MAX PLANCK INSTITUTE
FOR DEMOGRAPHIC
RESEARCH

Alignment, clocking, and macro patterns of episodes in the life course

Tim Riffe

2 motivating observations:

1. sequence analysis of trajectories ending in death
2. matrix expression for average episode count

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1. sequence analysis of trajectories ending in death (pattern detection) (Y. Hu)
2. matrix expression for average episode count (tenure statistics) (C. Dudel)

2 motivating questions:

1. would different patterns emerge if trajectories were aligned on moment of death rather than age?
2. what is the age pattern of average episode duration?

2 *procedural* solutions:

1. restructure wrt state transitions:
2. flexible episode recording:

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1. restructure wrt state transitions: alignment
2. flexible episode recording: clocking

An illustration

- Take transition matrix from Dudel & Myrskylä (2017).
- Simulate 10k trajectories using `rmarkovchain()` in `markovchain` package (Spedicato, 2017).
- Demonstrate concepts of alignment and clocks
- Generate (stationary) novel macro patterns

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Clock measures

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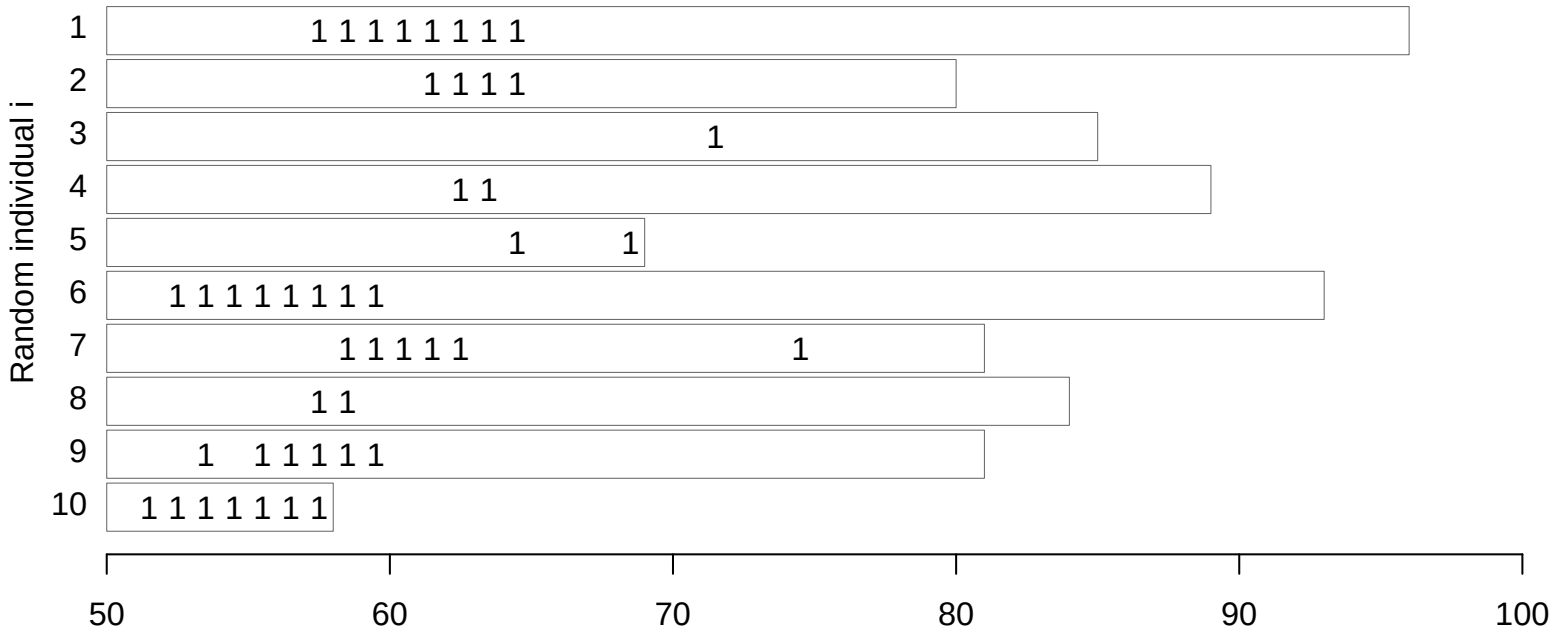
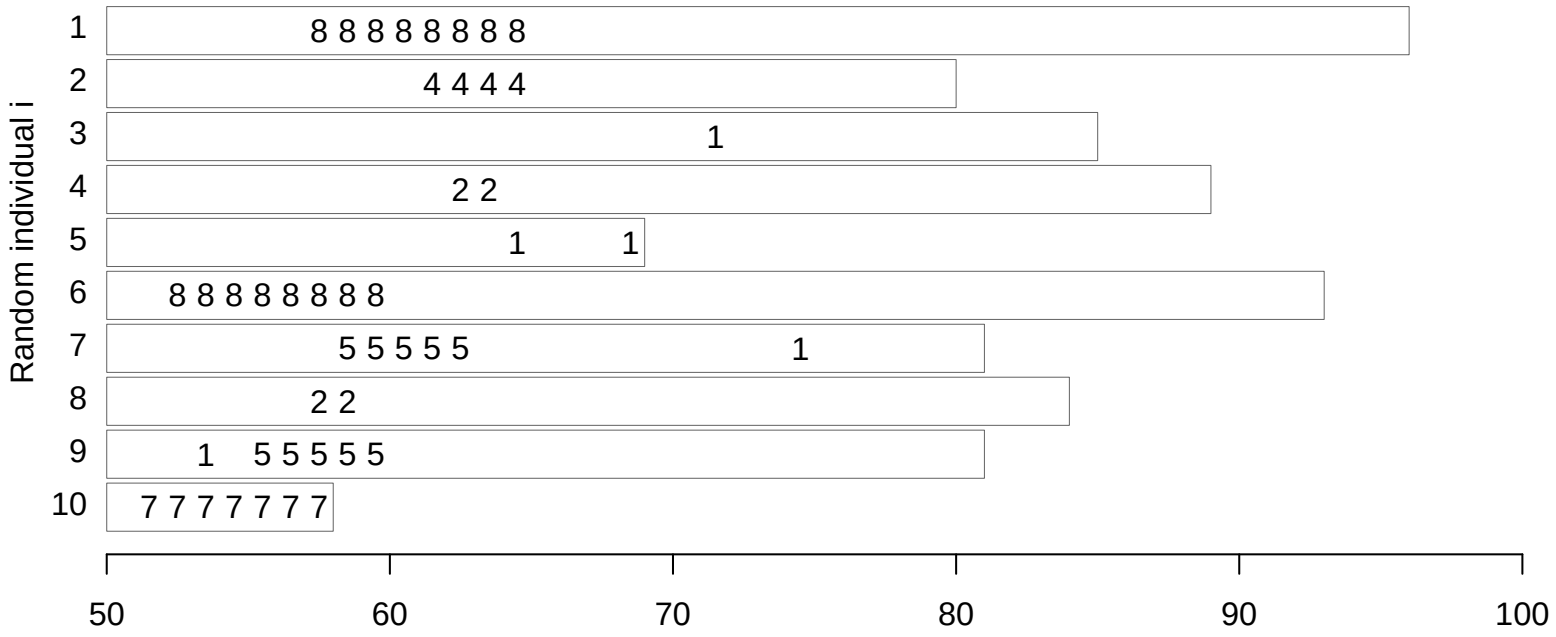


