

University of Colorado
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Problem of the Month
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At the 2020 presidential election Democrats will win with probability p_1 . Similarly, at the n th election from now ($n > 1$), change will happen (i.e. the ruling party loses and the other party wins) with probability p_n . Assuming that the given sequence (p_n) is summable, the Borel-Cantelli Lemma guarantees that with probability 1, changes will stop occurring after some finite time, after which either the Republican party or the Democratic party will remain the ruling party. What is the probability that the eventual winner is the Republican party, in terms of the sequence (p_n) ?