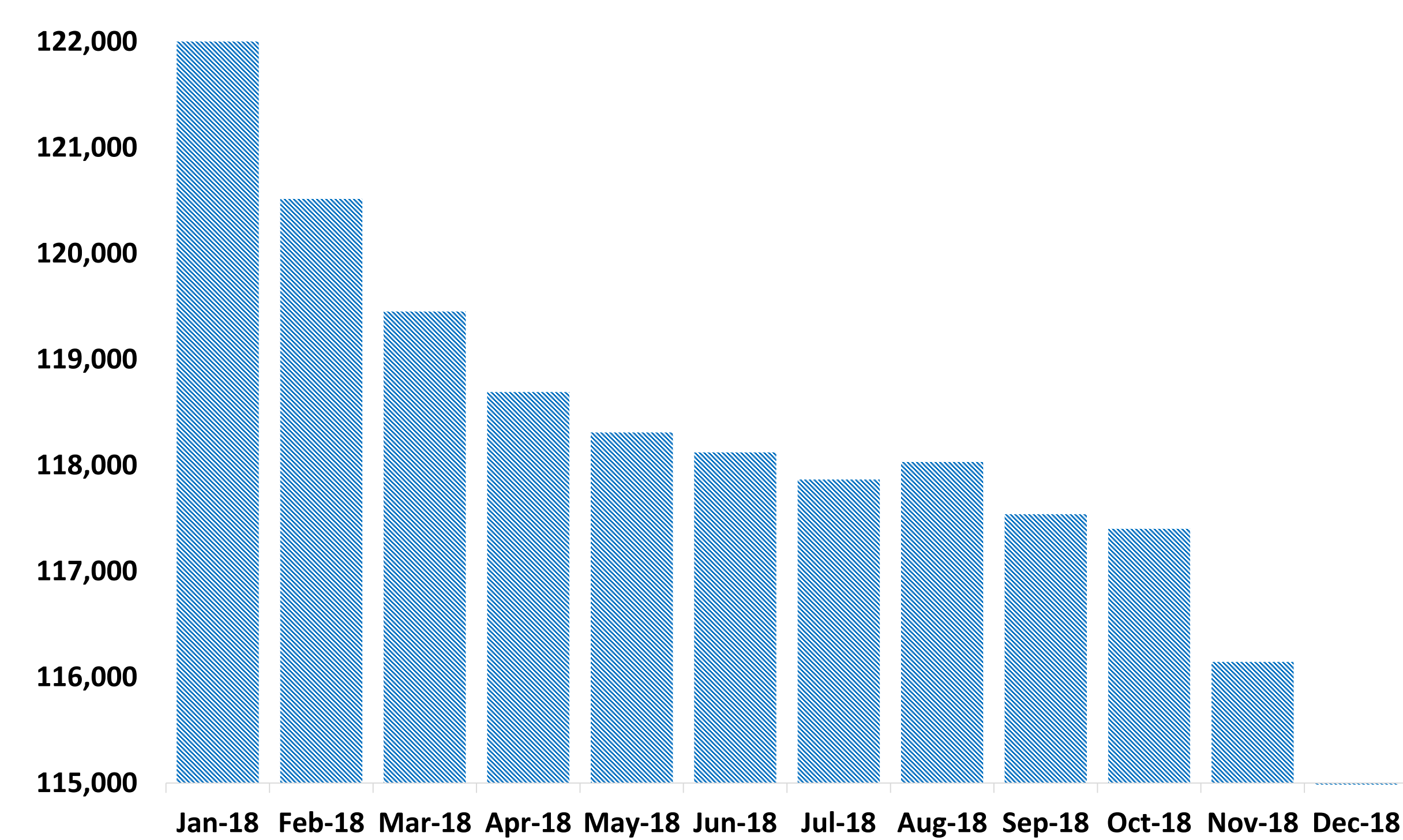
Background

The County of Riverside Department of Public Social Services (DPSS) Self-Sufficiency Division serves and supports Riverside County individuals and families to achieve and sustain health, well-being, and economic independence.

