

Path Maps:

Visualization of Trajectories in Large-Scale Temporal Data

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Background

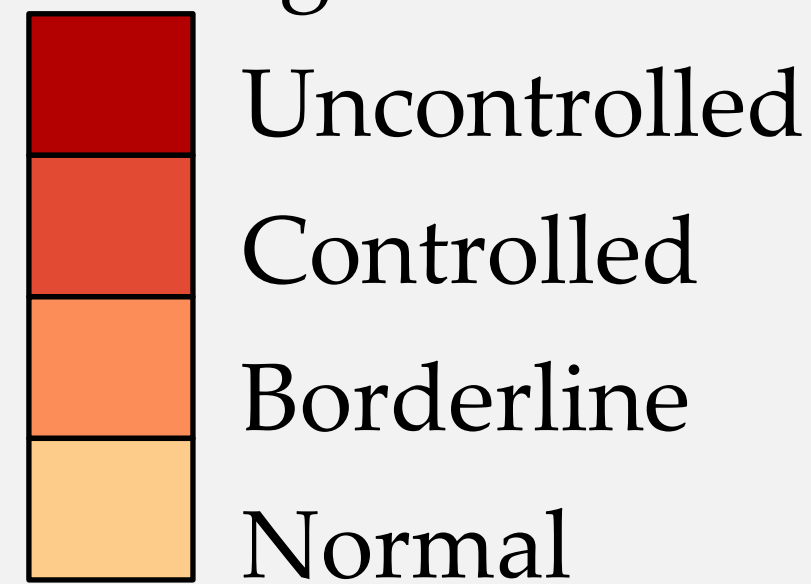
Diabetes mellitus (DM)

- Complex disease
- Different **disease trajectories** can lead to different outcomes

Data

Hemoglobin A1c (HbA1c) levels

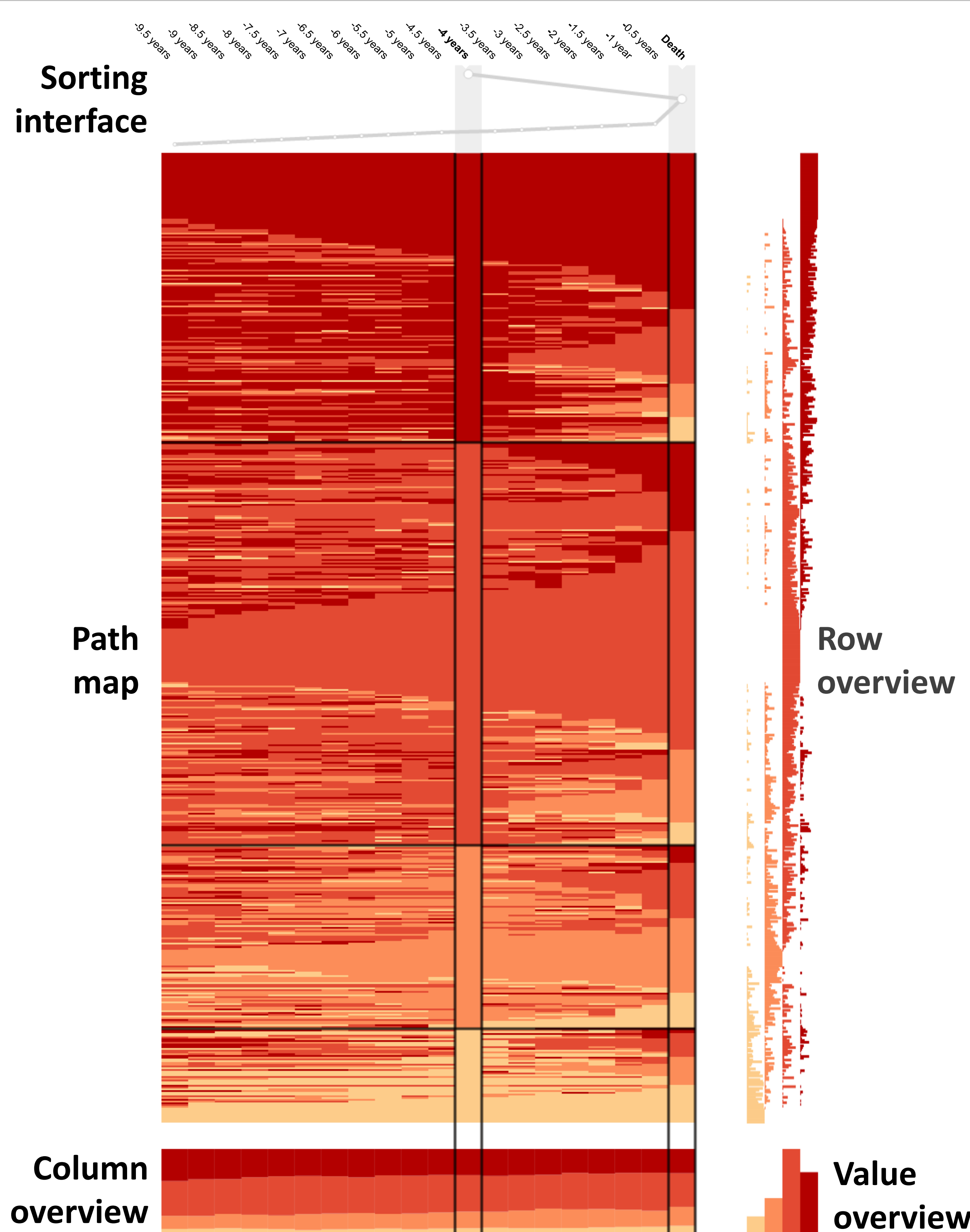
- 546 and 3638 patient cohorts
- Sampled every six months
- Aligned by death at right
- Categorized as



