**Appendix E2** Mean node-age estimates and 95% CI width for all analyses. The time units for each data set correspond to those in Table 2. *PC* stands for the partition assignment selected in ClockstaR. *PRi* stands for random partition assignment, where subscript *i* is the number of the replicate. The rows are ordered by the estimated marginal likelihood, as shown in Supplementary Table S2. The simulation replicates are indicated with ‘R*j*’, where *j* stands for the replicate number.

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| **Number of clock partitions for simulations with true *k*=1 (R1)** | **Node-age estimates** | | | | | | | | | | | |
| ***PC* Mean** | ***PC*95% CI width** | ***PR1* Mean** | ***PR1* 95% CI width** | ***PR2* Mean** | ***PR2* HPD** | ***PR3* Mean** | ***PR3* 95% CI width** | ***PR4* Mean** | ***PR4* 95% CI width** | ***PR5* Mean** | ***PR5* 95% CI width** |
| *k*=1 | 10.21 | 1.31 | - | - | - | - | - | - | - | - | - | - |
| *k*=5 | 11.13 | 1.98 | 17.70 | 1.98 | 14.36 | 4.17 | 23.26 | 10.54 | 8.49 | 0.84 | 13.39 | 3.13 |
| *k*=3 | 12.05 | 1.41 | 8.64 | 0.24 | 19.78 | 4.68 | 18.09 | 5.79 | 14.05 | 2.25 | 15.13 | 1.63 |
| *k*=4 | 11.27 | 1.42 | 8.83 | 0.48 | 20.39 | 7.80 | 20.85 | 3.14 | 22.42 | 7.00 | 10.15 | 1.02 |
| *k*=2 | 9.81 | 1.32 | 9.42 | 0.75 | 14.57 | 0.89 | 15.68 | 0.80 | 13.44 | 1.36 | 13.91 | 2.94 |

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| **Number of clock partitions for simulations with true *k*=1 (R2)** | **Node-age estimates** | | | | | | | | | | | |
| ***PC* Mean** | ***PC*95% CI width** | ***PR1* Mean** | ***PR1* 95% CI width** | ***PR2* Mean** | ***PR2* HPD** | ***PR3* Mean** | ***PR3* 95% CI width** | ***PR4* Mean** | ***PR4* 95% CI width** | ***PR5* Mean** | ***PR5* 95% CI width** |
| *k*=1 | 10.04 | 1.49 | - | - | - | - | - | - | - | - | - | - |
| *k*=5 | 12.59 | 1.36 | 12.22 | 1.45 | 14.41 | 7.25 | 13.14 | 1.29 | 13.77 | 2.03 | 14.58 | 2.60 |
| *k*=3 | 12.8 | 2.68 | 12.13 | 1.55 | 12.22 | 3.39 | 12.09 | 5.4 | 12.50 | 6.15 | 12.67 | 7.02 |
| *k*=4 | 12.8 | 3.05 | 13.55 | 2.87 | 15.54 | 2.03 | 12.06 | 1.4 | 12.49 | 2.19 | 13.20 | 2.72 |
| *k*=2 | 12.59 | 1.95 | 12.89 | 1.44 | 15.88 | 7.31 | 19.68 | 8.17 | 19.71 | 8.83 | 20.14 | 9.28 |

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| **Number of clock partitions for simulations with true *k*=1 (R3)** | **Node-age estimates** | | | | | | | | | | | |
| ***PC* Mean** | ***PC*95% CI width** | ***PR1* Mean** | ***PR1* 95% CI width** | ***PR2* Mean** | ***PR2* HPD** | ***PR3* Mean** | ***PR3* 95% CI width** | ***PR4* Mean** | ***PR4* 95% CI width** | ***PR5* Mean** | ***PR5* 95% CI width** |
| *k*=1 | 10.15 | 0.39 | - | - | - | - | - | - | - | - | - | - |
| *k*=4 | 10.66 | 0.72 | 10.43 | 0.61 | 10.66 | 2.43 | 12.88 | 1.44 | 12.80 | 0.69 | 12.24 | 0.06 |
| *k*=5 | 11.64 | 2.84 | 11.66 | 1.26 | 12.22 | 1.81 | 12.21 | 2.7 | 11.84 | 1.75 | 11.39 | 0.84 |
| *k*=2 | 12.71 | 1.13 | 12.92 | 1.11 | 9.07 | 1.24 | 13.35 | 3.56 | 13.00 | 3.10 | 12.81 | 2.15 |
| *k*=3 | 12.64 | 1.99 | 11.71 | 4.35 | 9.52 | 2.5 | 10.23 | 1.69 | 9.52 | 1.29 | 8.75 | 1.16 |

