CovidMDP Documentation

Release 0.1

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patient_evolution.**change_state** (*person*)

Receives an array representing a person, calls the appropriate function dependending on it's current state and return the person array in the next disease state

Args:

person (np.array): Array containing id, state, day of infection and
current state duration of a person.

Returns:

person (np.array): The same person in the next state of the disease.

Raises:

ValueError: If persons time in state (person[3]) is different from zero

patient_evolution.**exposed_to_infected** (*person*)

Receives an array representing a person and change it's state from exposed to infected. The new period duration is sampled from onset_to_hosp_or_asymp().

Args:

person (np.array): Array containing id, state, day of infection and current state duration of a person.

Returns:

person (np.array): The same person, infected

Raises:

ValueError: If person's state (person[1]) is different from exposed or if the state duration has not yet reached zero

patient_evolution.**hospitalized_to_removed** (*person*)

Receives an array representing a person and change it's state from hospitalized to removed.

Args:

person (np.array): Array containing id, state, day of infection and current state duration of a person.

Returns:

person (np.array): The same person, removed

Raises:

ValueError: If person's state (person[1]) is different from hospitalized or if the state duration has not yet reached zero

patient_evolution.**infected_to_new_state** (*person*)

Receives an array representing a person and change it's state from infected to either hospitalized or removed. needs_hospitalization(person[4]) determines if the person will need hospitalization based on the person's age (person[4] is the person's age in years) and, if the person is going to be hospitalized, the period of stay at the hospital is sampled from hospitalization_to_removed().

Args:

person (np.array): Array containing id, state, day of infection and current state duration of a person.

Returns:

person (np.array): The same person, hospitalized, with hospitalization
time, or removed

Raises:

ValueError: If person's state (person[1]) is different from infected or if the state duration has not yet reached zero

patient_evolution.**susceptible_to_exposed** (*person*, *day*)

Receives an array representing a person and the current day of simulation and change it's state from susceptible to exposed. The new period duration is sampled from incubation().

Args:

person (np.array): Array containing id, state, day of infection and current state duration of a person.

Returns:

person (np.array): The same person, exposed at the current day

Raises:

ValueError: If person's state (person[1]) is different from susceptible

disease_evolution.**hospitalization_to_removed** (*clip_low=2*, *clip_high=32*, *mean=8.6*, *std=6.7*)

Returns the time for someone to either get removed after being hospitalized in days within range(-clip_low, clip_high), of a truncated_norm(mean, std).

disease_evolution.**hospitalized_needs_ICU** (*age*)

Returns if a person needs ICU care, given they have been hospitalized, based on their age and data extracted from https://www.imperial.ac.uk/media/imperial-college/medicine/sph/ide/gida-fellowships/Imperial-College-COVID19-NPI-modelling-16-03-2020.pdf

disease_evolution.**incubation** (*clip_low=2*, *clip_high=15*, *mean=6*, *std=3*)

Returns the incubation time in days within range(clip_low, clip_high), of a truncated_norm(mean, std).

disease_evolution.**needs_hospitalization** (*age*)

Returns if a person needs hospitalization based on their age and data extracted from https://www.imperial.ac.uk/media/imperial-college/medicine/sph/ide/gida-fellowships/Imperial-College-COVID19-N

disease_evolution.**onset_to_hosp_or_asymp** (*clip_low=2*, *clip_high=21*, *mean=6.2*, *std=4.3*)

Returns the time for someone to either get removed or hospitalized in days within range(clip_low, clip_high), of a truncated_norm(mean, std).

disease_evolution.**sample_truncated_norm** (*clip_low*, *clip_high*, *mean*, *std*)

Given a range (a,b), returns the truncated norm

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