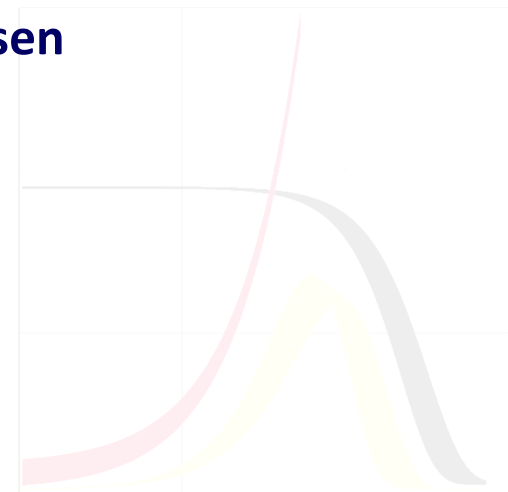


# Sex differences in medication and primary healthcare use before and after spousal bereavement at older ages in Denmark – nationwide register study of over 6000 bereavements

by

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## Background

- **Mortality disadvantage after spousal loss**

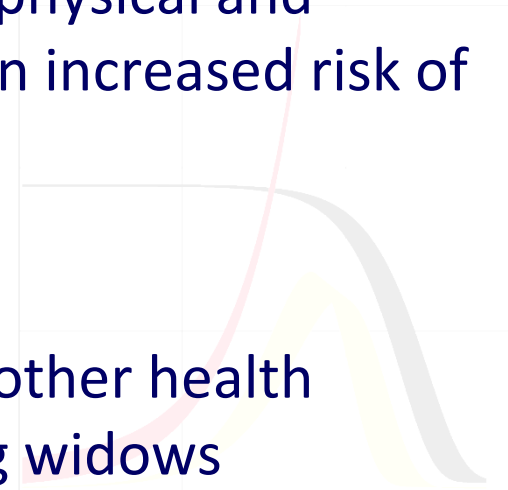
Increased all-cause & cancer mortality, mortality from CVD, respiratory diseases, accidents and violence (Finland, UK, & the US)

- **Health disadvantage after conjugal loss**

Higher levels of depressive symptoms, poorer physical and cognitive function, worse self-rated health & an increased risk of institutionalization

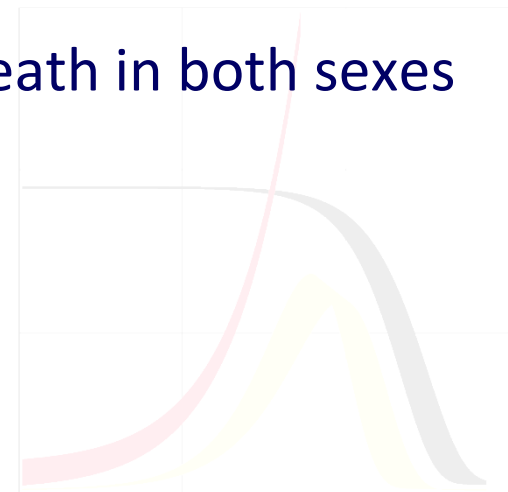
- **Sex differences in widowhood effect**

Adverse effects of widowhood on mortality & other health outcomes are greater in widowers than among widows



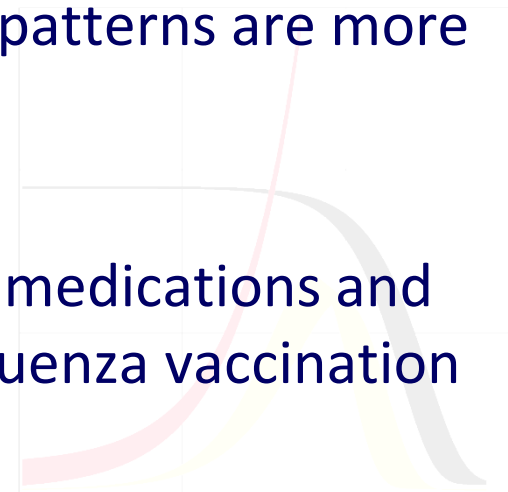
## Background: Denmark

- Substantially higher increase in suicide risks in the oldest-old widowers than widows, but less pronounced sex differences in younger age groups
- Higher widowhood effect among male twins than among female twins after a spouse's death
- Similar bereavement effect after a co-twin's death in both sexes



## Background: Proposed explanations

- **Immediate distress:** Changes in cardiovascular, autonomous nervous, immune and endocrine systems
- **Loss of social support:** Wider and stronger social networks among women than among men, especially after retirement
- **Changes in lifestyle behavior:** Smoking, alcohol and substance abuse are less frequent & sleeping and eating patterns are more regular among married
- **Changes in health regulating activities:** Use of medications and primary healthcare and other services (e.g. influenza vaccination and diabetic monitoring)



## Aim and hypotheses

### Aim:

Investigate sex differences in short and longer term healthcare use following conjugal loss by comparing medication and primary healthcare use before and after a spouse's death

### Hypotheses:

After a spouse's death elderly men will reduce medication use and visits to general practitioners (GPs)

Women will maintain or increase their healthcare utilization compared to the preloss level



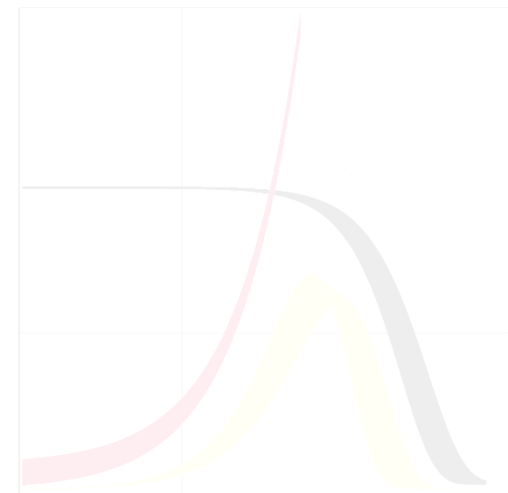
## Methods: Data

- **5% sample of the total Danish population & all Danish twins**  
5% of all persons from each birth year 1890-2004 (approx. 2600 persons/year)
- **Civil Registration System** (since April 1968)  
10-digit unique personal identifier (CPR-number)
- **Cover the complete Danish population**
- **Have different span**
  - Prescription Medicine Register (since 1995)
  - Health Insurance Register (since 1997)
  - Danish Twin Register (since 1954 for cohorts born from 1870)