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| **Number of clock partitions for simulations with true *k*=2 (R1)** | **Node-age estimates** | | | | | | | | | | | |
| ***PC* Mean** | ***PC*95% CI width** | ***PR1* Mean** | ***PR1* 95% CI width** | ***PR2* Mean** | ***PR2* 95% CI width** | ***PR3* Mean** | ***PR3* 95% CI width** | ***PR4* Mean** | ***PR4* 95% CI width** | ***PR5* Mean** | ***PR5* 95% CI width** |
| *k*=2 | 10.05 | 1.25 | 11.65 | 1.64 | 8.29 | 2.58 | 6.69 | 2.28 | 15.84 | 1.95 | 2.29 | 2.07 |
| *k*=3 | 11.36 | 1.86 | 7.69 | 2.10 | 12.45 | 0.75 | 6.03 | 3.97 | 6.59 | 2.51 | 2.41 | 1.89 |
| *k*=4 | 11.72 | 1.43 | 11.92 | 1.03 | 7.83 | 0.70 | 13.65 | 2.72 | 4.61 | 2.73 | 3.44 | 2.83 |
| *k*=5 | 9.81 | 1.65 | 7.24 | 1.46 | 12.37 | 1.21 | 4.08 | 1.70 | 2.52 | 2.64 | 2.13 | 2.28 |
| *k*=1 | 9.59 | 1.49 | - | - | - | - | - | - | - | - | - | - |

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| **Number of clock partitions for simulations with true *k*=2 (R2)** | **Node-age estimates** | | | | | | | | | | | |
| ***PC* Mean** | ***PC*95% CI width** | ***PR1* Mean** | ***PR1* 95% CI width** | ***PR2* Mean** | ***PR2* 95% CI width** | ***PR3* Mean** | ***PR3* 95% CI width** | ***PR4* Mean** | ***PR4* 95% CI width** | ***PR5* Mean** | ***PR5* 95% CI width** |
| *k*=2 | 10.73 | 0.93 | 12.18 | 0.81 | 12.24 | 3.27 | 11.79 | 1.54 | 12.6 | 1.86 | 12.61 | 1.96 |
| *k*=4 | 10.84 | 2.86 | 12.44 | 2.37 | 12.37 | 0.81 | 12.62 | 1.48 | 13.34 | 2.2 | 14.016 | 3.06 |
| *k*=5 | 10.96 | 0.73 | 9.63 | 1.54 | 12.26 | 1.75 | 12.08 | 2.9 | 12.93 | 3.18 | 13.24 | 3.53 |
| *k*=3 | 11.67 | 0.95 | 13.01 | 0.65 | 13.56 | 3.69 | 15.99 | 9.25 | 16.33 | 9.48 | 16.39 | 10.12 |
| *k*=1 | 9.22 | 1.42 | - | - | - | - | - | - | - | - | - | - |

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| **Number of clock partitions for simulations with true *k*=2 (R3)** | **Node-age estimates** | | | | | | | | | | | |
| ***PC* Mean** | ***PC*95% CI width** | ***PR1* Mean** | ***PR1* 95% CI width** | ***PR2* Mean** | ***PR2* 95% CI width** | ***PR3* Mean** | ***PR3* 95% CI width** | ***PR4* Mean** | ***PR4* 95% CI width** | ***PR5* Mean** | ***PR5* 95% CI width** |
| *k*=2 | 10.35 | 0.04 | 10.42 | 0.08 | 12.47 | 0.1 | 10.85 | 0.12 | 12.27 | 0.14 | 9.6 | 0.19 |
| *k*=3 | 10.28 | 0.16 | 13.11 | 0.18 | 12.24 | 0.11 | 9.31 | 0.09 | 12.47 | 0.15 | 10.89 | 0.19 |
| *k*=4 | 10.49 | 0.13 | 13.09 | 0.2 | 12.67 | 0.17 | 10.1 | 0.15 | 12.41 | 0.13 | 12.09 | 0.05 |
| *k*=1 | 9.42 | 0.1 | - | - | - | - | - | - | - | - | - | - |
| *k*=5 | 10.58 | 0.19 | 13.03 | 0.2 | 13.12 | 0.24 | 10.25 | 0.2 | 12.87 | 0.14 | 12.41 | 0.06 |