Clock measures



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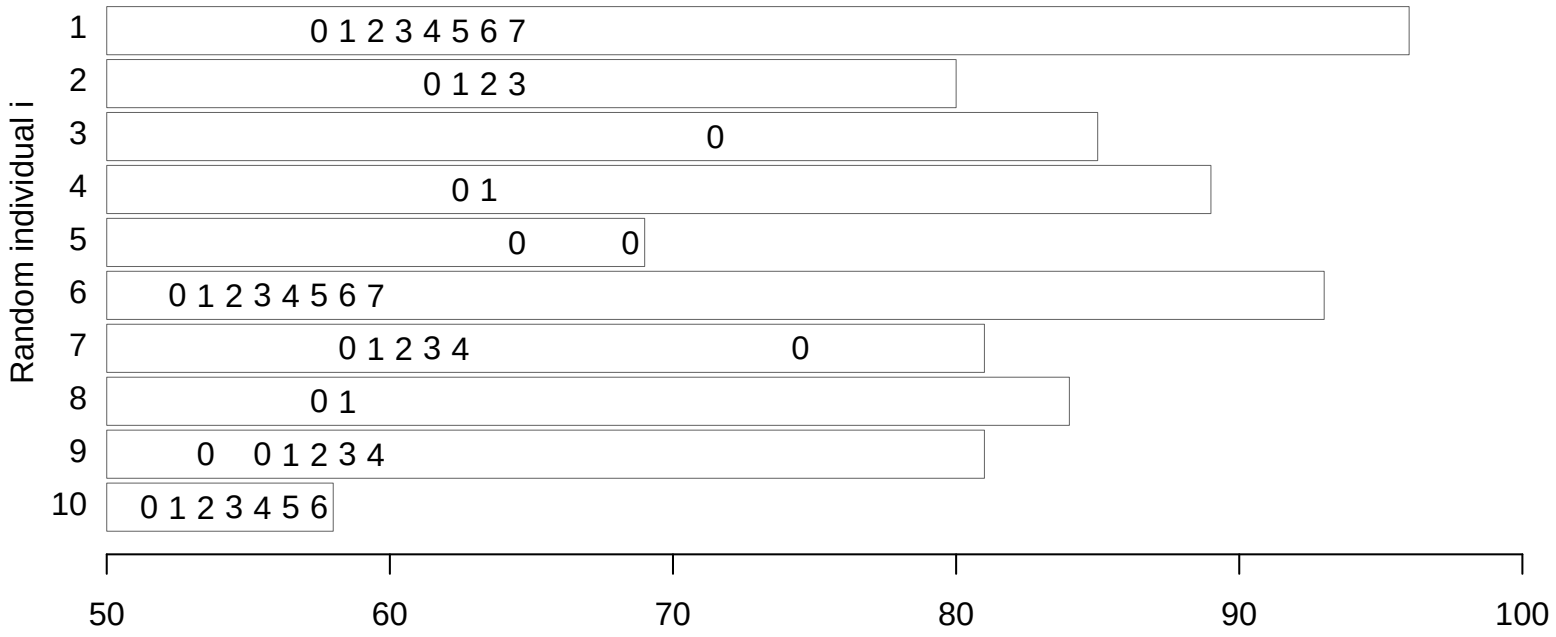
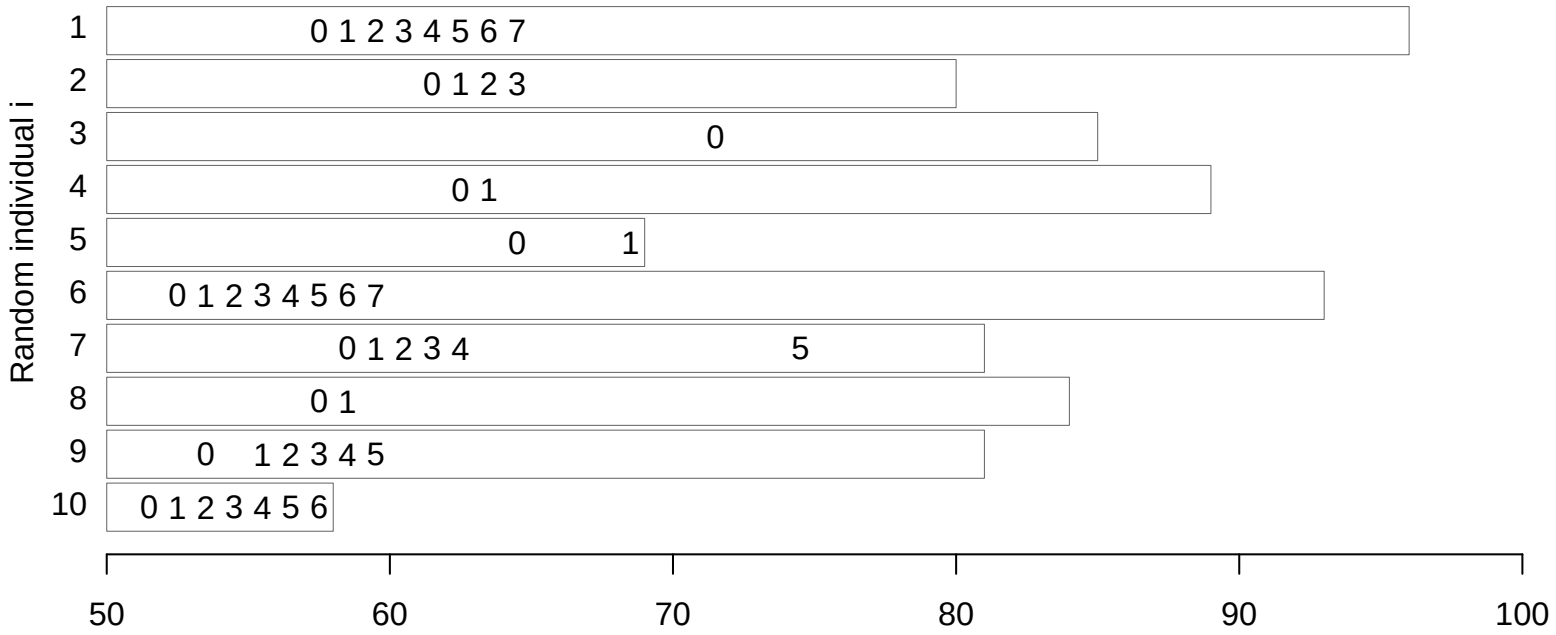


