

Orthogonal Projections in Patients dataset

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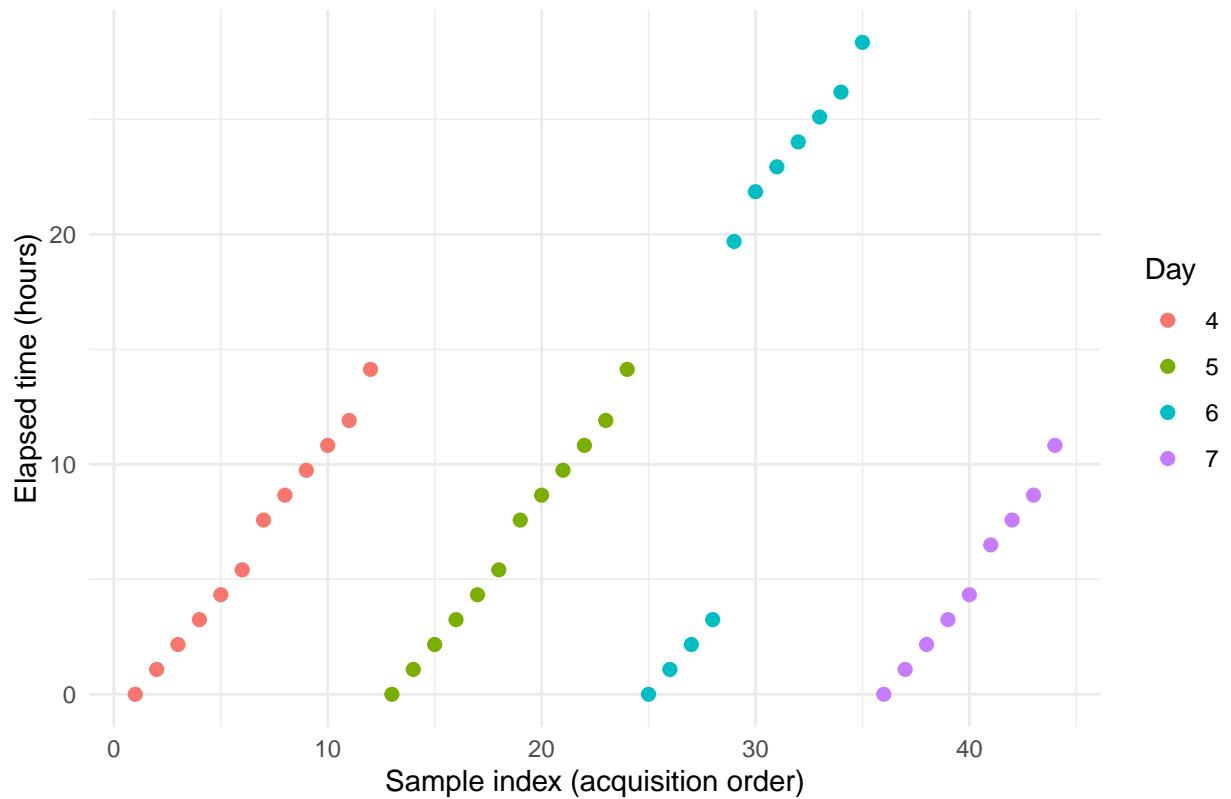
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1 Load and Prepare Data

```
## # A tibble: 6 x 2
##   SampleID      datetime
##   <chr>        <dttm>
## 1 250519_150601.mea 2025-05-19 15:06:01
## 2 250519_161058.mea 2025-05-19 16:10:58
## 3 250519_171554.mea 2025-05-19 17:15:54
## 4 250519_182051.mea 2025-05-19 18:20:51
## 5 250519_192549.mea 2025-05-19 19:25:49
## 6 250519_203045.mea 2025-05-19 20:30:45

## # A tibble: 6 x 4
##   SampleID      datetime       day elapsed_time
##   <chr>        <dttm>     <dbl>      <dbl>
## 1 250519_150601.mea 2025-05-19 15:06:01     4       0
## 2 250519_161058.mea 2025-05-19 16:10:58     4      1.08
## 3 250519_171554.mea 2025-05-19 17:15:54     4      2.16
## 4 250519_182051.mea 2025-05-19 18:20:51     4      3.25
## 5 250519_192549.mea 2025-05-19 19:25:49     4      4.33
## 6 250519_203045.mea 2025-05-19 20:30:45     4      5.41
```

