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On the local-global principle for torsion on elliptic curves. Preliminary report.

Fix an integer $m > 1$. Let E be an elliptic curve over \mathbf{Q} with the property that $\#E(\mathbf{F}_p)$ is divisible by m for all but finitely many primes p . While E is isogenous to an elliptic curve E' such that $\#E'(\mathbf{Q})_{\text{tors}}$ is divisible by m , but it may not be the case that $\#E(\mathbf{Q})_{\text{tors}}$ is divisible by m . Ordered by height, we show the probability that a curve with $m \mid \#E(\mathbf{F}_p)$ also has $m \mid \#E(\mathbf{Q})_{\text{tors}}$ is nonzero and we compute the probability explicitly in several cases. This is joint work with John Voight. (Received February 05, 2018)