Clock measures



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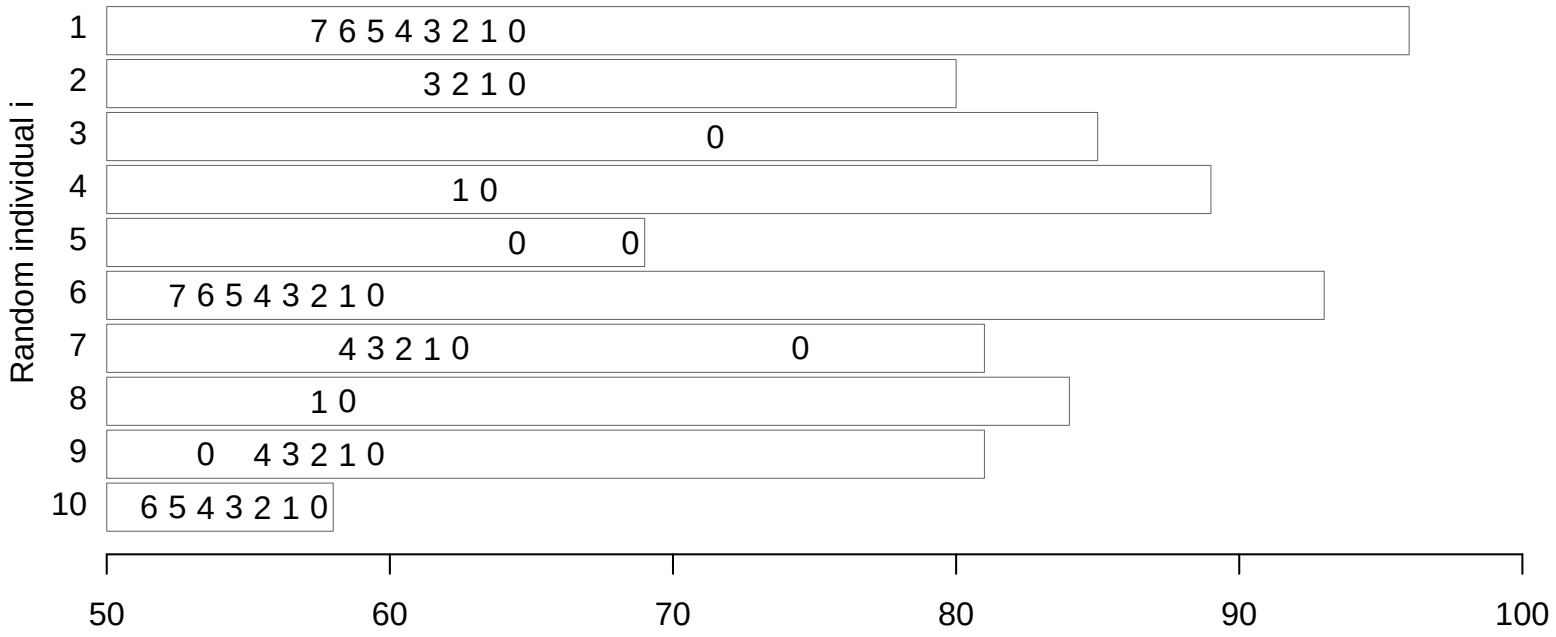
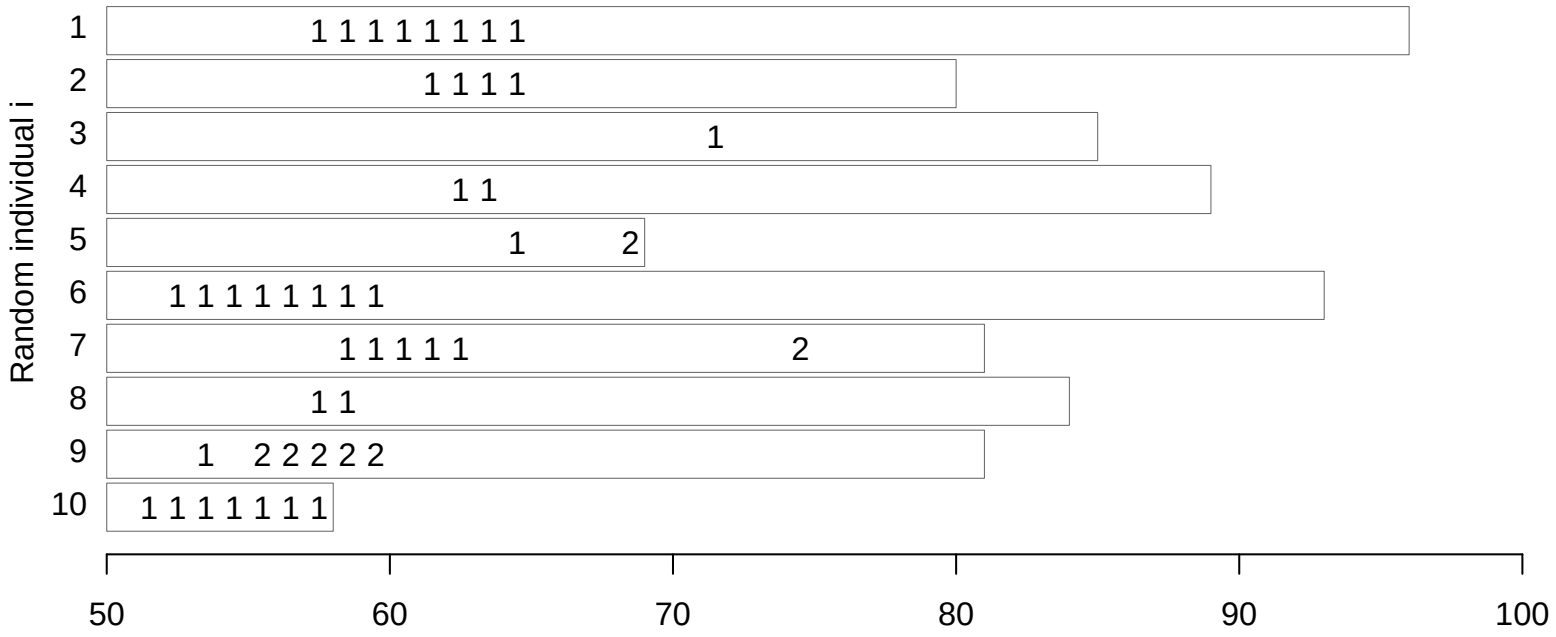
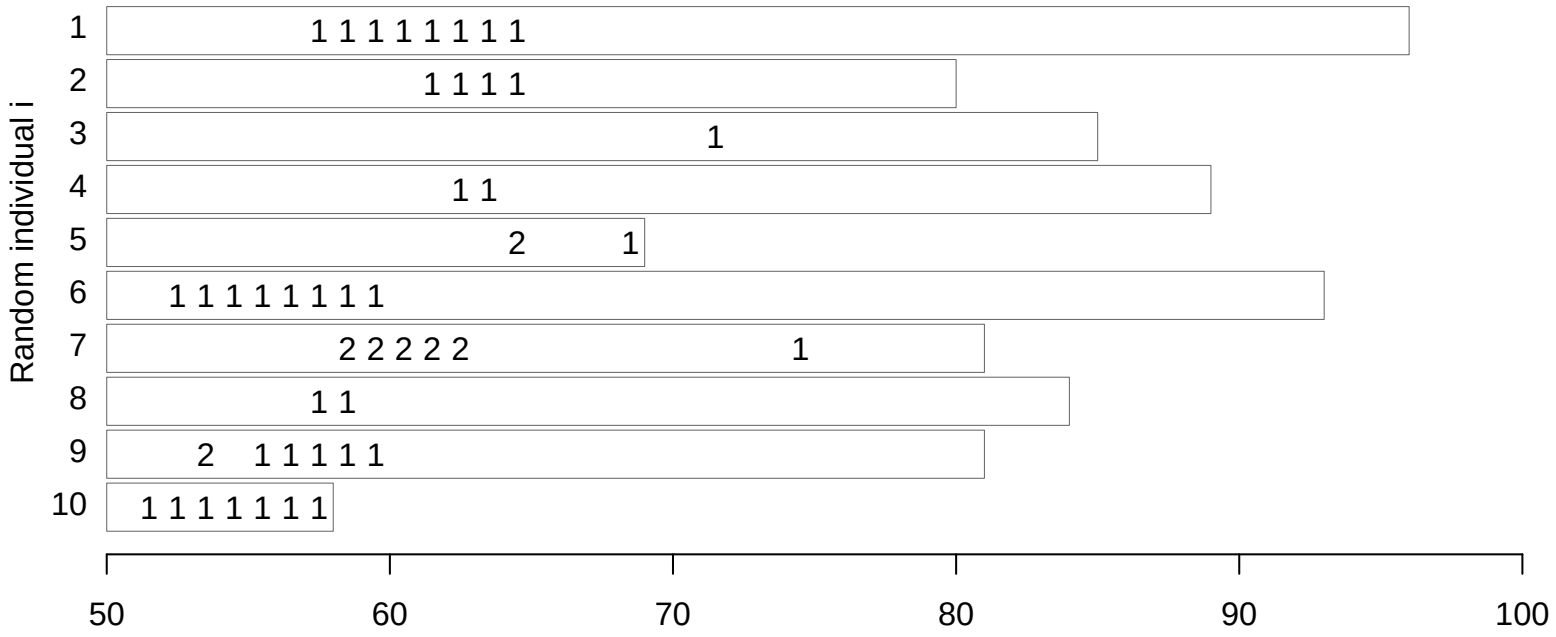


Clock measures



Clock measures



Clock measures

Measures of scaling or total durations in episodes or cumulatively over episodes; Also measures of episode order, or even simply prevalence as a degenerate case.