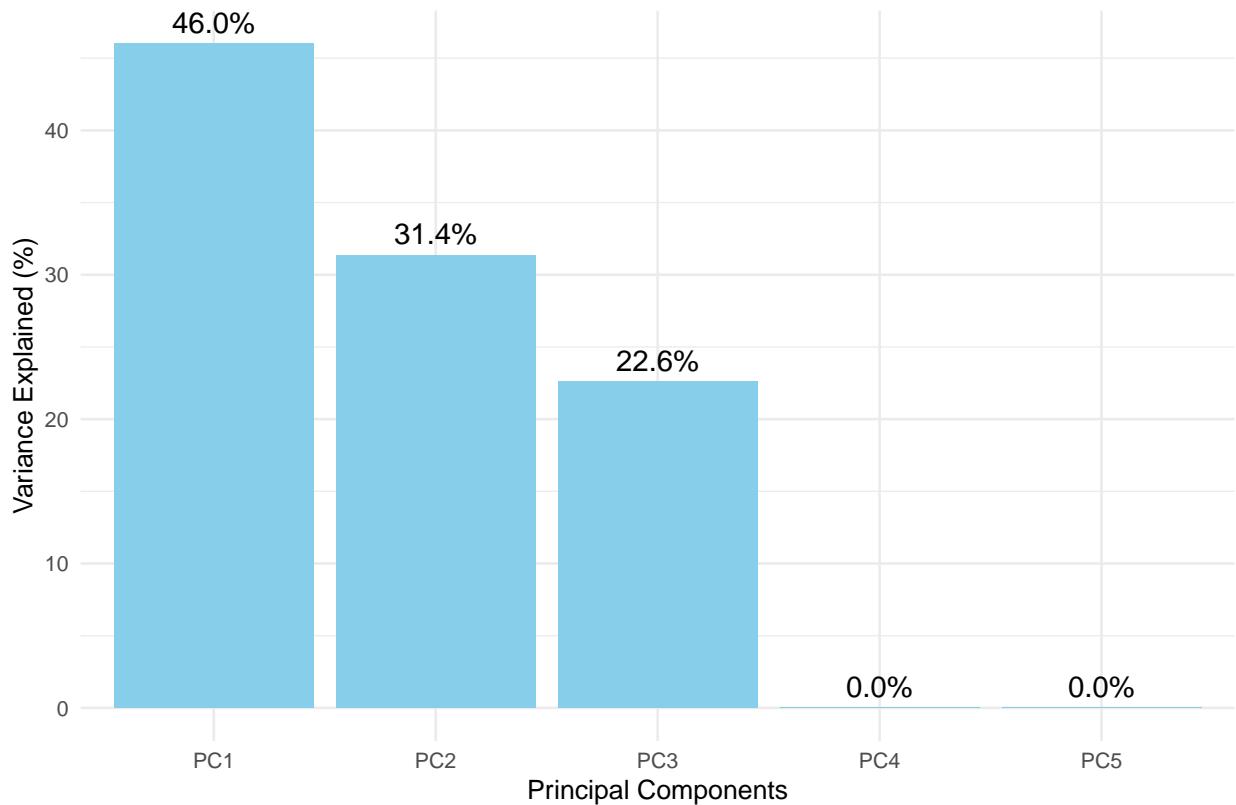
Elapsed time profile across acquisition days



