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We report long-term variability of Martian upper thermospheric and lower exospheric densities within 175-275 km altitudes on the dayside. Atmospheric CO_2, N_2, O, and Ar densities are from NASA Mars Atmosphere and Volatile EvolutioN (MAVEN) observations during the time period of 2015-2020 near solar minimum. These neutral measurements, together with estimates of concurrent solar radiation fluxes, enable us to disentangle the orbital effect (due to the annual Sun-Mars distance change with solar longitude) and the solar EUV effect in atmospheric density variations. Generally speaking, upper atmospheric densities are minimal near aphelia and maximal near perihelia, with additional modulation coming from Solar EUV fluxes at Mars. In contrast to the orbital effect, which decreases slowly with increasing altitude, the solar EUV effect increases relatively rapidly with altitude. These two effects are comparable near ~250 km altitude for CO_2 and O densities and near ~280 km for N_2 densities. This is the first time the orbital and solar EUV effects in upper atmospheric density variations are quantified in MAVEN measurements. Our results show a consistent long-term trend with the prediction from previous Mars Global Surveyor and Mars Odyssey studies of exospheric mass density variations at ~400 km altitude. It is found that during a solar minimum, the orbital (solar EUV) effects are stronger (weaker) at ~400 km than in the low exosphere. In contrast, during a solar maximum, the solar EUV effect near ~400 km is considerably enhanced and makes more contributions to density variances than the orbital effect.

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