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**Sayan Banerjee, Fabrice Baudoin, Maria Gordina and Phaniel Mariano\***  
([marianop@union.edu](mailto:marianop@union.edu)), Schenectady, NY 12308. *The Cheng-Yau gradient estimate for Carnot groups and sub-Riemannian manifolds.*

We recall the Cheng-Yau gradient inequality and its implications in the Riemannian setting. We discuss how the Cheng-Yau inequality can be proven on two classes of sub-Riemannian manifolds: Carnot groups and sub-Riemannian manifolds satisfying a generalized curvature-dimension inequality. Two approaches will be presented. A coupling approach and an analytic approach using a curvature-dimension condition. A discussion for on-going work related to weak Hörmanders operators will also be presented. This is joint works with Sayan Banerjee, Fabrice Baudoin and Masha Gordina. (Received August 31, 2021)