Problem

Understand temporal patterns of HbA1c levels representing different disease trajectories

- Many patients
- Multiple temporal samples
- Missing data
- Standard line plots too confusing

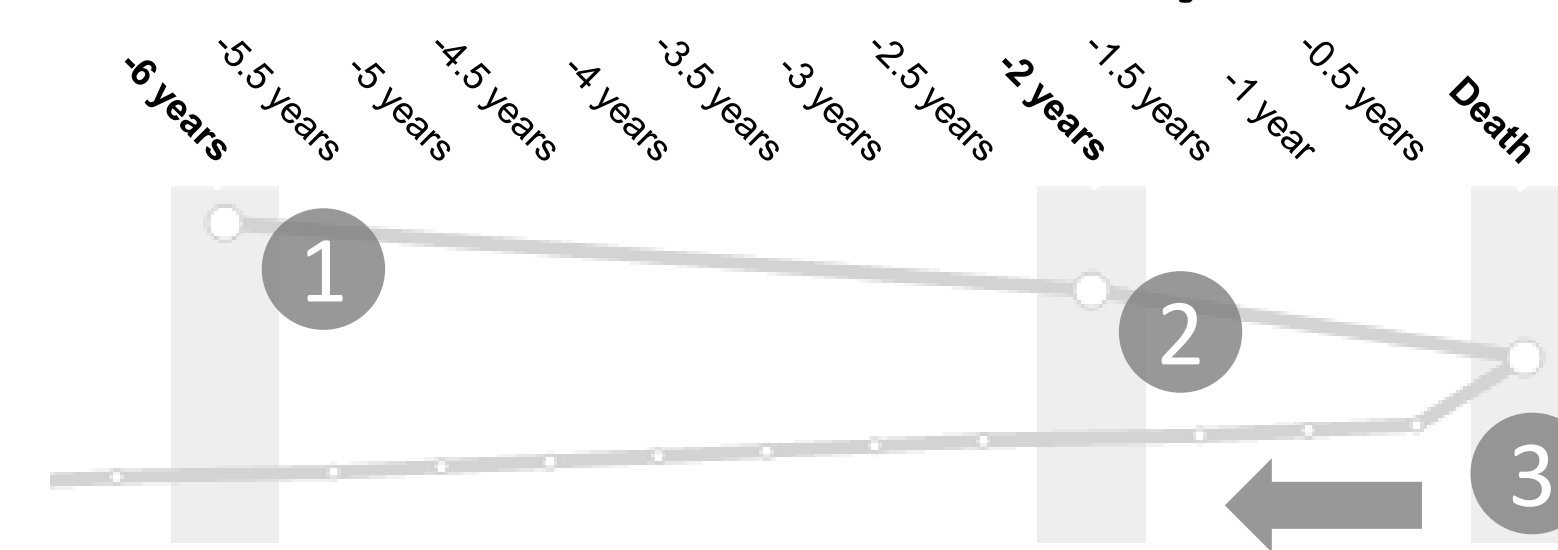


Sorting at -4 years from death, then at death, shows the breakdown of patients that moved from one value to another in that time period, while also showing the intervening variability.