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| **Number of clock partitions for simulations with true *k*=3 (R1)** | **Node-age estimates** | | | | | | | | | | | |
| ***PC* Mean** | ***PC*95% CI width** | ***PR1* Mean** | ***PR1* 95% CI width** | ***PR2* Mean** | ***PR2* 95% CI width** | ***PR3* Mean** | ***PR3* 95% CI width** | ***PR4* Mean** | ***PR4* 95% CI width** | ***PR5* Mean** | ***PR5* 95% CI width** |
| *k*=3 | 10.18 | 1.52 | 4.25 | 1.20 | 12.88 | 1.42 | 8.45 | 1.26 | 13.99 | 1.38 | 13.91 | 2.08 |
| *k*=4 | 9.29 | 1.77 | 14.29 | 1.18 | 6.81 | 1.77 | 12.79 | 1.64 | 8.02 | 2.83 | 12.85 | 1.81 |
| *k*=5 | 11.04 | 1.68 | 7.90 | 1.12 | 8.47 | 3.94 | 13.41 | 1.40 | 11.45 | 1.73 | 13.11 | 1.54 |
| *k*=2 | 10.71 | 1.35 | 5.32 | 1.13 | 13.79 | 2.24 | 9.96 | 2.25 | 12.78 | 1.22 | 12.95 | 3.21 |
| *k*=1 | 8.36 | 1.22 | - | - | - | - | - | - | - | - | - | - |

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| **Number of clock partitions for simulations with true *k*=3 (R2)** | **Node-age estimates** | | | | | | | | | | | |
| ***PC* Mean** | ***PC*95% CI width** | ***PR1* Mean** | ***PR1* 95% CI width** | ***PR2* Mean** | ***PR2* 95% CI width** | ***PR3* Mean** | ***PR3* 95% CI width** | ***PR4* Mean** | ***PR4* 95% CI width** | ***PR5* Mean** | ***PR5* 95% CI width** |
| *k*=3 | 11.23 | 1.5 | 9.94 | 0.66 | 11.77 | 4.44 | 14.79 | 5.94 | 13.81 | 5.20 | 13.44 | 4.28 |
| *k*=4 | 11.69 | 1.63 | 12.2 | 0.35 | 13.69 | 3.96 | 11.18 | 3.36 | 10.427 | 2.78 | 10.32 | 2.73 |
| *k*=5 | 9.29 | 2.24 | 9.27 | 3.56 | 9.24 | 1.94 | 13.19 | 2.76 | 13.10 | 1.82 | 12.83 | 1.07 |
| *k*=2 | 11.78 | 1.74 | 12.83 | 1.66 | 13.1 | 2.89 | 9.44 | 1.21 | 8.96 | 0.57 | 8.70 | 0.40 |
| *k*=1 | 12.76 | 2.13 | - | - | - | - | - | - | - | - | - | - |

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| **Number of clock partitions for simulations with true *k*=3 (R3)** | **Node-age estimates** | | | | | | | | | | | |
| ***PC* Mean** | ***PC*95% CI width** | ***PR1* Mean** | ***PR1* 95% CI width** | ***PR2* Mean** | ***PR2* 95% CI width** | ***PR3* Mean** | ***PR3* 95% CI width** | ***PR4* Mean** | ***PR4* 95% CI width** | ***PR5* Mean** | ***PR5* 95% CI width** |
| *k*=3 | 11.85 | 1.60 | 13.32 | 1.40 | 13.89 | 2.22 | 9.55 | 2.50 | 9.98 | 1.34 | 9.24 | 1.42 |
| *k*=4 | 11.89 | 0.9 | 10.80 | 0.7 | 12.49 | 2.10 | 15.12 | 1.9 | 14.88 | 1.70 | 14.18 | 1.53 |
| *k*=5 | 11.96 | 1.40 | 12.61 | 1.11 | 14.66 | 1.44 | 11.64 | 1.00 | 11.12 | 1.74 | 10.97 | 2.20 |
| *k*=2 | 11.69 | 1.81 | 10.80 | 2.54 | 12.49 | 1.22 | 15.12 | 0.6 | 14.88 | 1.31 | 14.18 | 0.4 |
| *k*=1 | 13.67 | 2.1 | - | - | - | - | - | - | - | - | - | - |

