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# Occurrence of Seasonal Variation in Incident Unprovoked Venous Thromboembolism in the Danish Population

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## Introduction

Incidence of venous thromboembolism (VTE), i.e. deep venous thrombosis and pulmonary embolism, is found to be higher in winter than summer. However, this variation may result from seasonal variation in occurrence of diseases that provoke VTE. Knowledge about possible seasonal variation of incident VTE may improve preventive strategies.

## Objectives

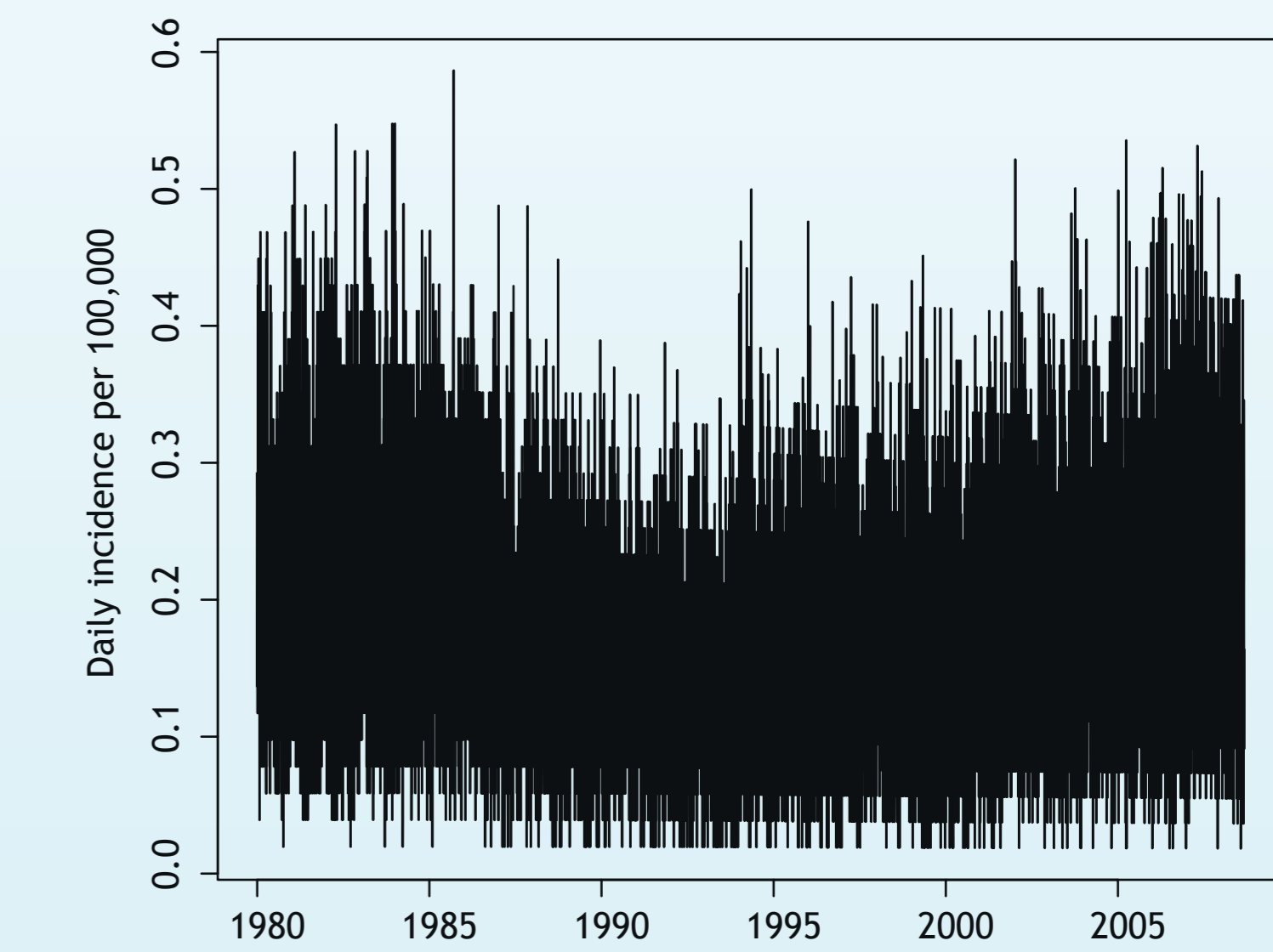
We aimed to assess the occurrence of seasonal variation in incident unprovoked VTE for subjects with and without any comorbidity diseases using the Danish population as a cohort.