## Methods: Study population

- All individuals alive & aged  $\geq 60$  years by Jan 1, 1996
- Married for at least one year prior to Jan 1, 1996
- Became widowed in the period from Jan 1, 1996 to Jan 31, 2003
- Survival status available through Dec 2006  
(n=6,421)



## Methods: Study instrument

- **Medication use**

Average daily defined dose (DDD)

For all-cause and several major system-specific medications: cardiovascular (ATC-C), nervous (ATC-N), respiratory (ATC-R), and alimentary tract and metabolism (ATC-A) medications

- **Primary healthcare use**

Number of GPs visits per year

- **Within 1 yr before and up to 4 yrs after widowhood**

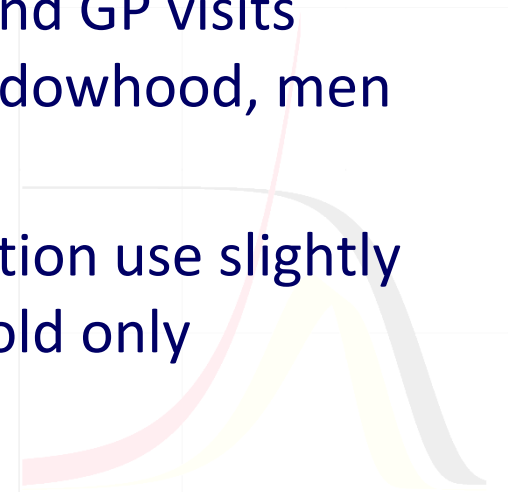
- **Adjusted to the time at risk**



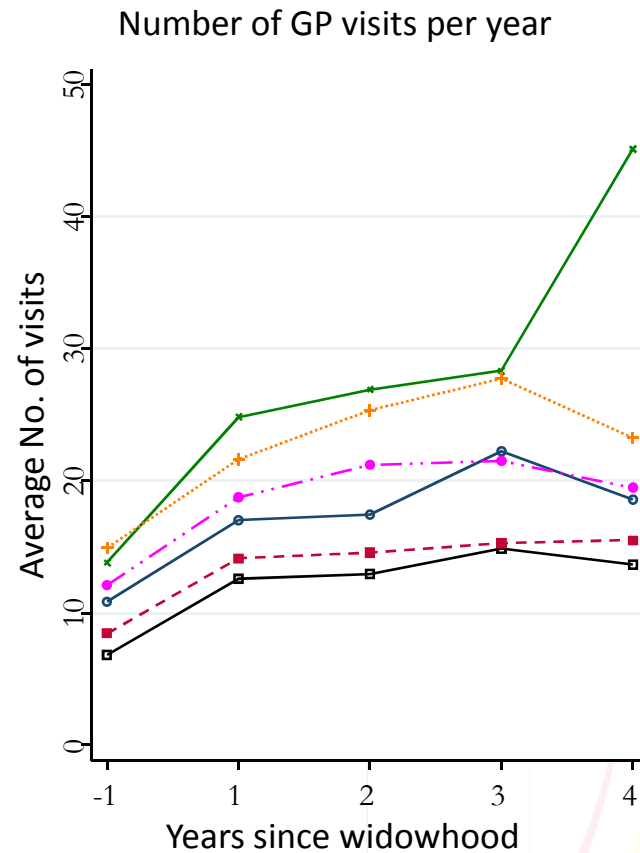
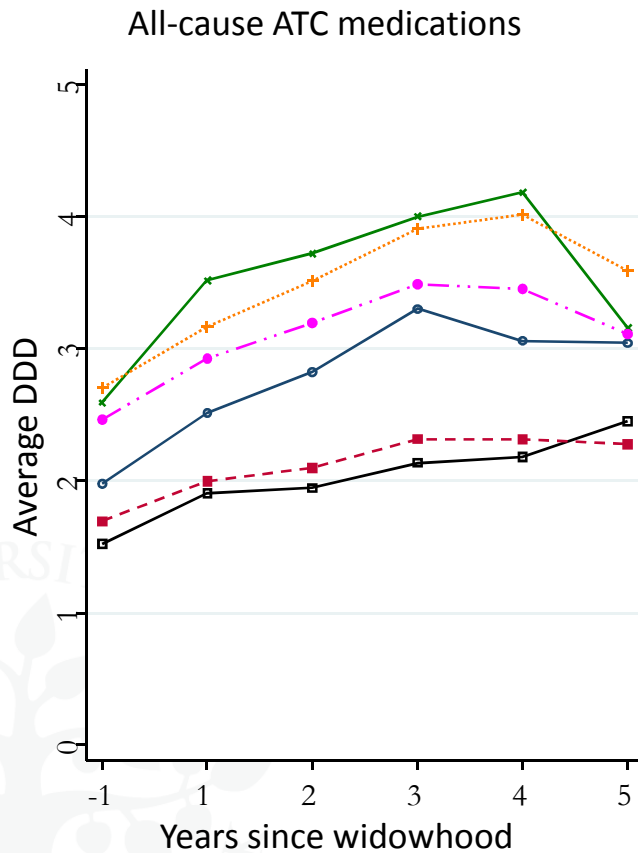


## Results

- Higher average use of all-cause and ATC-N medications and GP visits in women
- Higher average use of ATC-R medications in men (not always statistically significant)
- Less clear sex-specific patterns for ATC-C and ATC-A medications
- All-cause and system-specific medication use and GP visits increased from 1 year before to 1 year after widowhood, men and women
- Increase in all-cause, ATC-C, and ATC-R medication use slightly higher in men, but significant in the 80+ years old only