Values that get averaged *with respect to some structure*.

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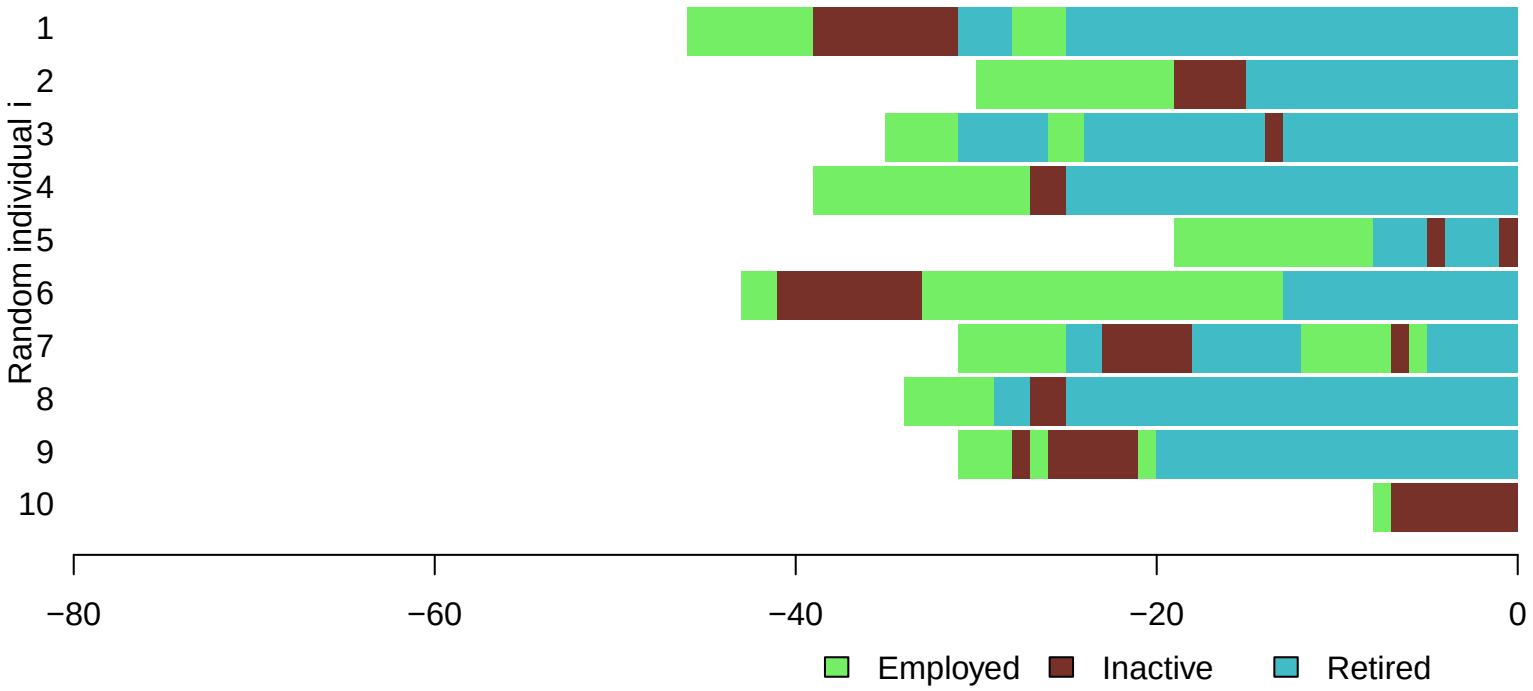
Alignment


Random individual i
1
2
3
4
5
6
7
8
9
10
50
60
70
80
90
100
Employed
Inactive
Retired

Alignment


Random individual i
1
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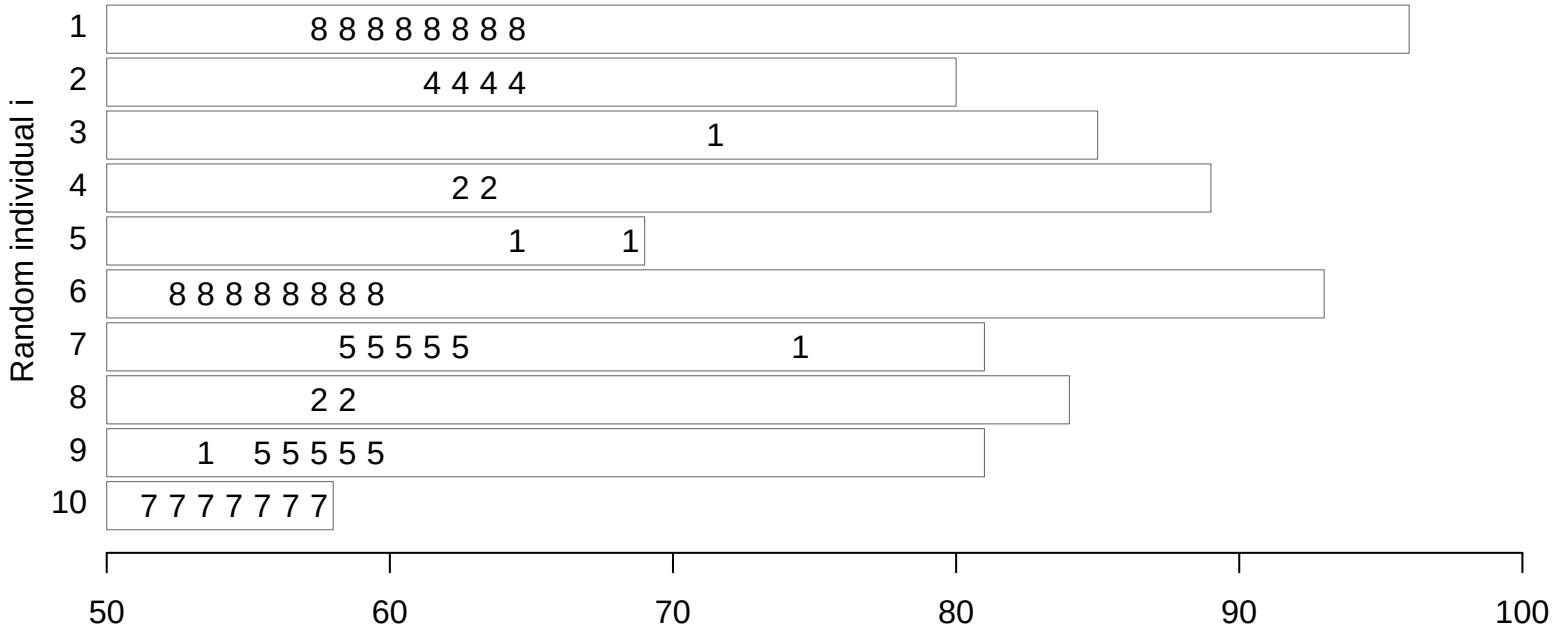
10
−80
−60
−40
−20
0
Employed
Inactive
Retired