## Materials and Methods

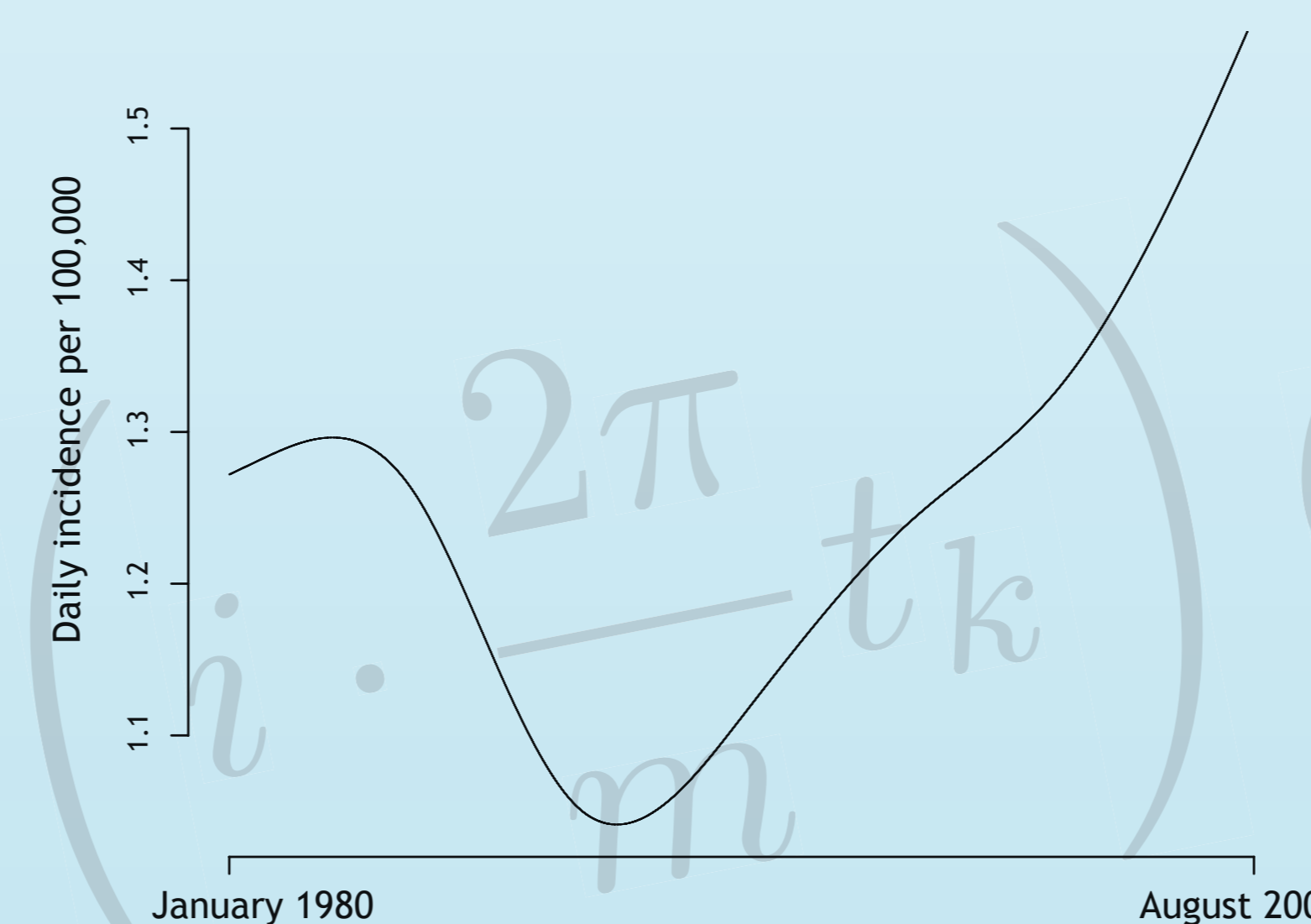
- Historical cohort study
- Danish population
  - Aged 20 or more
  - Diagnosed with an incident VTE during January 1980 until August 2008
  - No previous diagnosis of any cancer
  - No registration in the Danish National Patient Registry within three months before diagnosis of incident VTE
- Statistical analysis using Poisson regression
  - Secular trend: Cubic spline
  - Seasonal variation: Single cycle sinusoidal curve
  - Adjusting for gender, age- and Charlson comorbidity index groups
  - Interaction between seasonality and Charlson comorbidity index groups