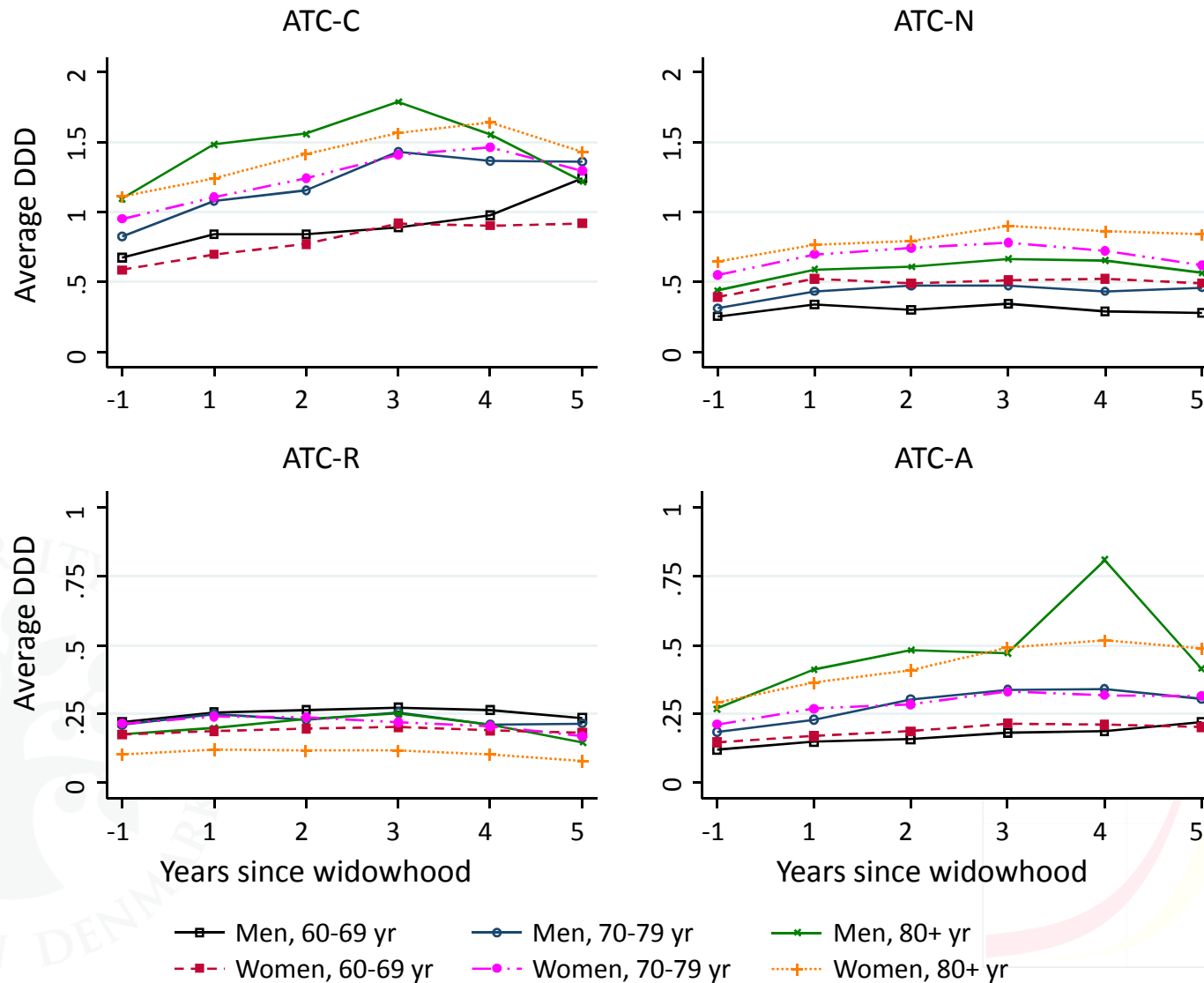


# Trajectories of all-cause medication use and GP visits

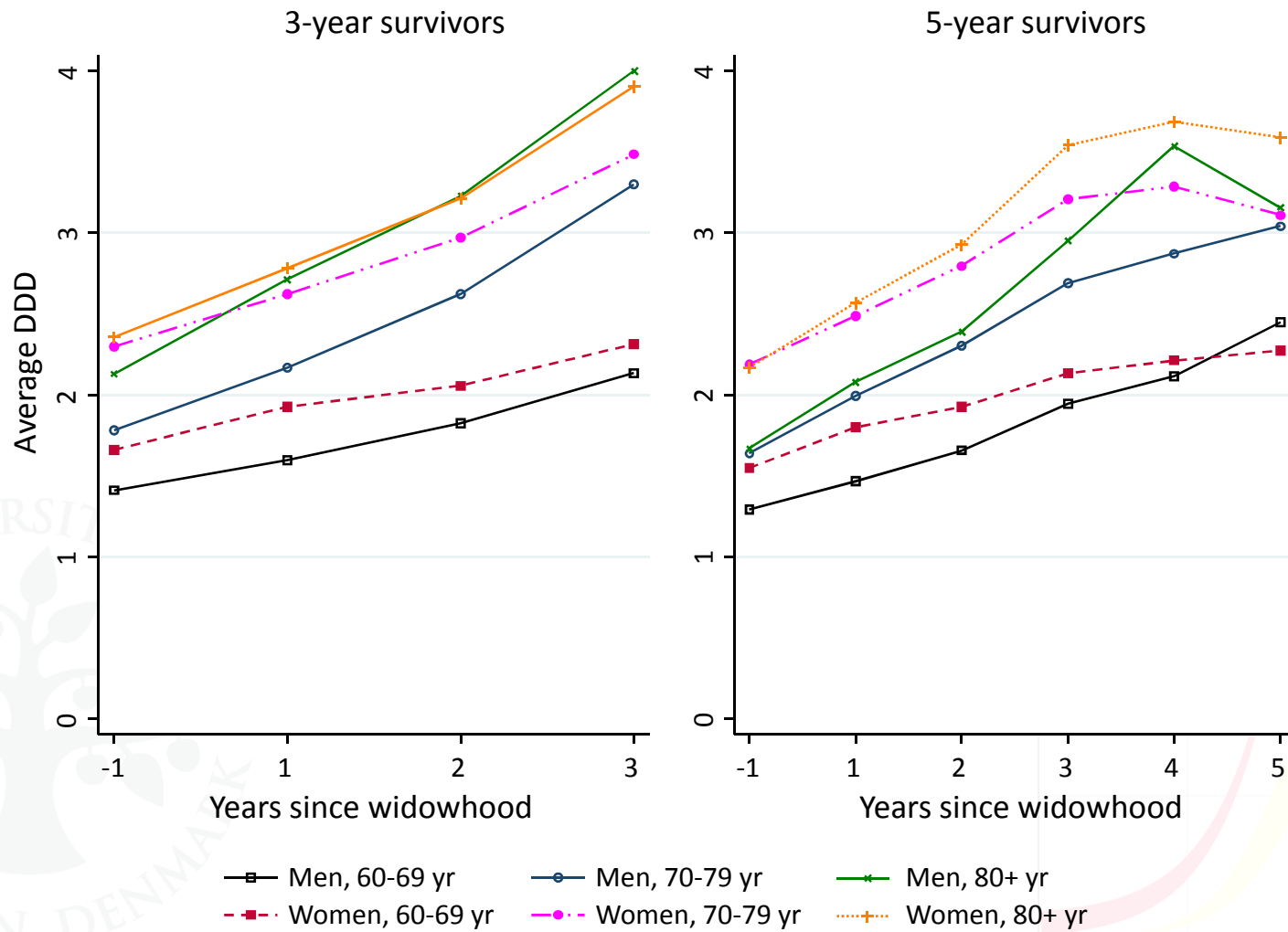


—■— Men, 60-69 yr      —○— Men, 70-79 yr      —×— Men, 80+ yr  
 - - - ■ - - - Women, 60-69 yr      - · - · - · Women, 70-79 yr      - · - · - · Women, 80+ yr