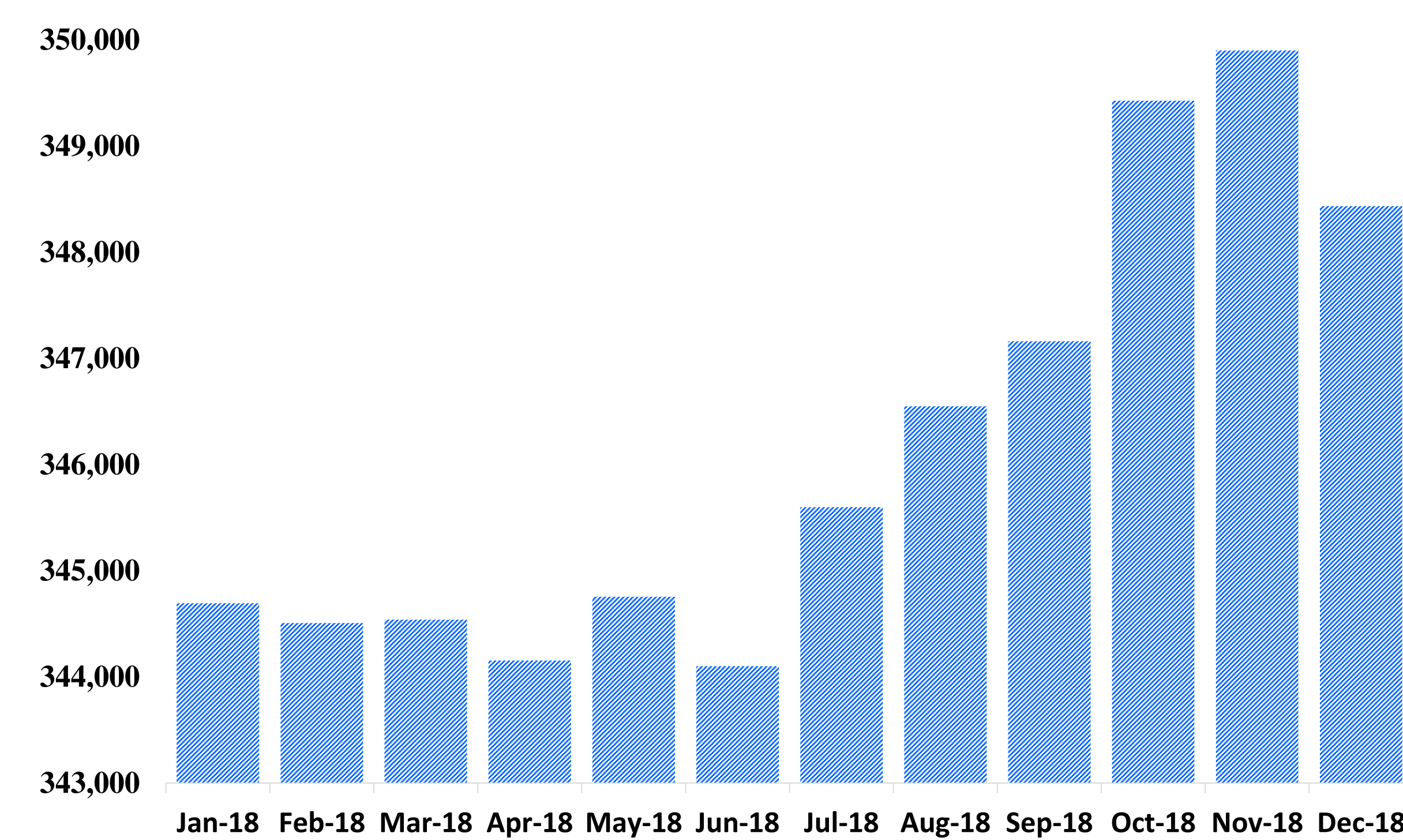
The Medi-Cal caseload consistently increased from January 2018 while the CalFresh caseload experienced a decrease during the same timeframe. The purpose of caseload forecasting is to project the number of cases of Self-Sufficiency programs such as the Supplemental Nutrition Assistance (CalFresh) and Medi-Cal programs. The caseload estimates by office location are important for facility planning and are used to estimate DPSS expenditure and deliver a more streamline business process to ensure that the funding formulas for different programs are structured appropriately.