Alignment


Random individual i
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1 5 5 5 5 5
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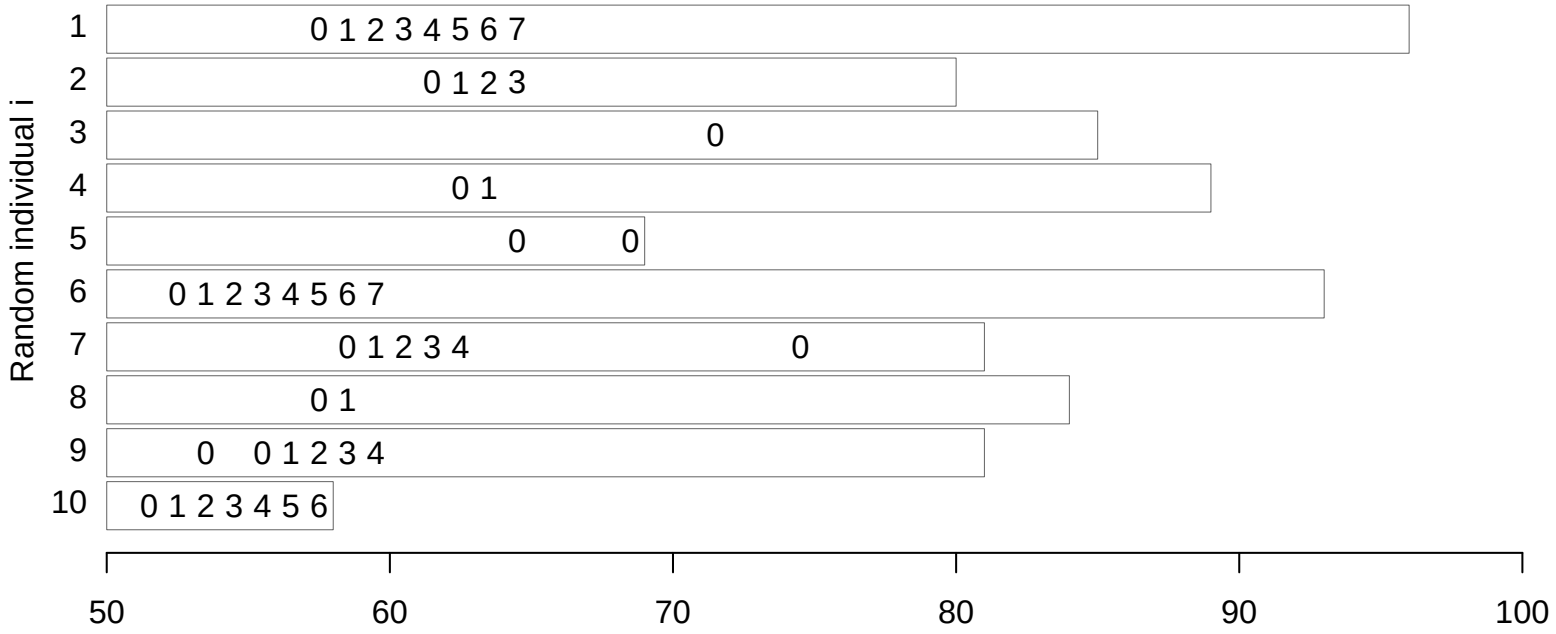
Alignment