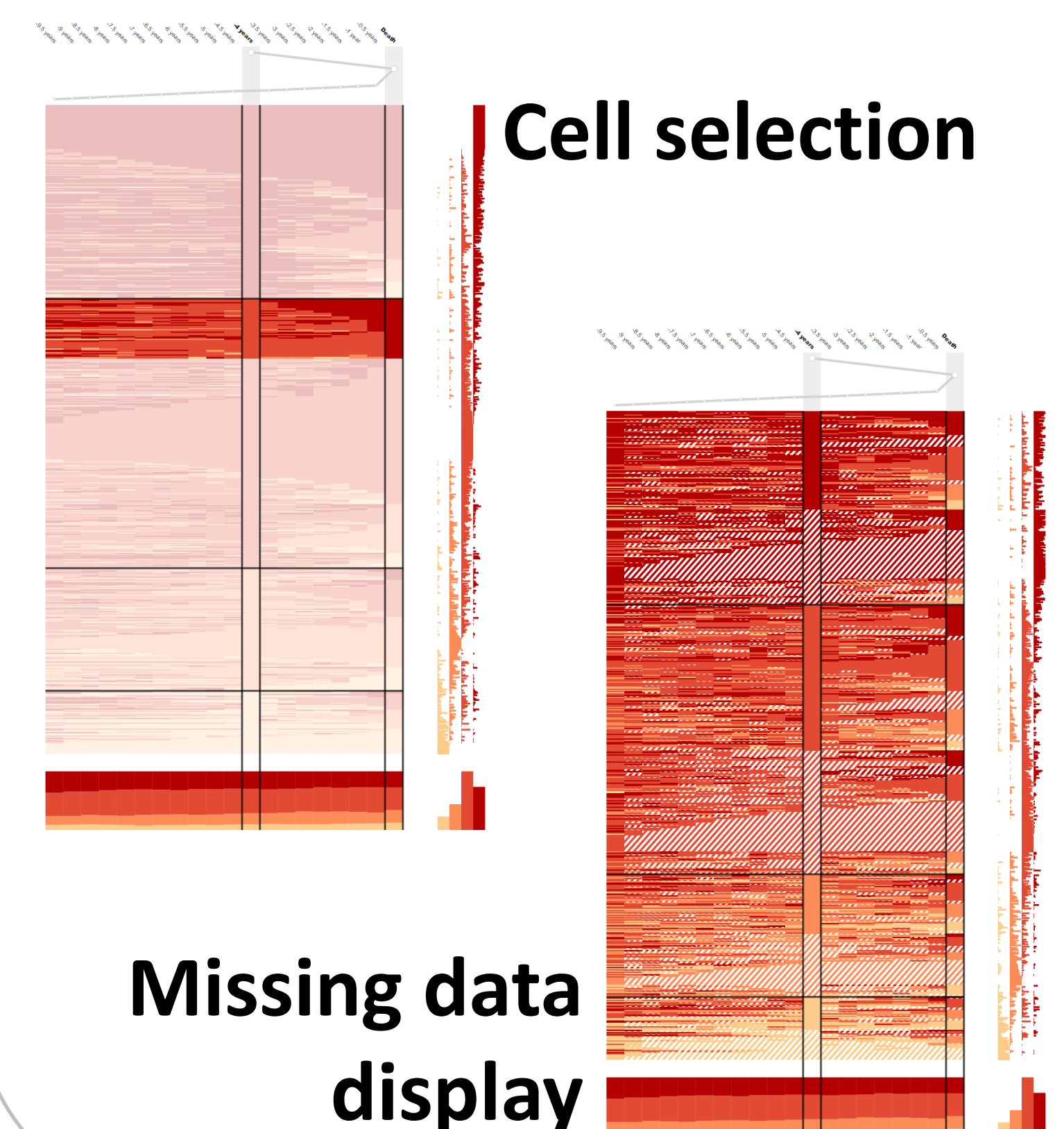
Basic path map

- 546 patients
- Each row a patient
- Sort rows by value at user-selected columns
- Generate cells from contiguous regions per column
- Information-dense display

