SUPPLEMENT

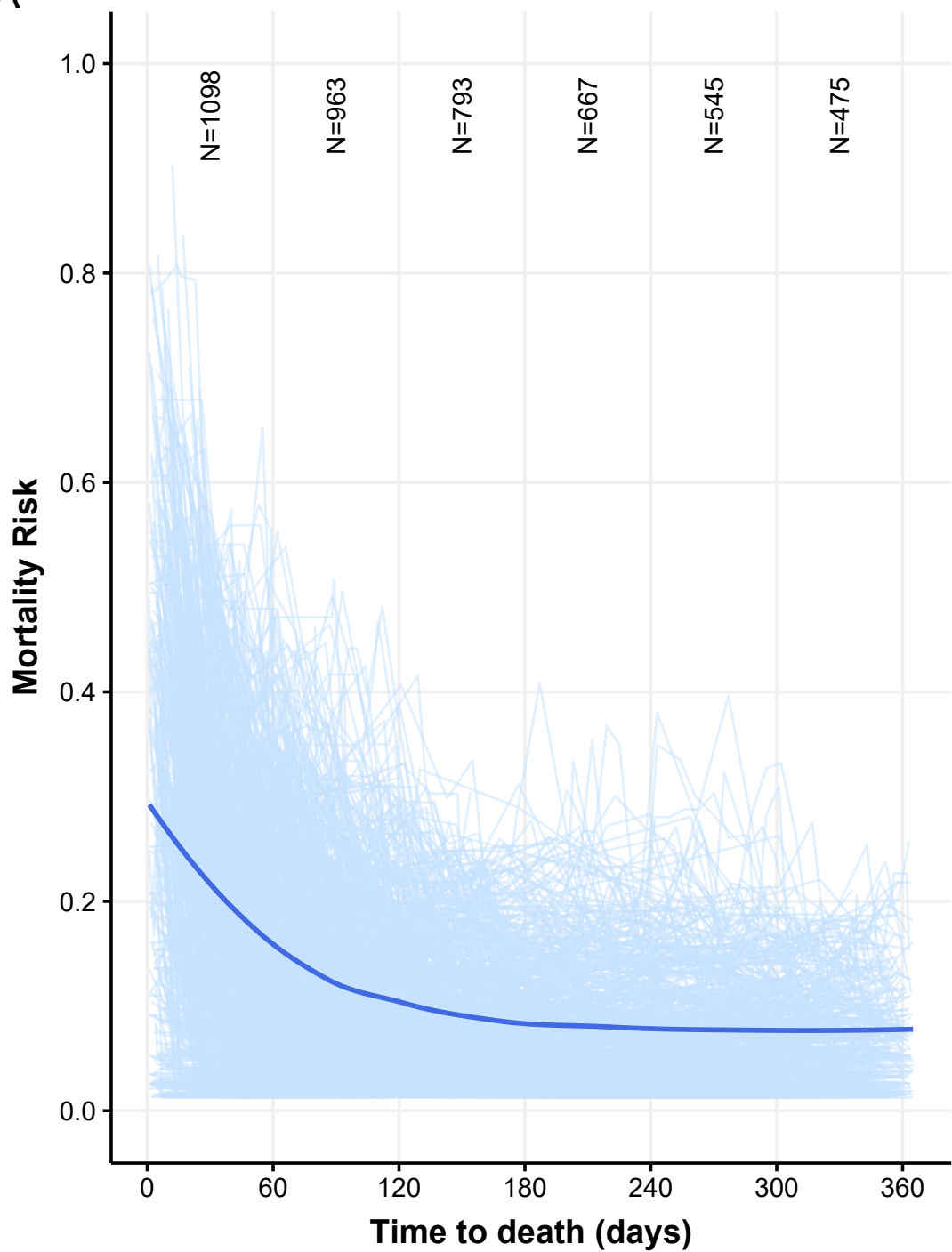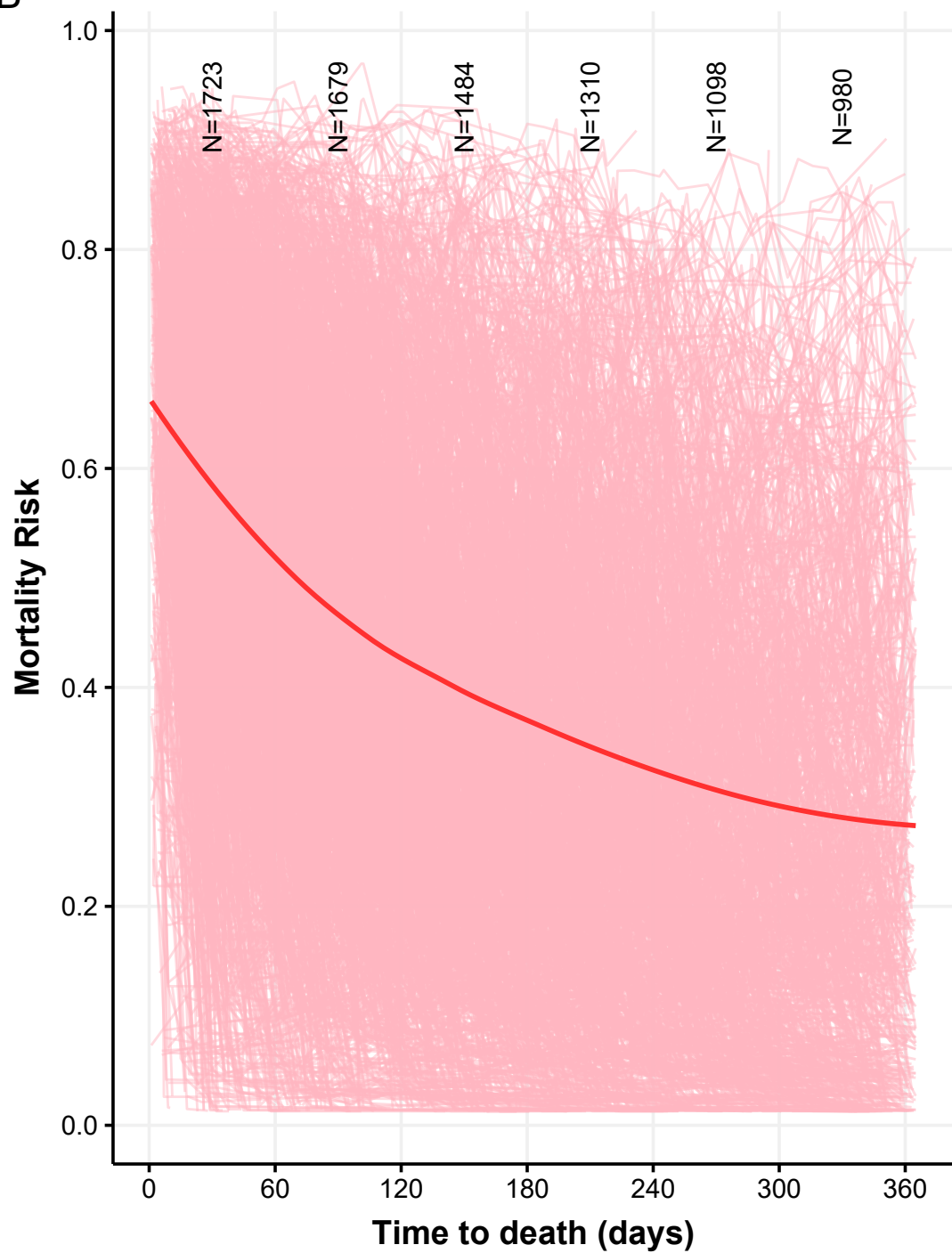**Supplementary Table 1. Characteristics of mortality trajectories from logistic regression***

| Characteristics | OR† | 95% CI | P value |
|---|---|---|---|
| (Intercept) | 0.14 | [0.08-0.23] | <0.001 |
| **Age** | | | |
|   < 75 (Ref) | | | |
|   ≥ 75 | 0.73 | [0.60-0.89] | 0.002 |
| **# of encounters** | 1.22 | [1.19-1.24] | <0.001 |
| Year of death | | | |
|   2018 (Ref) | | | |
|   2019 | 0.87 | [0.73-1.04] | 0.133 |
|   2020 | 1.04 | [0.77-1.39] | 0.800 |
| Gender | | | |
|   Male (Ref) | | | |
|   Female | 0.97 | [0.86-1.11] | 0.689 |
| Race | | | |
|   Black (Ref) | | | |
|   White | 1.20 | [0.95-1.53] | 0.132 |
|   Other | 1.19 | [0.80-1.76] | 0.397 |
