*S1 File. Derivation of the distribution of time to apnea*

*In the probability space where = {1, 0}, 1 represents for apnea event and 0 for non-apnea event, the probability distribution function of time to apnea onset is defined as ],. is defined as {} where . At a specific non-apnea block in the discretized state space, the probability of time to apnea onset denoted asequal to the probability that non-apnea block evolves over non-apnea blocks and stops in an apnea block at step is the estimated probability of points in state space ( and ) to sleep apnea in 1 step and* *is**transition**coefficients to all states from state . Here, the evolution patterns over non-apnea blocks from block are concatenated from the transitions of through i-1 possible blocks in the quantized state space. The probabilities of being in an apnea block one step ahead of every non-apnea block in the discretized state space is updated using one-step-ahead predictions from the DPMG model.*