# Trajectories of system-specific medication use



# Trajectories of all-cause medication use in survivors



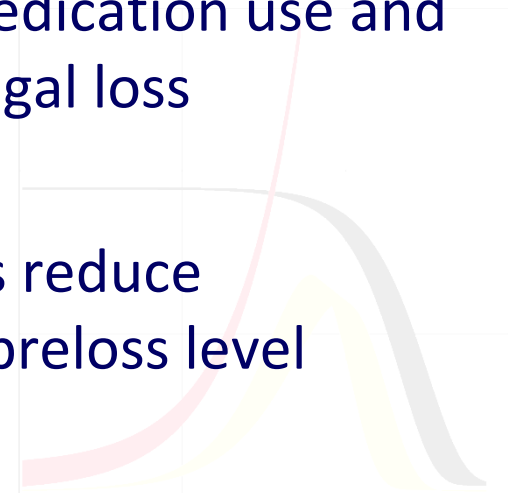
## Methodological considerations

- Analysis of healthcare use reflects both the effect of age & the effect of widowhood
  - Unlikely to bias the analysis of male-female differences in healthcare use
- Country-specific findings
  - Greater gender equality in the division of household labor in Sweden and Denmark vs. Greece or Spain
  - Less dependence on the wives for regulating health behaviors among Danish men



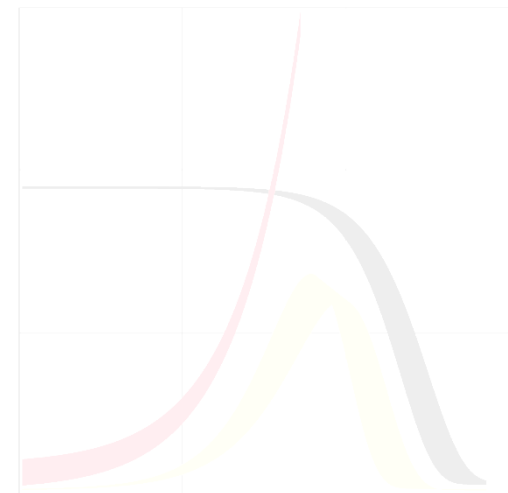
## Summary

- Women use prescription medicines more than men, especially anti-anxiety and anti-depressant medications
- Medication and primary healthcare use increased short- and long-term after widowhood
- No sex-specific pattern in the trajectories of medication use and GP visits over short and long period after conjugal loss
- Little support for the hypothesis that widowers reduce medication use or visits to GPs compared to a preloss level