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| **Number of clock partitions for Pinnipeds data set** | **Node-age estimates** | | | | | | | | | | | |
| ***PC* Mean** | ***PC*95% CI width** | ***PR1* Mean** | ***PR1* 95% CI width** | ***PR2* Mean** | ***PR2* 95% CI width** | ***PR3* Mean** | ***PR3* 95% CI width** | ***PR4* Mean** | ***PR4* 95% CI width** | ***PR5* Mean** | ***PR5* 95% CI width** |
| *k*=2 | 21.93 | 3.32 | 26.77 | 13.23 | 27.16 | 16.37 | 24.60 | 17.09 | 18.67 | 10.61 | 20.25 | 4.60 |
| *k*=5 | 24.07 | 4.35 | 22.98 | 8.41 | 19.13 | 7.33 | 13.37 | 7.00 | 28.41 | 10.81 | 26.30 | 4.73 |
| *k*=4 | 21.69 | 6.53 | 21.69 | 6.53 | 29.85 | 13.73 | 28.82 | 6.04 | 24.87 | 7.12 | 20.81 | 4.68 |
| *k*=3 | 25.97 | 4.87 | 29.97 | 4.87 | 22.59 | 4.51 | 23.26 | 7.68 | 15.86 | 5.18 | 18.87 | 4.83 |
| *k*=1 | 20.04 | 2.10 | - | - | - | - | - | - | - | - | - | - |

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| **Number of clock partitions for *Orcinus orca* data set** | **Node-age estimates** | | | | | | | | | | | |
| ***PC* Mean** | ***PC*95% CI width** | ***PR1* Mean** | ***PR1* 95% CI width** | ***PR2* Mean** | ***PR2* 95% CI width** | ***PR3* Mean** | ***PR3* 95% CI width** | ***PR4* Mean** | ***PR4* 95% CI width** | ***PR5* Mean** | ***PR5* 95% CI width** |
| *k*=1 | 0.20 | 0.04 | - | - | - | - | - | - | - | - | - | - |
| *k*=2 | 0.23 | 0.05 | 0.16 | 0.05 | 0.49 | 0.04 | 0.40 | 0.05 | 0.40 | 0.04 | 0.50 | 0.03 |
| *k*=3 | 0.19 | 0.03 | 0.21 | 0.03 | 0.19 | 0.03 | 0.35 | 0.02 | 0.30 | 0.00 | 0.18 | 0.03 |
| *k*=4 | 0.22 | 0.04 | 0.25 | 0.04 | 0.26 | 0.04 | 0.20 | 0.04 | 0.40 | 0.03 | 0.15 | 0.03 |
| *k*=5 | 0.16 | 0.05 | 0.32 | 0.04 | 0.25 | 0.02 | 0.38 | 0.02 | 0.13 | 0.01 | 0.33 | 0.01 |

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| **Number of clock partitions for HPV-16 data set** | **Node-age estimates** | | | | | | | | | | | |
| ***PC* Mean** | ***PC*95% CI width** | ***PR1* Mean** | ***PR1* 95% CI width** | ***PR2* Mean** | ***PR2* 95% CI width** | ***PR3* Mean** | ***PR3* 95% CI width** | ***PR4* Mean** | ***PR4* 95% CI width** | ***PR5* Mean** | ***PR5* 95% CI width** |
| *k*=1 | 2712.91 | 116.08 | - | - | - | - | - | - | - | - | - | - |
| *k*=4 | 2958.59 | 163.59 | 3558.59 | 193.59 | 2243.56 | 195.21 | 3185.97 | 164.39 | 3273.43 | 177.06 | 2396.40 | 155.29 |
| *k*=5 | 2558.54 | 169.73 | 2758.54 | 119.73 | 2492.61 | 42.16 | 1829.17 | 144.93 | 4006.37 | 142.58 | 2537.74 | 132.44 |
| *k*=3 | 2651.52 | 147.72 | 3551.52 | 147.72 | 3842.59 | 90.20 | 4087.56 | 176.52 | 4191.50 | 114.42 | 3252.06 | 133.49 |
| *k*=2 | 2313.16 | 227.05 | 3553.16 | 220.05 | 3258.93 | 180.36 | 4871.09 | 192.64 | 1342.47 | 158.25 | 2334.62 | 93.49 |