## Results

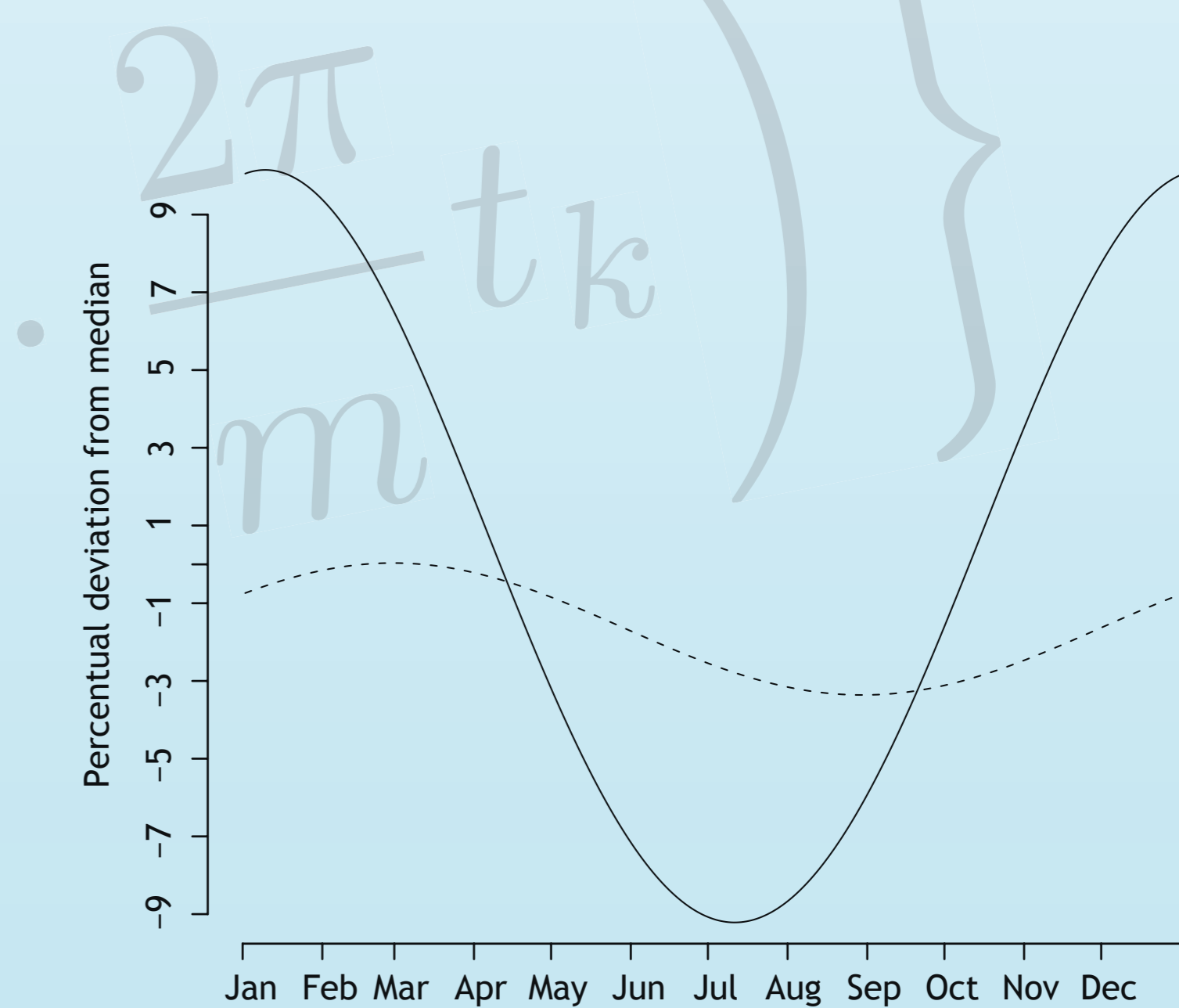
Total number of cases	101,501
Female	53,896 (53.1%)
Age	Median (25%-75%)
Female	69 (52-79)
Male	64 (52-74)
Charlson index	# Charlson index > 0
Female	16,897 (31.35%)
Male	14,911 (31.32%)