A new service model is needed to maximize staffing resources, expand the knowledge, skills, and abilities for eligibility staff, and provide Managers the flexibility to manage attrition. The new program allows for more promotional opportunities for staff and improves the County Customer services.

CalFresh Program Caseload



Medi-Cal Program Caseload

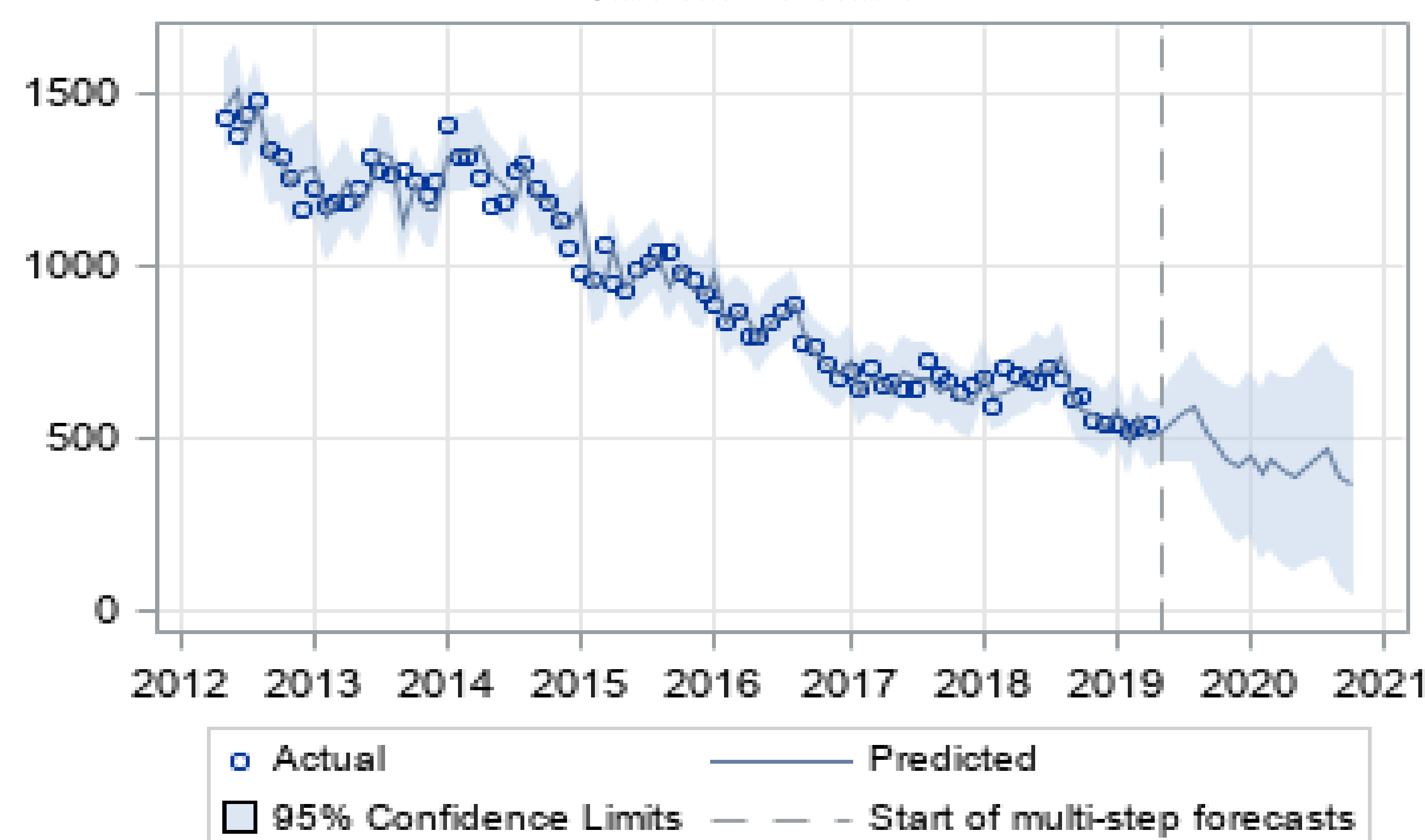


Example of Caseload Forecasts

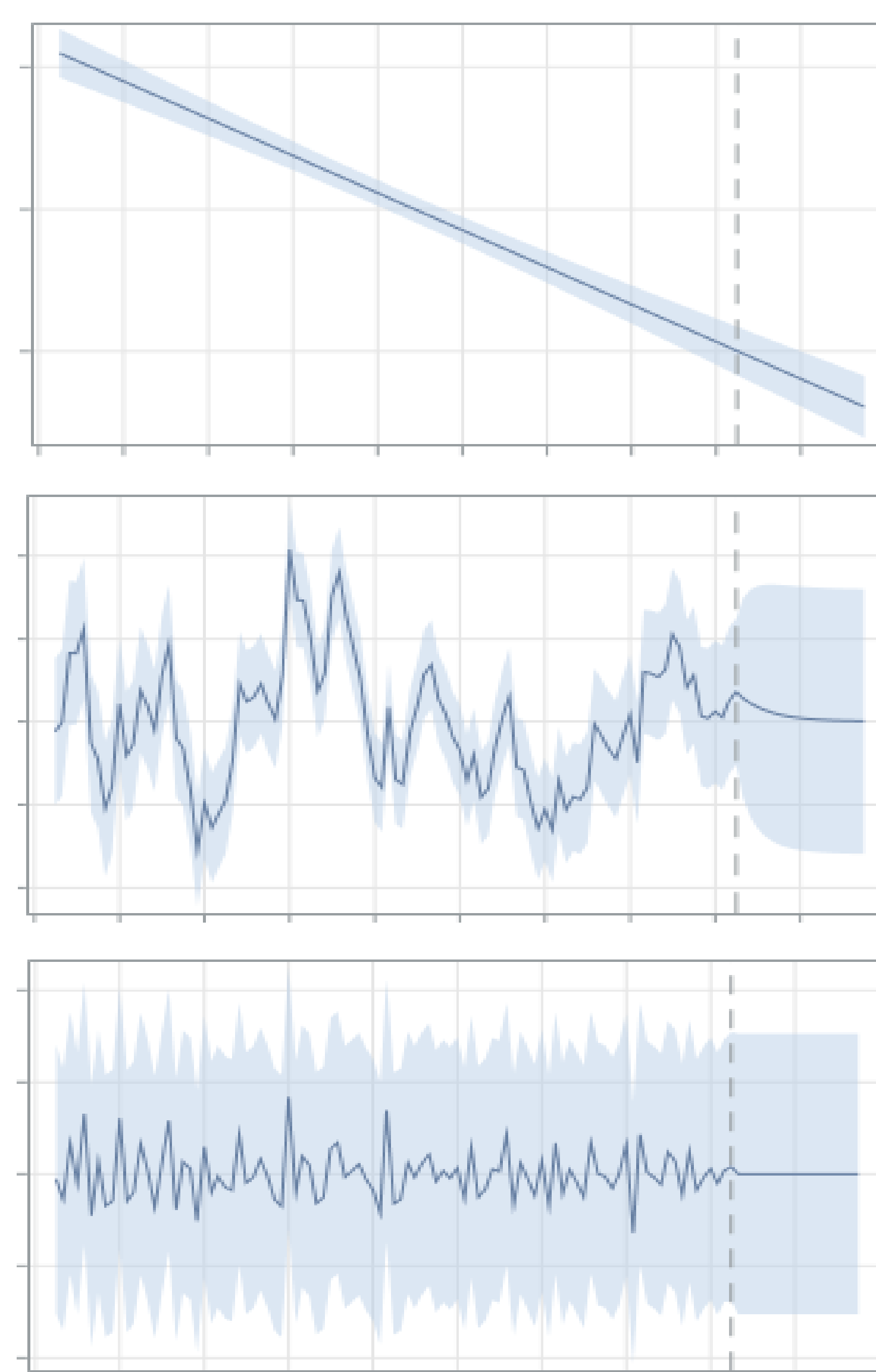
A standard notation is used for ARIMA(p, d, q) where p is the lag order, d is the degree of differencing, and q is the order of moving average.

