Ehrhart quasi-polynomials, h*-vectors, Eulerian polynomials and unimodality

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The Ehrhart quasi-polynomial counts lattice points in integer dilates of a polytope Q having rational vertices. The coefficients of the polynomial which appears as the numerator of the corresponding generating function define the h*-vector of Q. They are nonnegative integers which are often unimodal and have combinatorial significance in interesting special cases. For instance they count linear extensions of a naturally labeled partially ordered set P by the number of descents when Q is the order polytope of P. In this talk I will give a survey of open problems and recent results related to the unimodality of h*-vectors.