Random individual i
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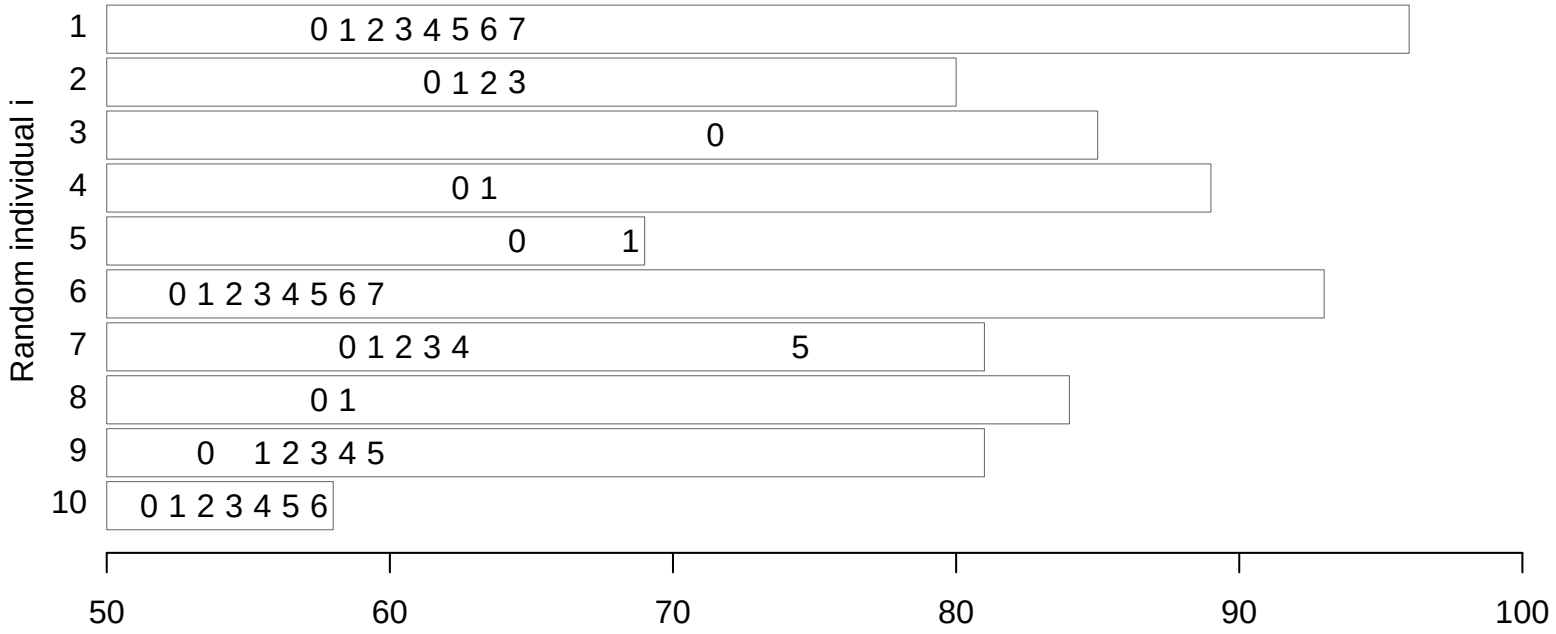
Alignment


Random individual i
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0 1 2 3 4 5 6
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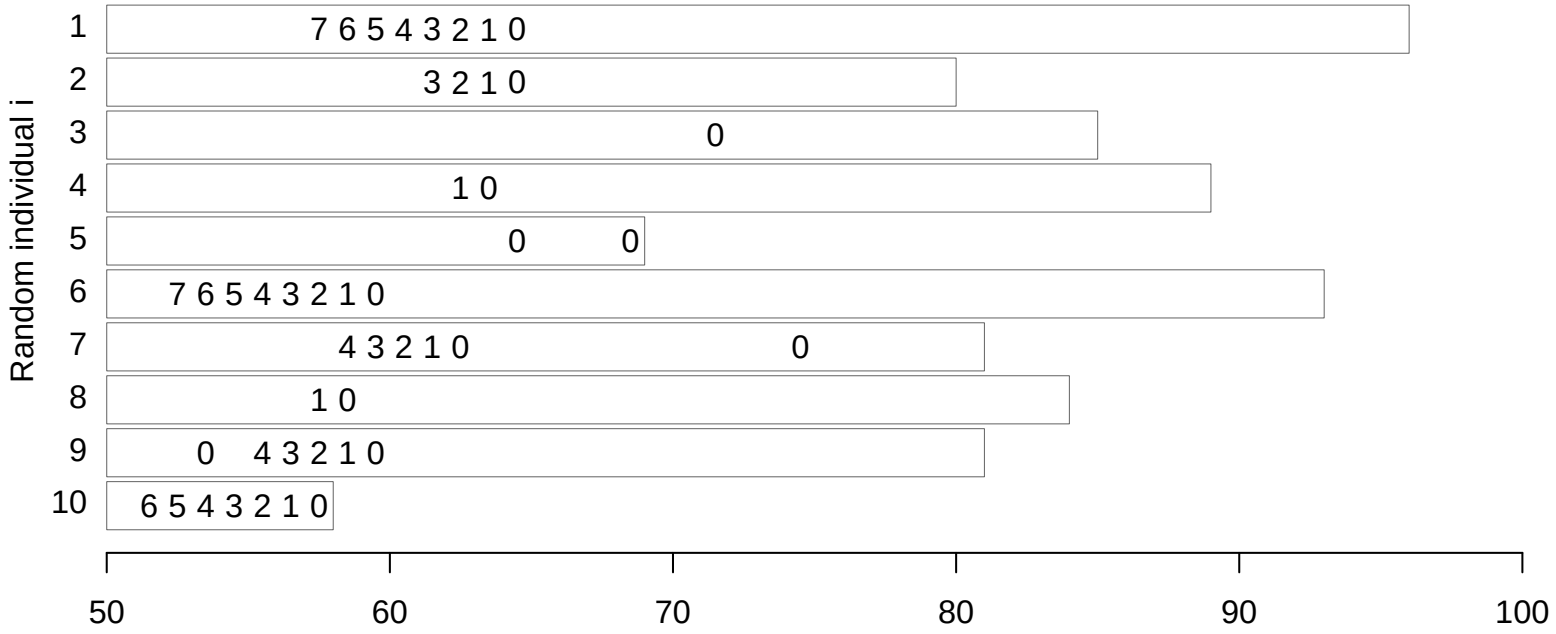
Alignment


