The measurement of the muon's anomalous magnetic moment has been a historic test of our theoretical understanding of elementary particles and their interactions. At present, the world average is in tension with the value predicted by the Standard Model of particle physics by more than three standard deviations, possibly caused by new physics interactions. To resolve this discrepancy, the Muon g-2 experiment at Fermilab aims to measure the muon's anomalous magnetic moment to a record 140 parts per billion using data taken over five years from 2018 to 2022. The experimental method involves trapping a polarized beam of positive muons in a storage ring containing an extremely uniform magnetic field. The difference in the muons' cyclotron and spin-precession frequencies - known as the anomalous precession frequency - is directly proportional to the muon's anomalous magnetic moment. This talk motivates making an improved measurement of the muon's anomalous magnetic moment, outlines the experimental method, and describes the algorithm used to reconstruct the decay positrons impacting the electromagnetic calorimeters around the ring. Using data taken in 2018, a blinded measurement of the muon's anomalous precession frequency to 410 parts per billion is then presented, which will allow the muon's anomalous magnetic moment to be determined with a precision comparable to that of the world average.