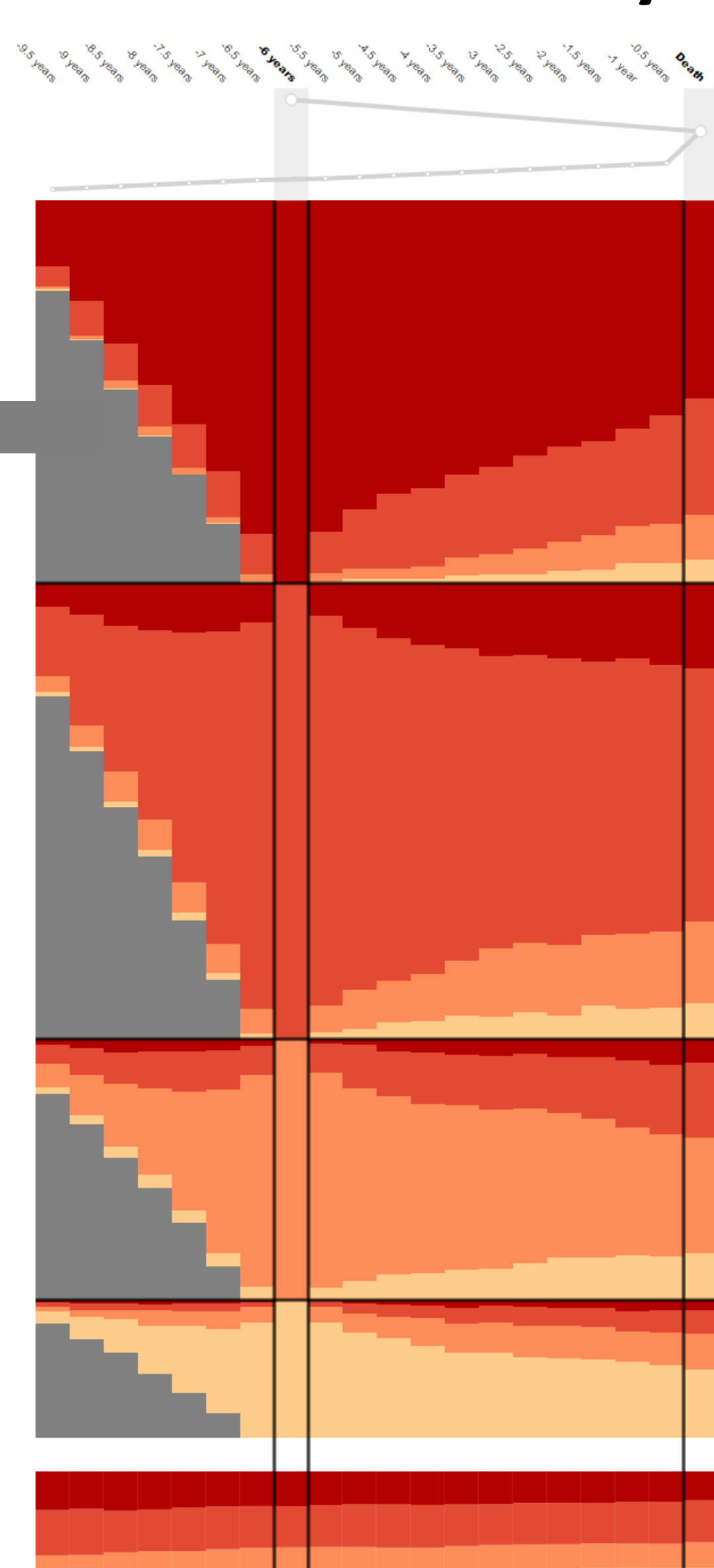
Sort by value at columns in any order



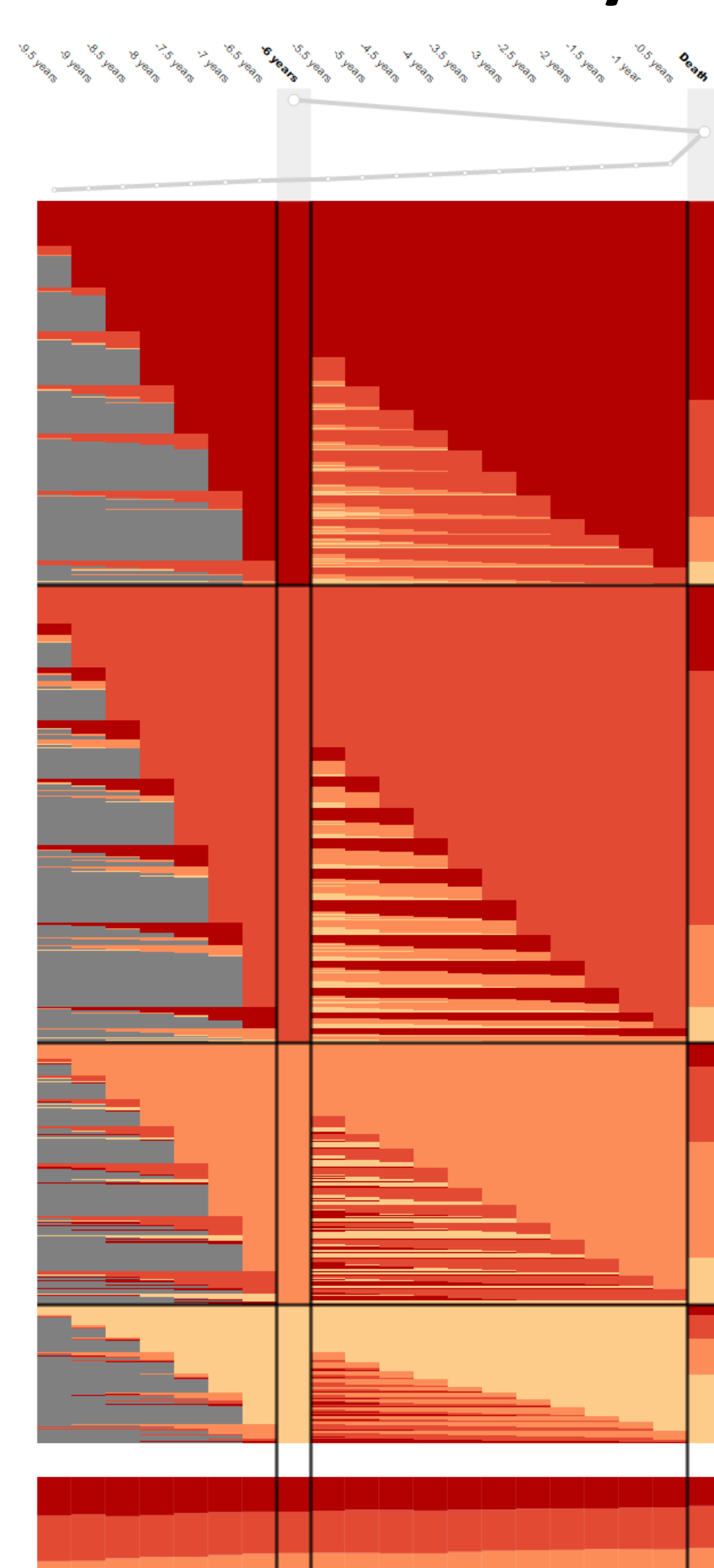
Cell selection



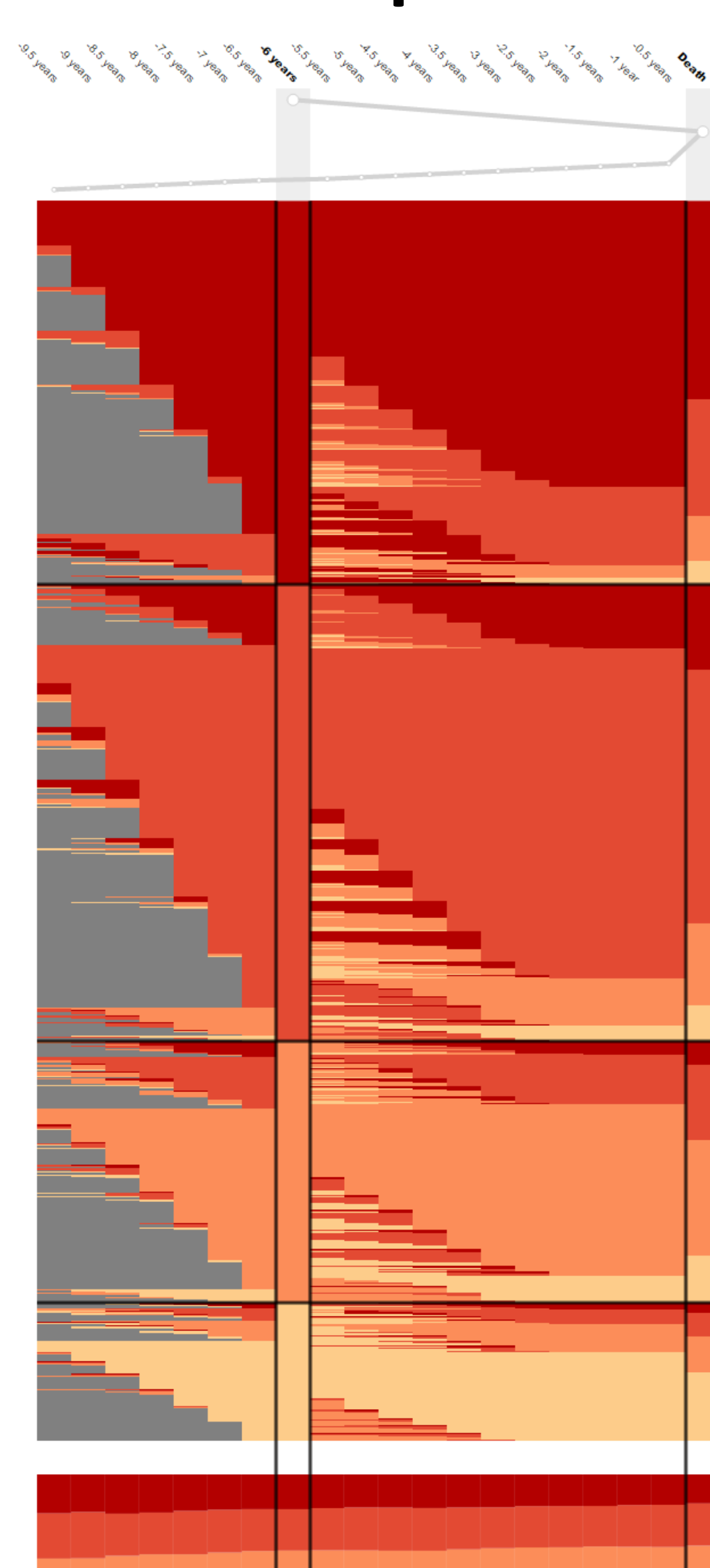
Column summary



Row hierarchy



Row compression



Data aggregation

- 3638 patients
 - Results in over-plotting with one patient per row
- Aggregation map methods
 - **Column summary**
 - Show general trends over time
 - **Row hierarchy**
 - **Row compression**
 - Select groups of rows with certain characteristics