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Analysis and prediction of Canadian construction industry demand

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Abstract. The construction sector's volatile demand is often cited by contractors as a barrier to maintaining consistent staffing and workload. To evaluate this claim, this study analyzed Canadian building permit data, a proxy for industry demand, using statistical and machine learning methods. The analysis aimed to determine the predictability of demand despite economic and political influences. Statistical analysis revealed demand stability with minimal variability and consistent yearly patterns, highlighting a dominant seasonal effect over a subdued trend. Predictive models, while exhibiting occasional higher error rates (up to 30%), generally demonstrated that historical patterns can be replicated for future demand forecasting with errors around 7%. These findings challenge the contractors' assertion of unpredictable market fluctuations that impede workforce stability, suggesting that workload fluctuations may stem from other factors requiring further investigation.

Keywords: time series analysis, construction industry demand prediction, market fluctuation modeling