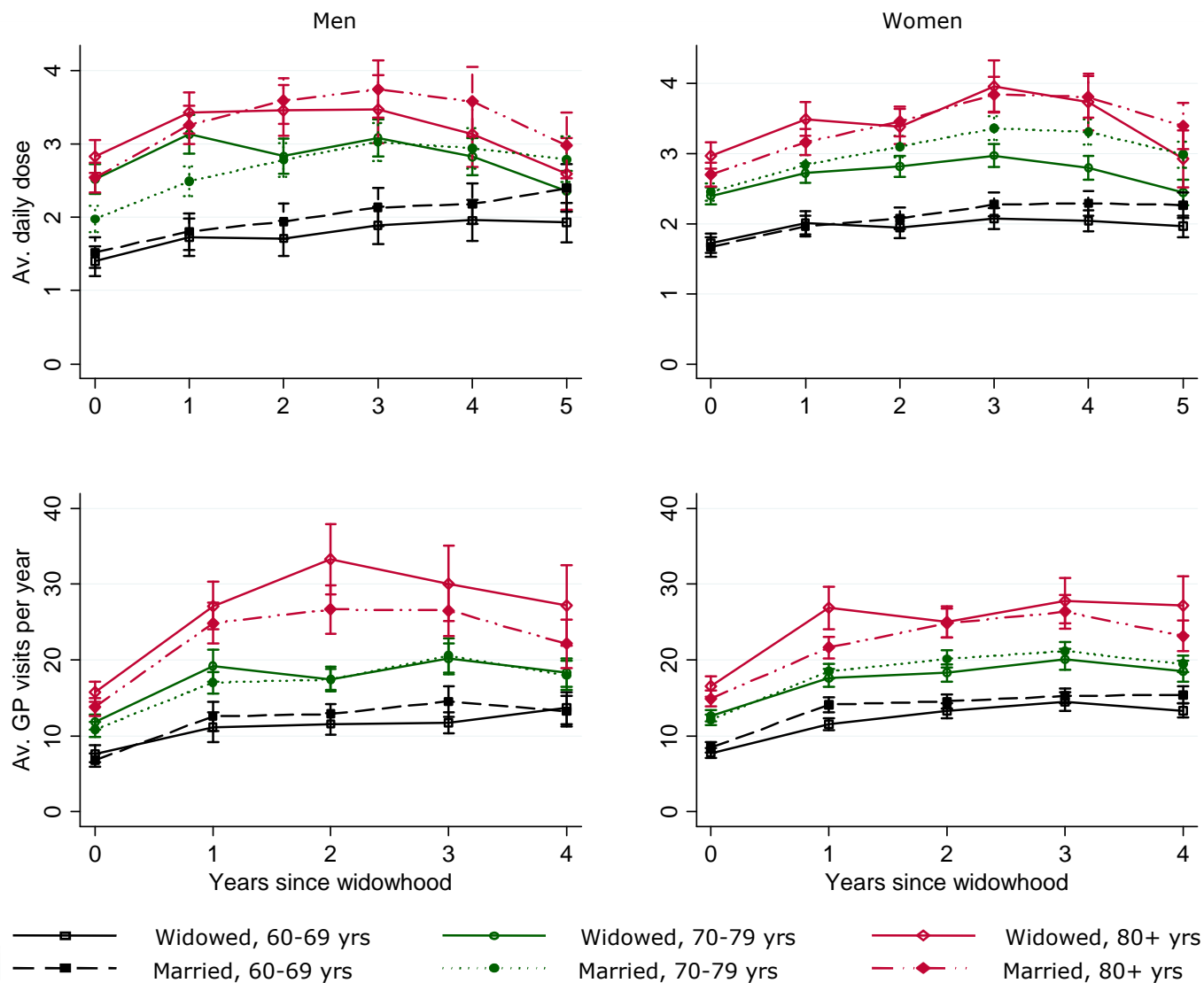


## Acknowledgments

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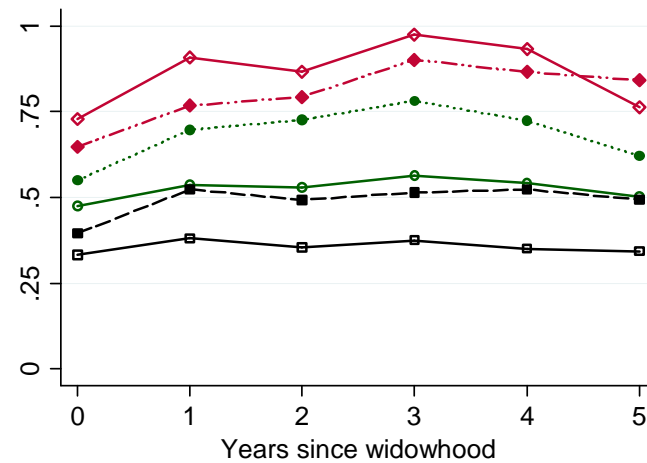
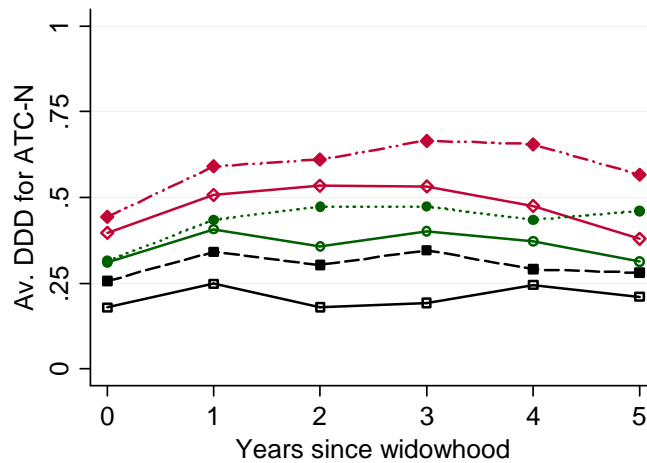
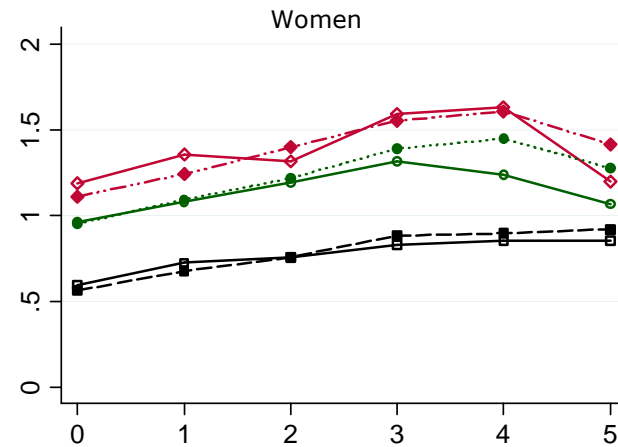
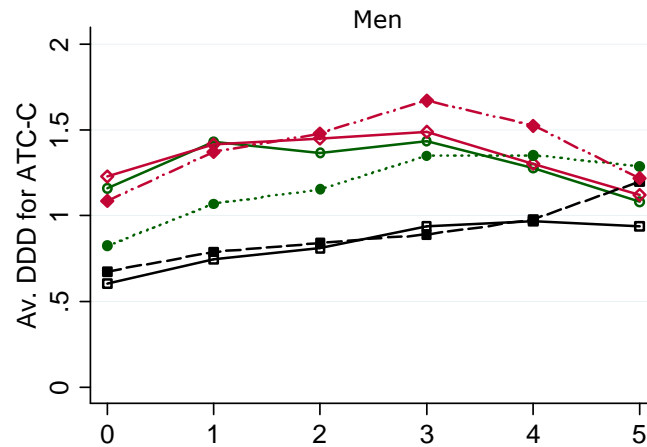


# Trajectories of all-cause medication use and GP visits by marital status





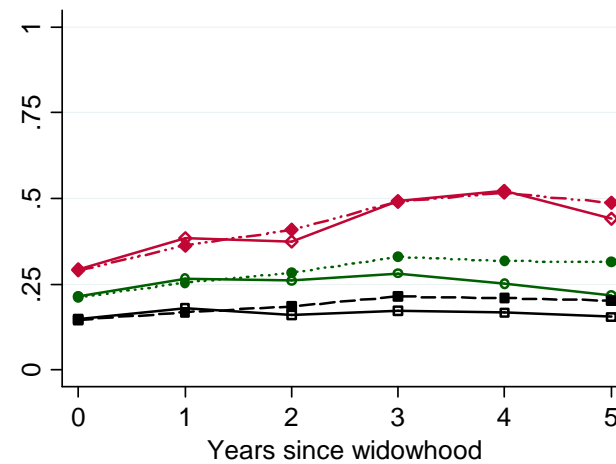
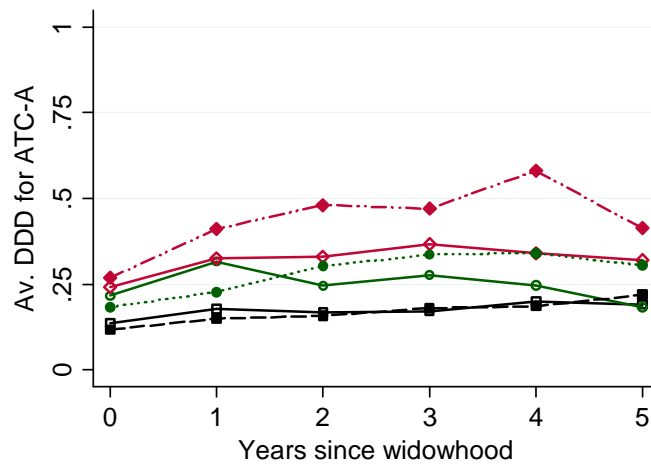
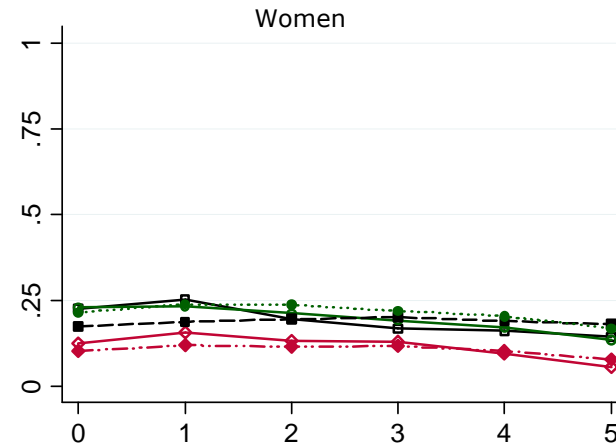
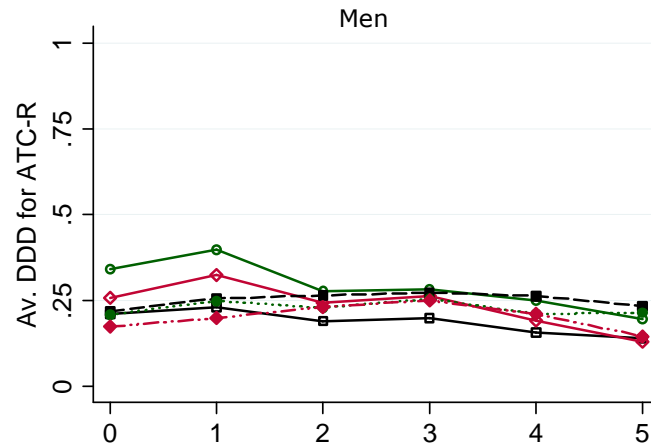
# Trajectories of ATC-C and ATC-N medication use by marital status