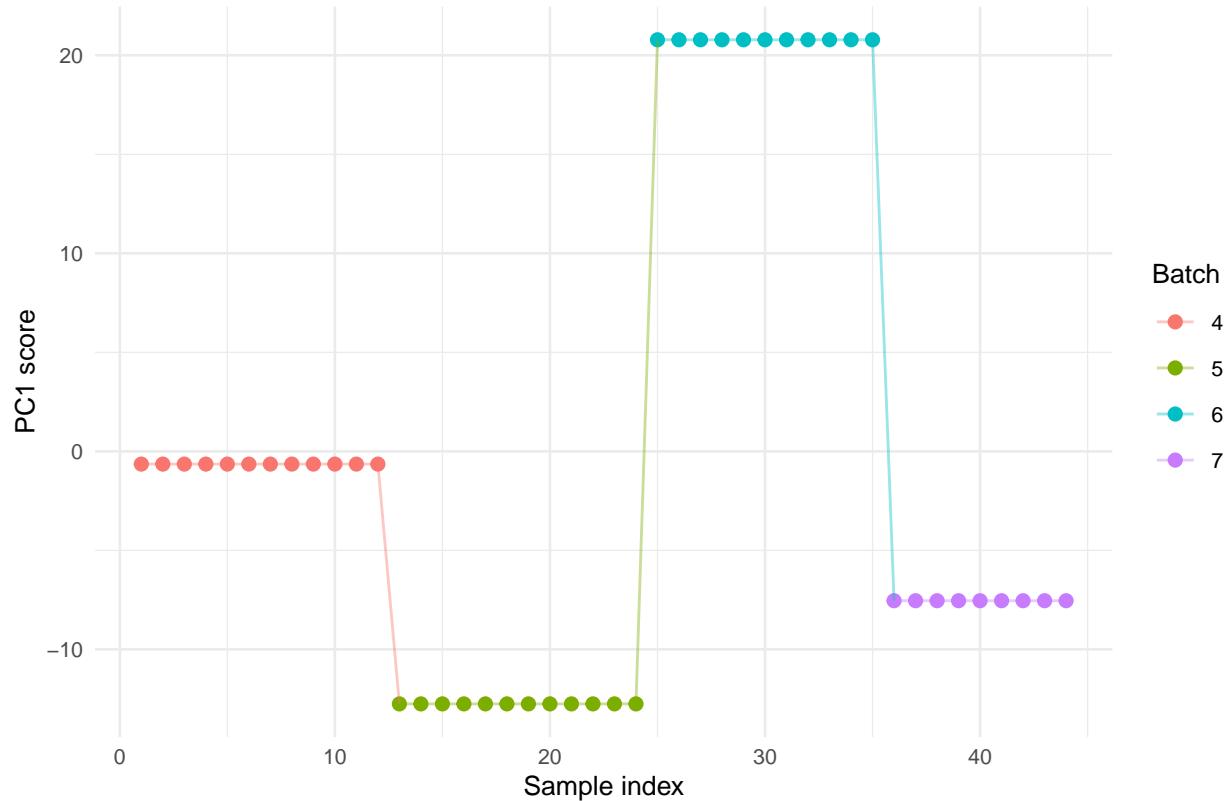
2 Exploring Batch Influence

Percentage of total variance explained by batch means: 7.33 %

Explained Variance (Top 5 PCs)