Random individual i
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0 0
7 6 5 4 3 2 1 0
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0 4 3 2 1 0
6 5 4 3 2 1 0
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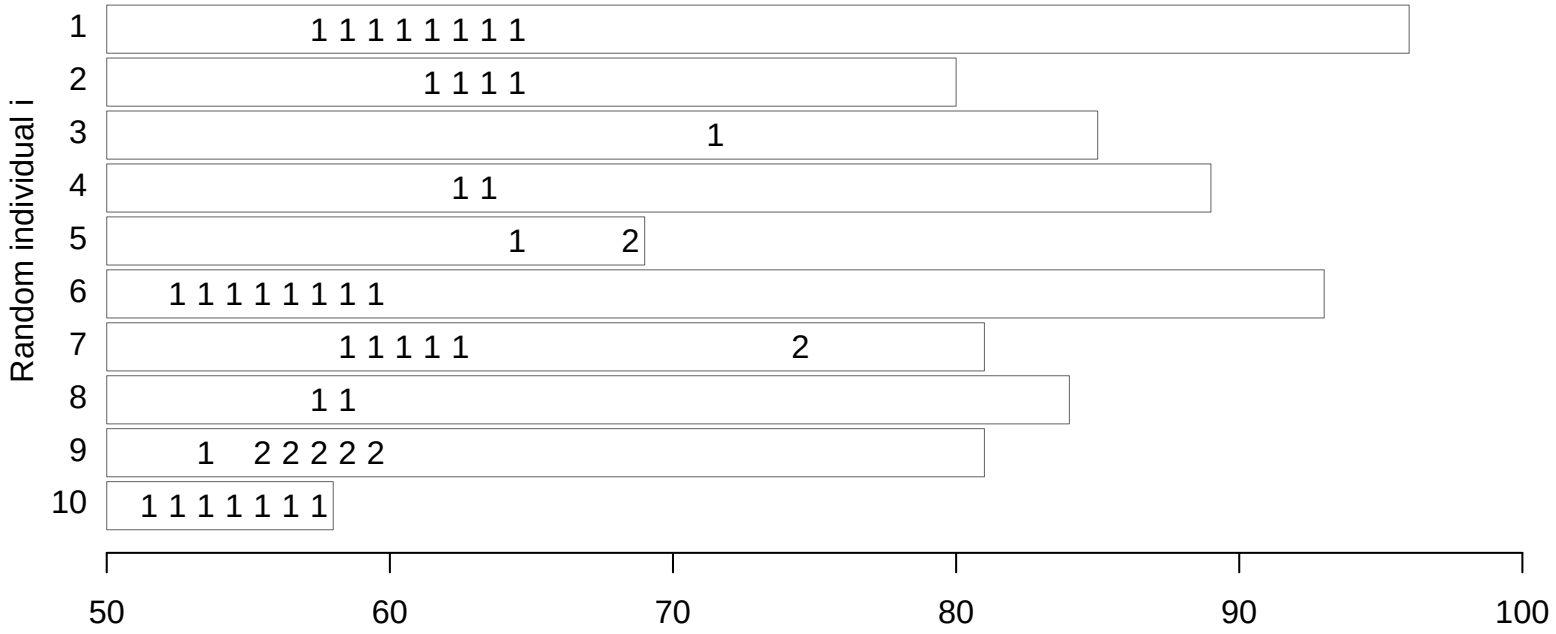
Random individual i
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1 2
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1 1 1 1 1 2
1 1
1 2 2 2 2 2
1 1 1 1 1 1 1
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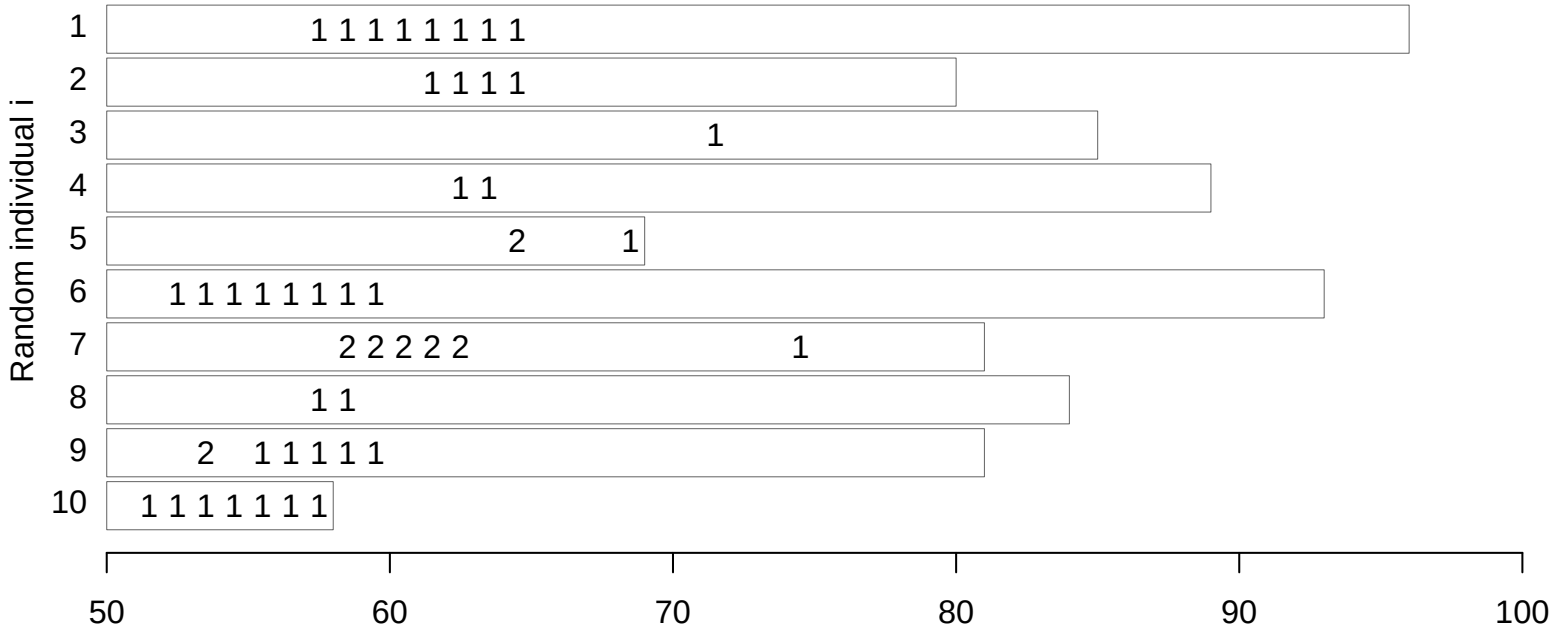
Alignment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2 1
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2 2 2 2 2 1
1 1
2 1 1 1 1 1
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