The Autoregressive Integrated Moving Average model (ARIMA) is fitted to time-series data to predict future points in the series. ARIMA models are powerful for decomposing the trend, season, and autocorrelation components of the data.

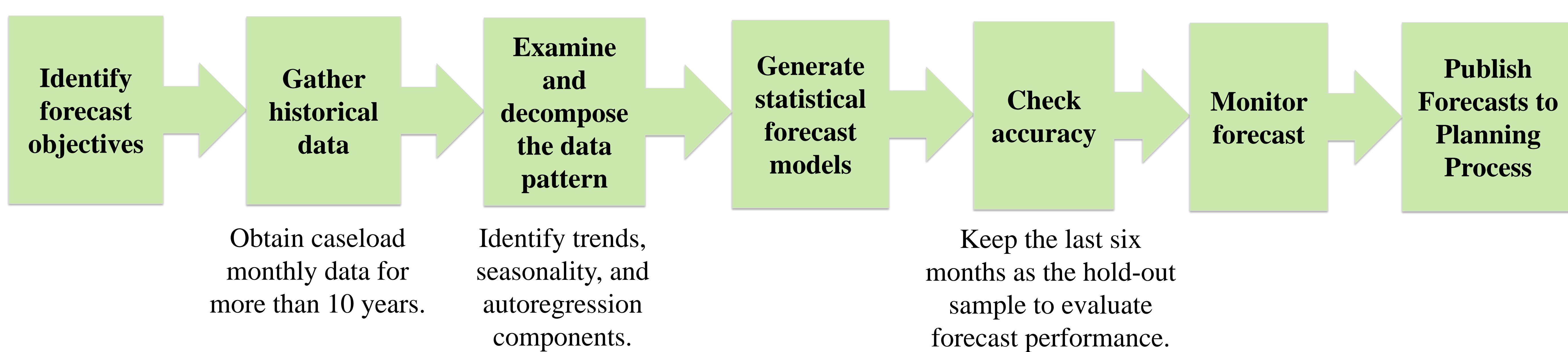
Caseload Forecasts



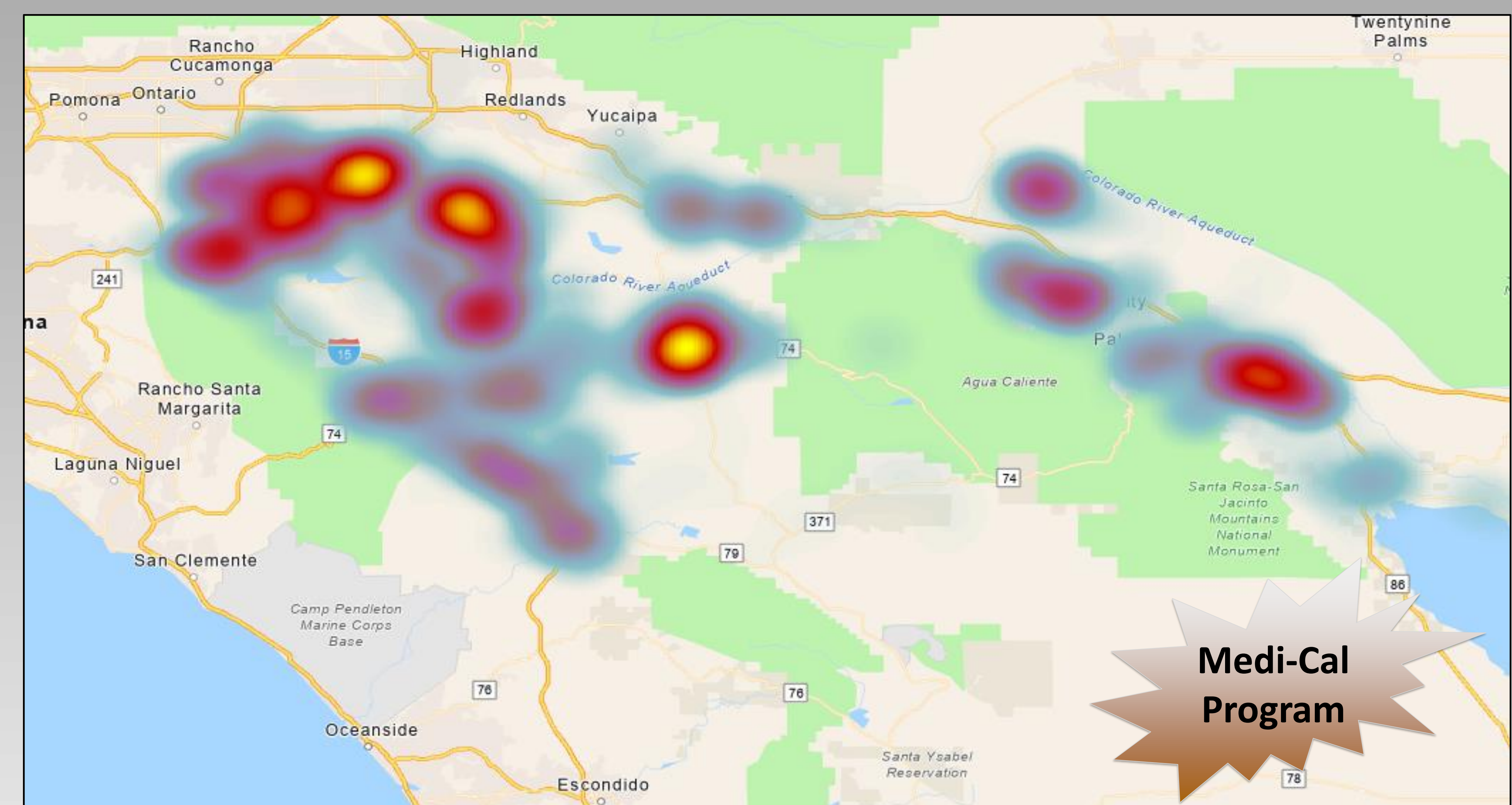
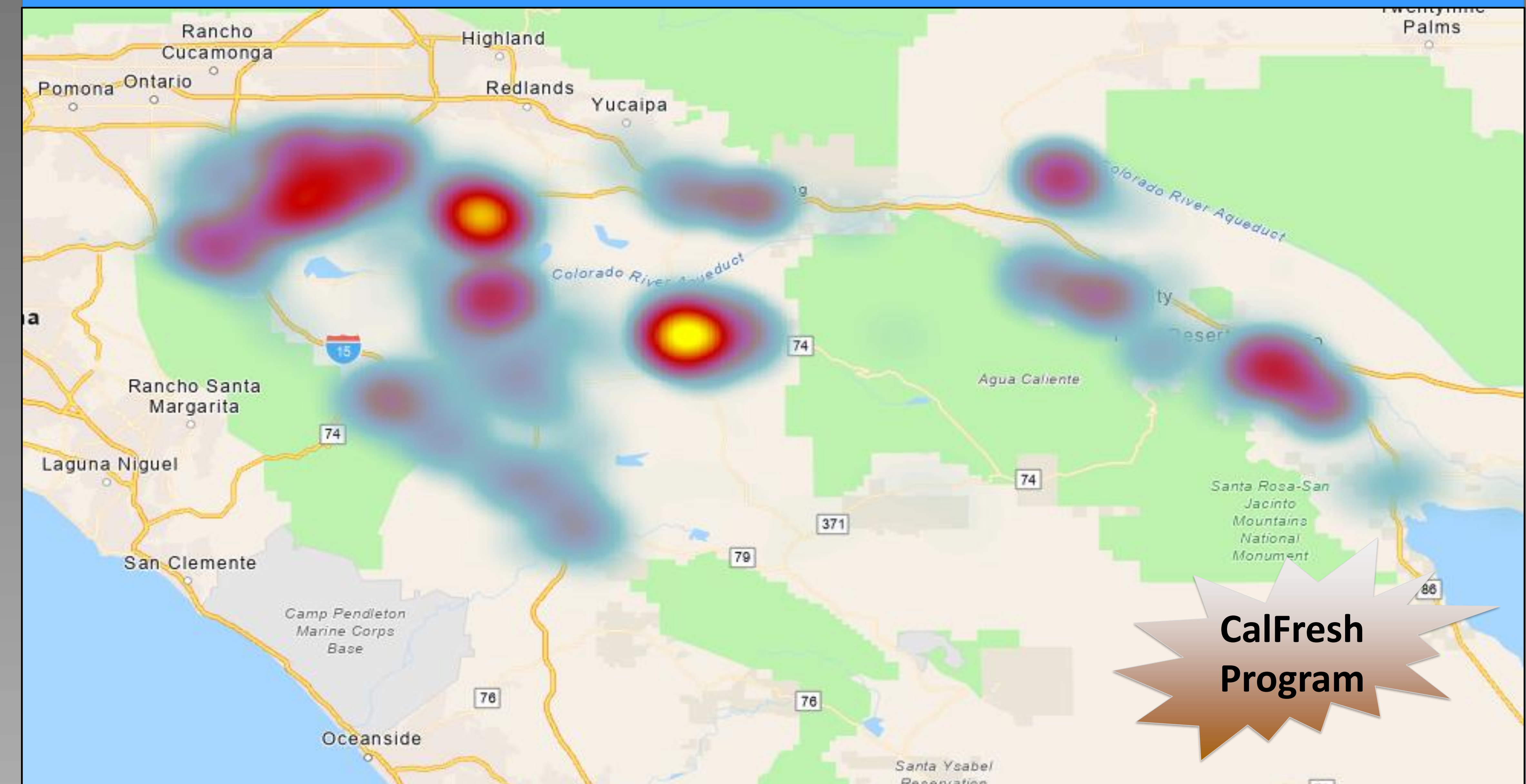
Trend, Cycle, and Irregular Components



Forecasting Methodology



Spatial Analysis Results



Business Planning

- Integrate the McFresh dual program allowing for more promotional opportunities for staff and improving the County customer service.
- Open new Self-Sufficiency offices to help communities have much easier access to DPSS benefits and services.
- Increase online application resources for faster services with lower expenditure.

Selected References

Athanasopoulos, G., Hyndman, R. J., Kourentzes, N., & Petropoulos, F. (2017). Forecasting with temporal hierarchies. *European Journal of Operational Research*, 262(1), 60–74.

De Livera, A. M., Hyndman, R. J., & Snyder, R. D. (2011). Forecasting time series with complex seasonal patterns using exponential smoothing. *J American Statistical Association*, 106(496), 1513–1527.

Barrera, R., Frank, A., and Al-Taha, K., 1991, *Temporal Relations in Geographic Information Systems*. NCGIA Technical Report 91-4.

Berry, B. J. L., 1964, *Approaches to regional analysis: A synthesis*. *Annals of the Association of American Geographers*, 54(1):2-11.