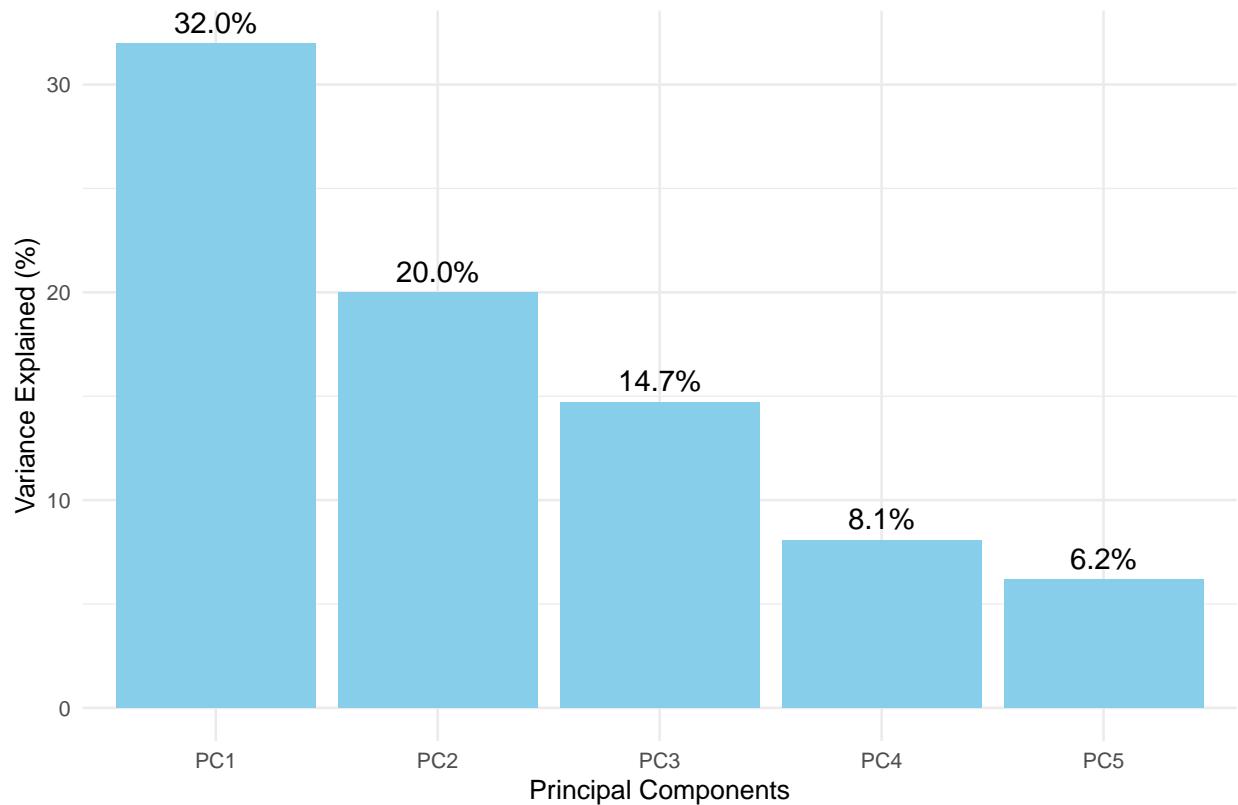
PC1 Scores across Samples



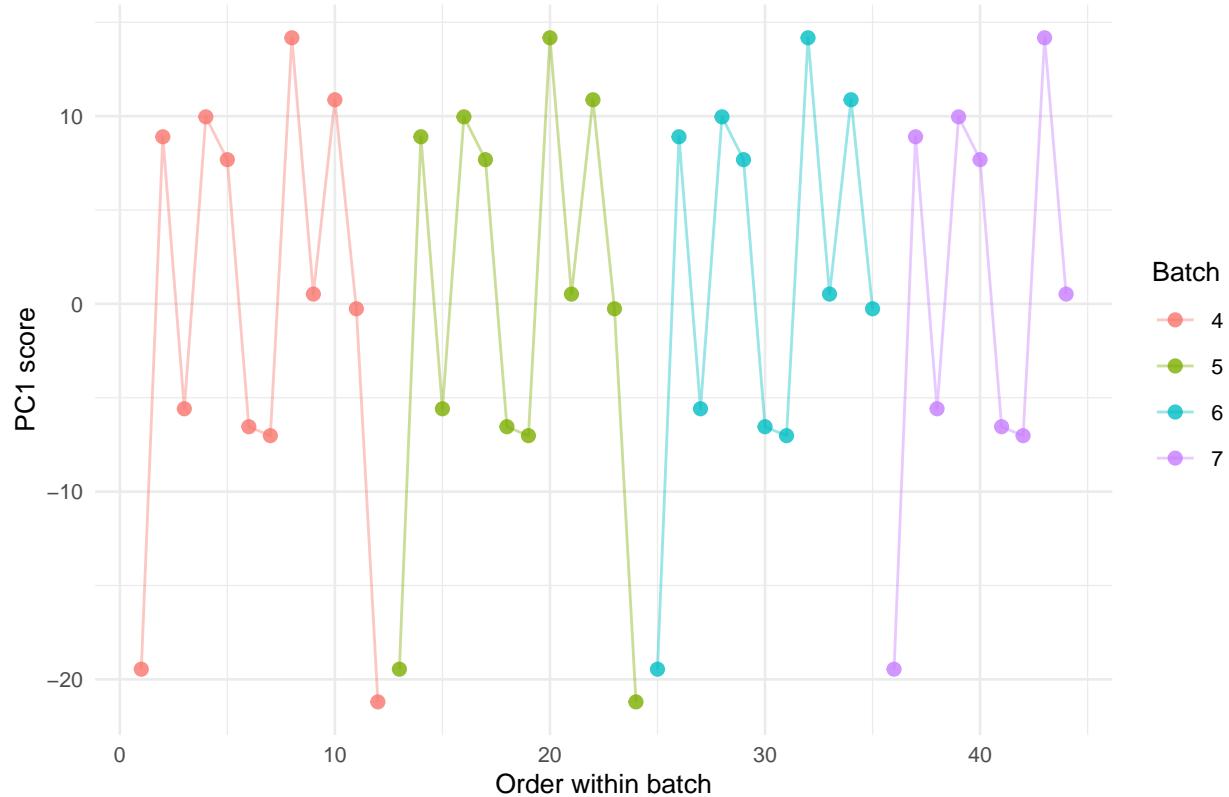
3 Exploring order influence

```
## Percentage of total variance explained by order means: 34 %
```

Explained Variance (Top 5 PCs) – Order Means



PC1 Scores across Order in Batch



4 Conclusions

- Batch effects explain only a small fraction (7%) of the total variance.
- Order within batch has a stronger effect (30%), but the variance is spread across several PCs.