|   Missing | 1.17 | [0.68-2.01] | 0.560 |
| **Marital status** | | | |
|   Married (Ref) | | | |
|   Unmarried | 0.83 | [0.69-1.00] | 0.048 |
| Insurance | | | |
|   Commercial insurance (Ref) | | | |
|   Managed Care | 1.00 | [0.70-1.43] | 0.992 |
|   Medicaid | 1.16 | [0.70-1.91] | 0.563 |
|   Medicare | 0.93 | [0.66-1.30] | 0.654 |
|   Missing | 0.58 | [0.30-1.09] | 0.089 |
| **Elixhauser comorbidity score** | | | |
|   0-1 (Ref) | | | |
|   2 | 1.50 | [1.16-1.95] | 0.002 |
|   3+ | 3.69 | [2.92-4.66] | <0.001 |
| **ECOG performance status** | | | |
|   0-1 (Ref) | | | |
|   2+ | 1.31 | [1.04-1.64] | 0.020 |
| **Cancer stage** | | | |
|   Not IV (Ref) | | | |
|   IV | 2.02 | [1.66-2.47] | <0.001 |
| Hospital type | | | |

| | | | |
|---|---|---|---|
| General oncology (Ref) | | | |
| Tertiary academic | 1.16 | [0.94-1.43] | 0.169 |
| Cancer type | | | |
| Thoracic (Ref) | | | |
| Breast | 1.15 | [0.77-1.70] | 0.494 |
| **Gastrointestinal tract** | 1.79 | [1.37-2.33] | < 0.001 |
| Genitourinary | 1.35 | [0.93-1.96] | 0.118 |
| Gynecology | 1.57 | [0.75-3.29] | 0.235 |
| Leukemia/Other Hematologic Malignancy | 1.26 | [0.82-1.96] | 0.293 |
| Lymphoma | 0.72 | [0.50-1.06] | 0.094 |
| Melanoma | 0.84 | [0.55-1.30] | 0.435 |
| **Myeloma** | 0.62 | [0.41-0.92] | 0.019 |
| **Neuro-oncology** | 0.32 | [0.21-0.49] | < 0.001 |
| Other | 0.58 | [0.25-1.33] | 0.197 |
| Missing | 0.90 | [0.66-1.23] | 0.504 |

* Bolded variables have statistically significant ORs.