Widowed, 60-69 yrs     
  Married, 60-69 yrs     
  Widowed, 70-79 yrs     
  Married, 70-79 yrs     
  Widowed, 80+ yrs     
  Married, 80+ yrs



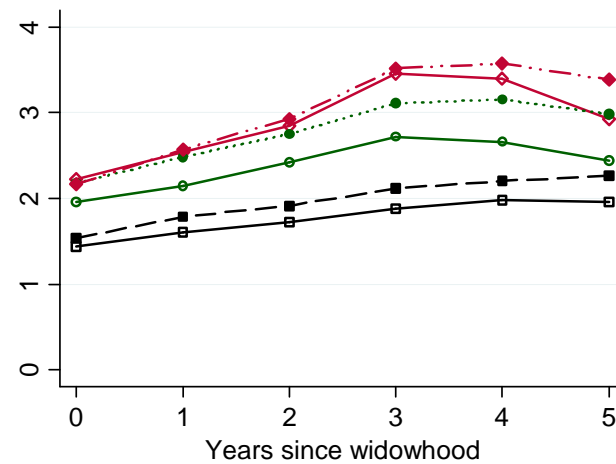
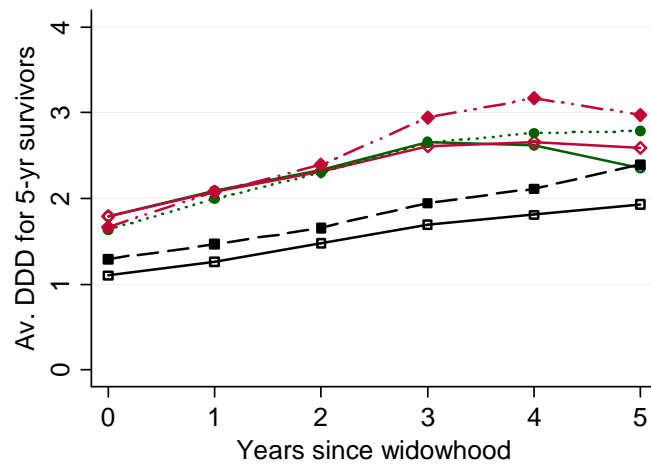
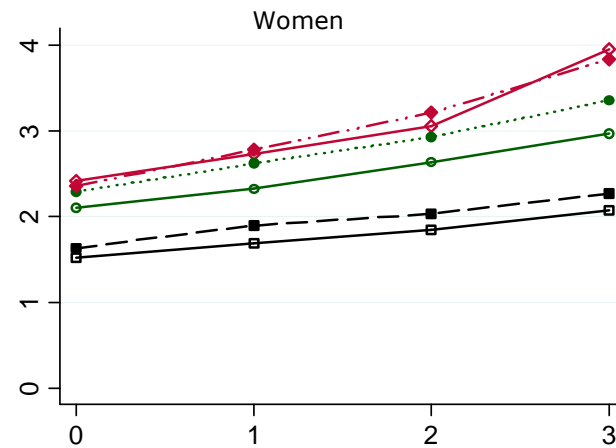
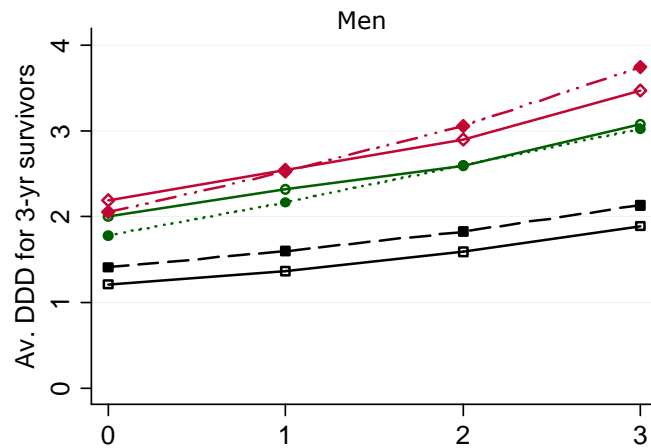
# Trajectories of ATC-R and ATC-A medication use by marital status



Widowed, 60-69 yrs    
  Married, 60-69 yrs    
  Widowed, 70-79 yrs    
  Married, 70-79 yrs    
  Widowed, 80+ yrs    
  Married, 80+ yrs



# Trajectories of all-cause medication use among survivors by marital status



Widowed, 60-69 yrs    
  Widowed, 70-79 yrs    
  Widowed, 80+ yrs  
 Married, 60-69 yrs    
  Married, 70-79 yrs    
  Married, 80+ yrs