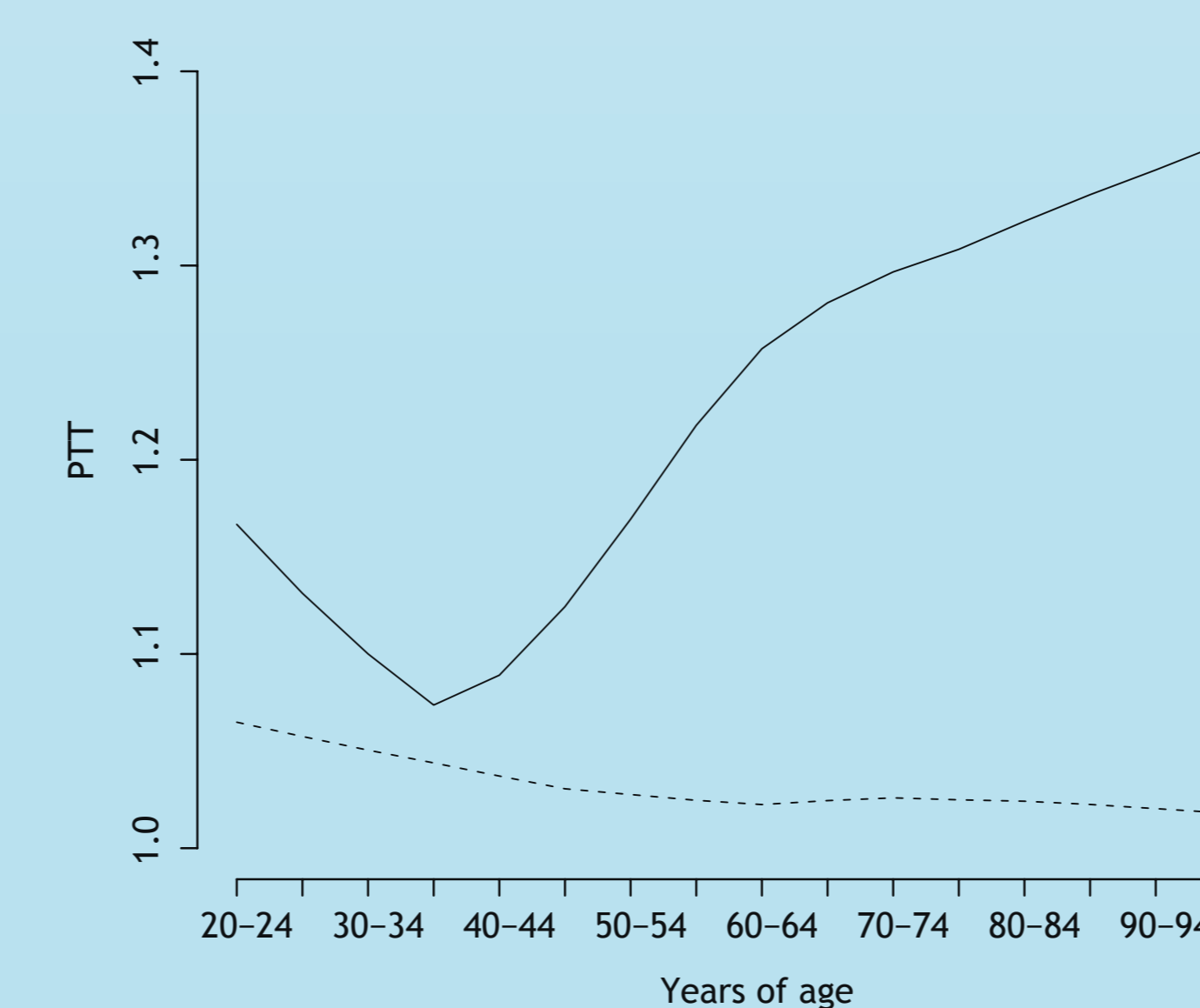
Daily incidence per 100,000 of incident unprovoked VTE in the Danish population during January 1980 until August 2008.



Secular trend component modelled by a cubic spline.



Seasonal component modelled by a single cycle sinusoidal curve for females aged 65-69 with Charlson comorbidity index equaling zero (solid line) and with positive Charlson comorbidity index (dashed line).



Estimated peak-to-trough (PTT) ratios versus age groups for cases with Charlson comorbidity index equaling zero (solid line) and for cases with Charlson comorbidity index (dashed line).

## Conclusion

- Seasonal variation of incident unprovoked VTE differs in Charlson comorbidity index groups
- No indication of different seasonal variation between gender
- PTT increases with age for subjects with comorbid diseases