†OR: "Predictable" trajectory vs. "Unpredictable" trajectory

A

N=48523    N=8386    N=7047    N=9167    N=5907    N=5741

B

N=4662    N=2191    N=2233    N=2439    N=2098    N=2049
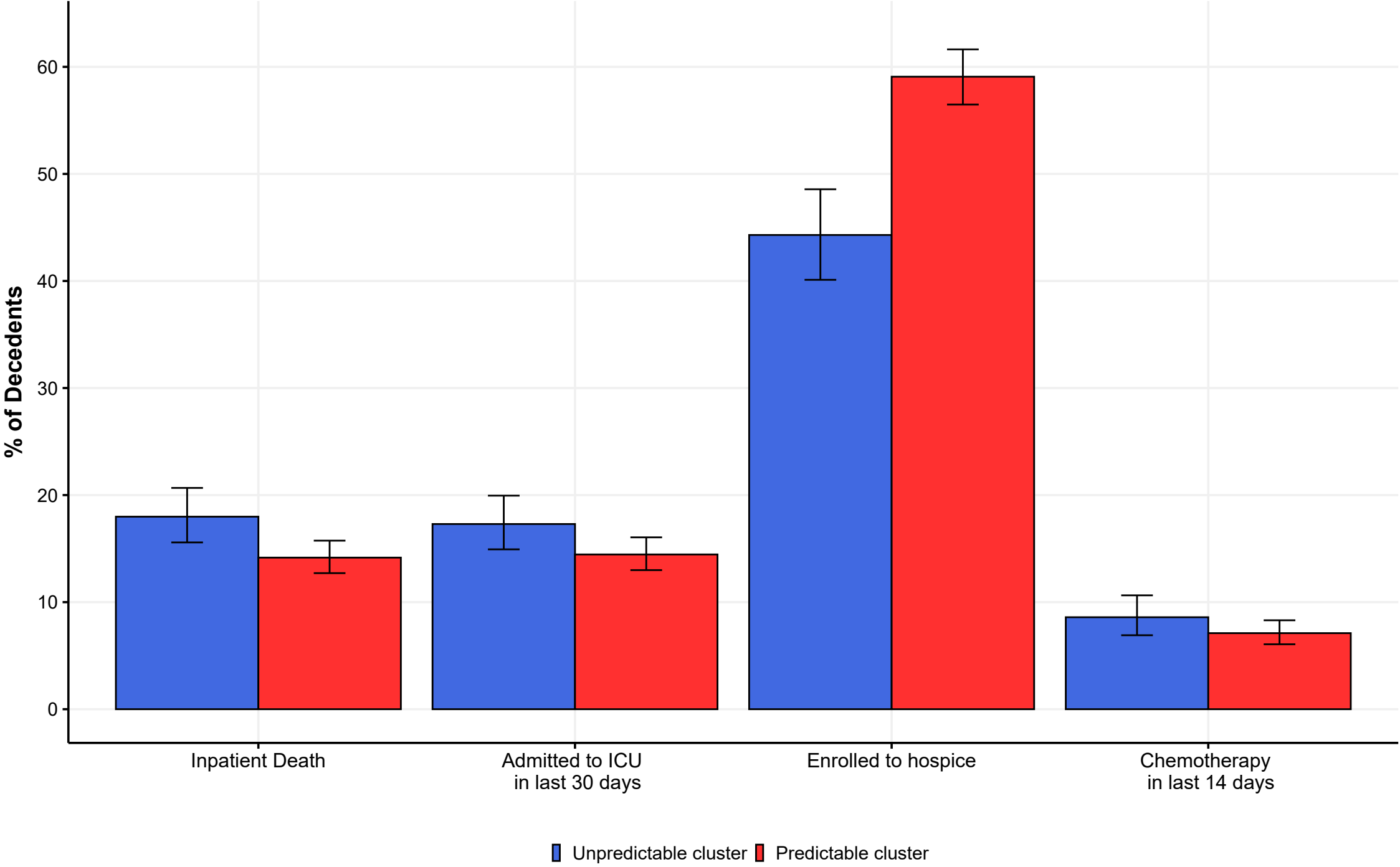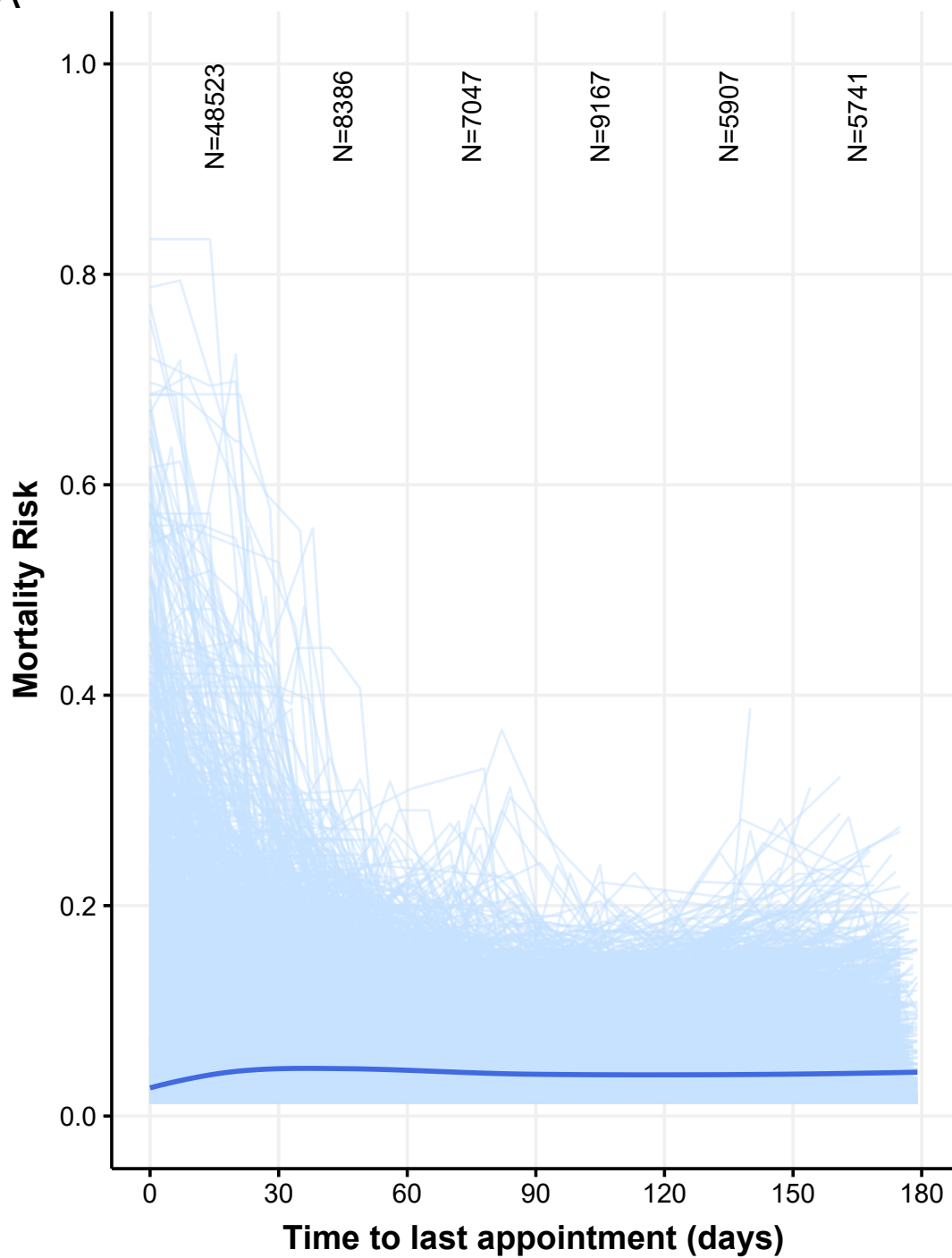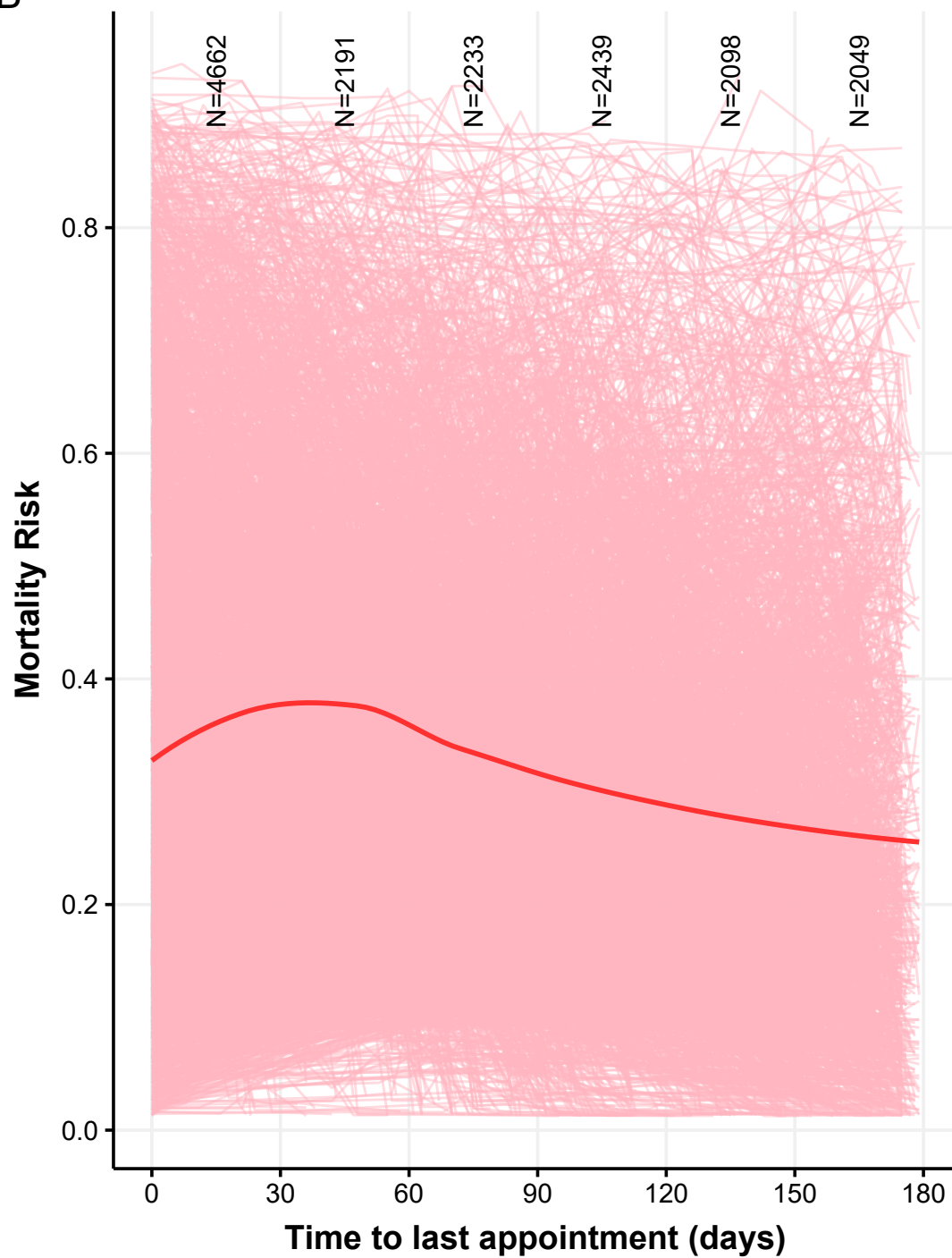
**Supplementary Figure 1. Trajectories and clustering of patients up to one year prior to death.** A, First ("Unpredictable") trajectory derived from EM algorithm using the elements from FPCA. Smooth Estimate of the Mean Function from Local weighted regression (loess) method (blue smoothed line); individual trajectory for all patients in this FPC (blue spaghetti plot). B, Second ("Predictable") trajectory derived from EM algorithm using the elements from FPCA. Smooth Estimate of the Mean Function from Local weighted regression (loess) method (red smoothed line); individual trajectory for all patients in this FPC (red spaghetti plot).

**Supplementary Figure 2. Observed end-of-life outcomes by trajectory.** Observed rates of end-of-life outcomes, split by mortality trajectory (predictable [red] vs. unpredictable [blue]).

**Supplementary Figure 3. Trajectory modelling among non-decedents, split by distinct trajectories (A and B).**