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Ajtai, M.; Erdős, Paul; Komlos, J.; Szemeredi, E.
On Turan's theorem for sparse graphs. (In English)
Combinatorica 1, 313-317 (1981). [0209-9683]

Let α be the (vertex) independence number and let $\log x = \max\{1, \ell n x\}$. Denote by $f(n,t,p)$ the largest integer such that every graph of order n and average degree $t \geq 1$ that contains no K_p satisfies $\alpha \geq f(n,t,p)$. Theorem: There exists an absolute constant c_1 such that $f(n,t,p) > c_1 \cdot (n/t) \cdot \log(\log t)/p$. This improves on the known bounds $\alpha \geq n/(t+1)$ and $\alpha > 0.01(n/t)\log t$. The lasr inequality may be rewritten as $f(n,t,3) > c \cdot (n/t) \log t$, and suggests the study of the question $f(n,t,p) = c_p(n/t)\log t$.

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Classification:
05C35 Extremal problems (graph theory)
05C99 Graph theory
60C05 Combinatorial probability

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