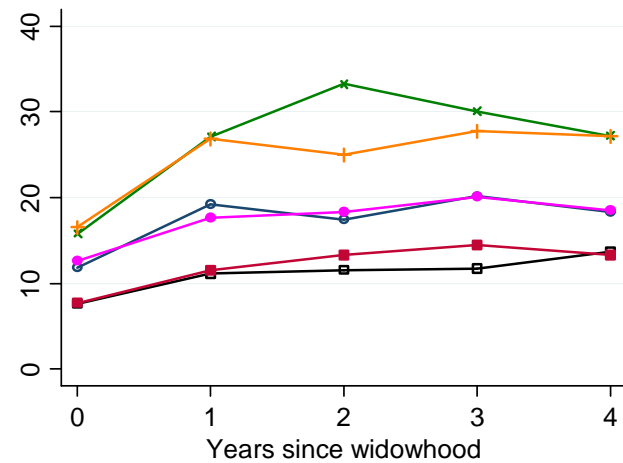
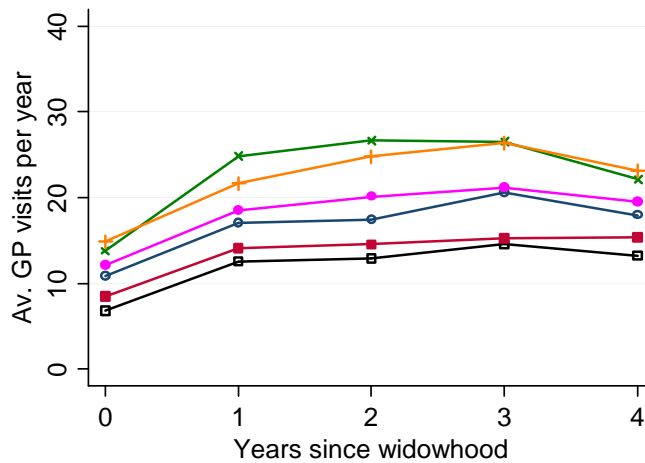
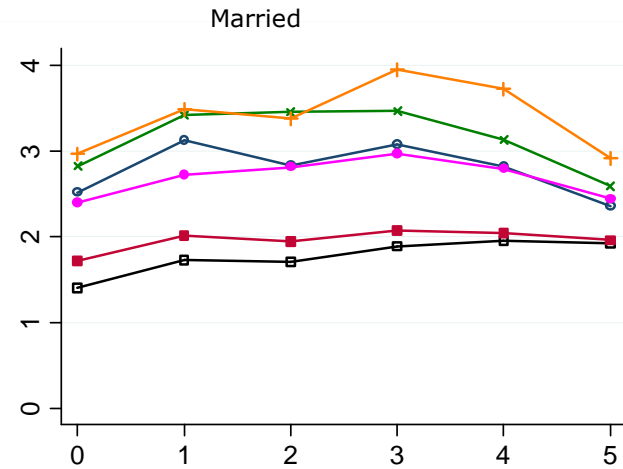
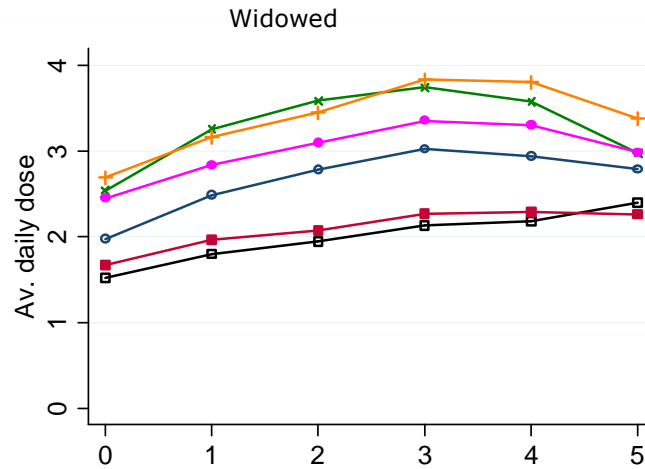


## Methodological considerations

- Size, representativeness, and completeness of the Danish register data and its longitudinal nature
- Free access to healthcare for each resident in Denmark  
Danish register data less confounded by SES than in some other countries
- Data extracted for all study participants  
Little room for selection bias due to non-participation or loss to follow-up inherent in longitudinal surveys



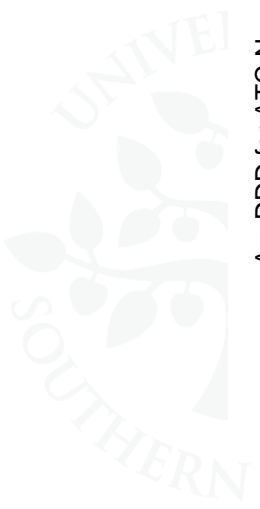
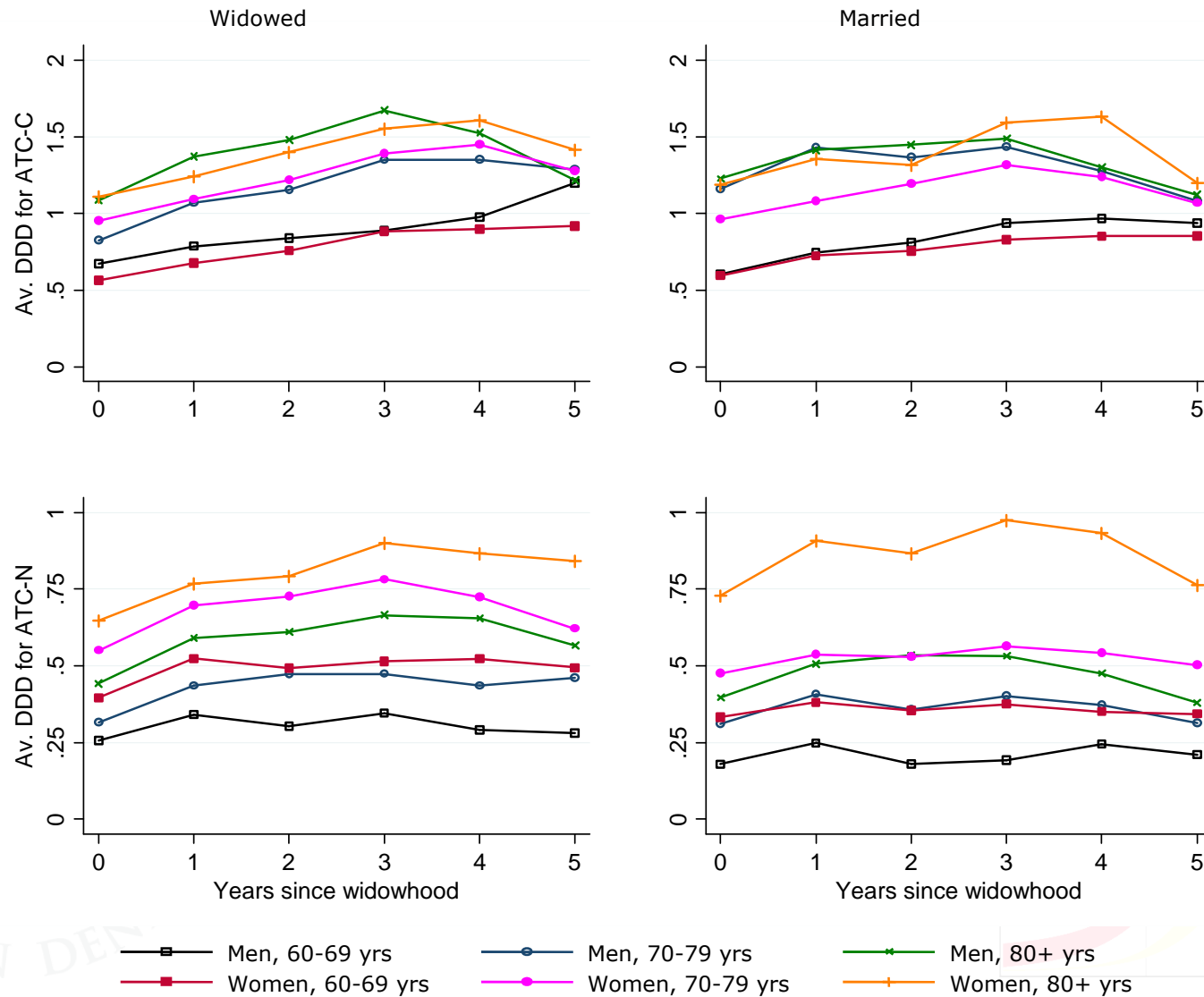
# Sex differences in the trajectories of all-cause medication use and number of GP visits by sex and marital status



