Method for correcting overlap in 12-month recall periods of medical encounters (doctor’s visits, emergency department visits, hospital admissions)

For each person, let:

- \( X_1 \) = number of encounters reported at the initial visit
- \( X_2 \) = number of encounters reported at the revisit
- \( D_1 \) = Date of the initial visit
- \( D_2 \) = Date of the revisit

Define:

- \( X_1 = \) number of encounters during period \( Y_1 \) + number of encounters during period \( Y_2 \)
- \( X_2 = \) number of encounters during period \( Y_2 \) + number of encounters during period \( Y_3 \)

Assume:

- Encounters are uniformly distributed over the year before \( D_1 \) (i.e., during periods \( Y_1 \) and \( Y_2 \)).
- Encounters are uniformly distributed during period \( Y_3 \), and encounters during \( Y_4 \) have the same uniform distribution.

For each person, calculate:

1. \( A = D_2 - D_1 \), days in the overlap period
2. \( M = A/30 \), months in the overlap period
3. \( \text{Rate}_1 = X_1/12 \), the encounter rate per month during \( Y_1 \) and \( Y_2 \)
4. \( \text{Rate}_2 = (X_2 - \text{number of encounters in } Y_2)/M = X_2 - (12-M)\times\text{RATE}_1/M \), the encounter rate per month during \( Y_3 \)
5. \( X_1 - X_2 \) is the change between the initial visit and revisit.
6. \( B = (\text{Rate}_1 \times 12) - (\text{Rate}_2 \times 12) \), is the benefit for the 12 months beginning at the initial visit.
7. \( BW = \) Winsorized benefit where values below the 1\textsuperscript{st} percentile are replaced by the value of the 1\textsuperscript{st} percentile, and values above the 99\textsuperscript{th} percentile are replaced with the value of the 99\textsuperscript{th} percentile.