Mean value formulas for classical solutions to subelliptic partial differential equations in divergence form

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We provide an overview of recent advances regarding mean value formulas for classical solutions to degenerate linear second-order partial differential equations in divergence form. The talk begins by analyzing the mean value theorems developed with D. Pallara, which rely on De Giorgi's perimeter theory and its extension to Carnot groups. It then demonstrates how these results lead to strong maximum principles and Harnack inequalities, reviewing the contributions of G. Pecorella for stationary subelliptic equations on Carnot groups and those of A. Rebucci for degenerate Kolmogorov equations. The presentation concludes by outlining some open problems in the field.