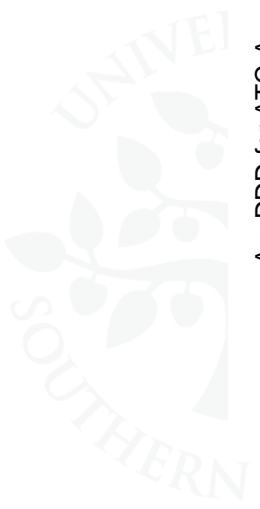
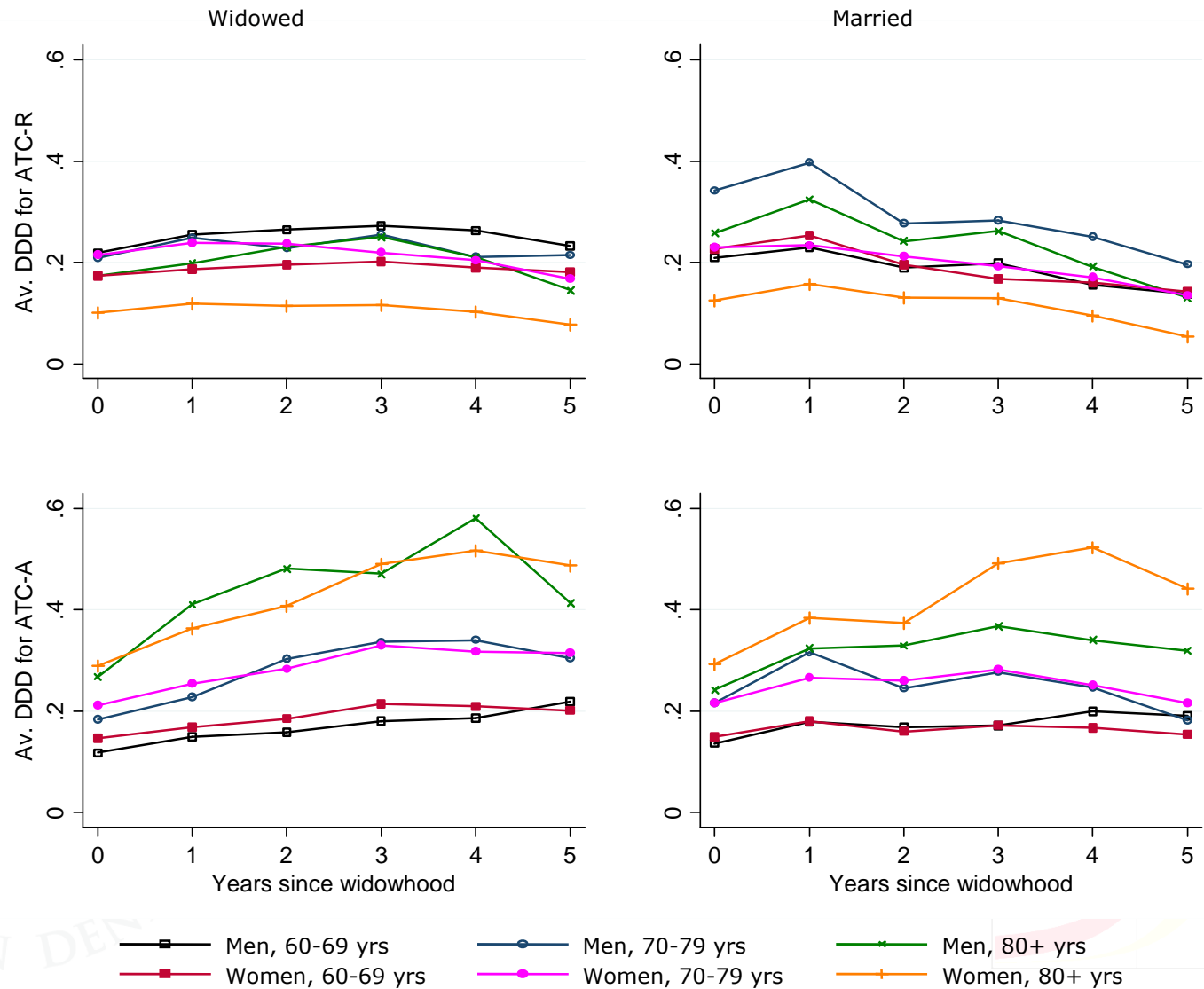
- Men, 60-69 yrs
- Men, 70-79 yrs
- × Men, 80+ yrs
- Women, 60-69 yrs
- Women, 70-79 yrs
- + Women, 80+ yrs



# Sex differences in the trajectories of ATC-C and ATC-N medication use by sex and marital status



# Sex differences in the trajectories of ATC-R and ATC-A medication use by sex and marital status



# Sex differences in the trajectories of all-cause medication use in 3-year and 5-year survivors by sex and marital status

