

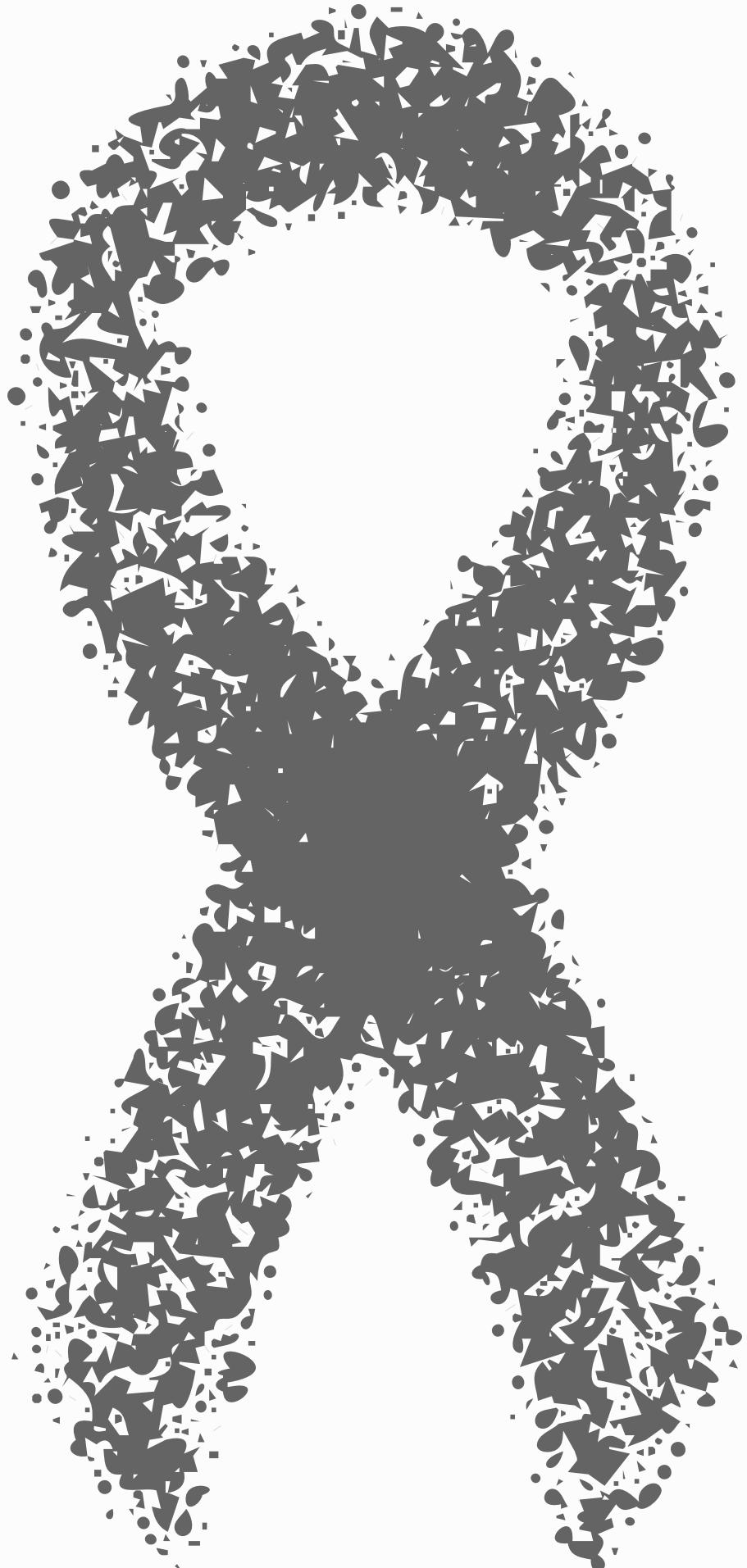
# Melanoma survival by tumour thickness in Norway, 1983–2019

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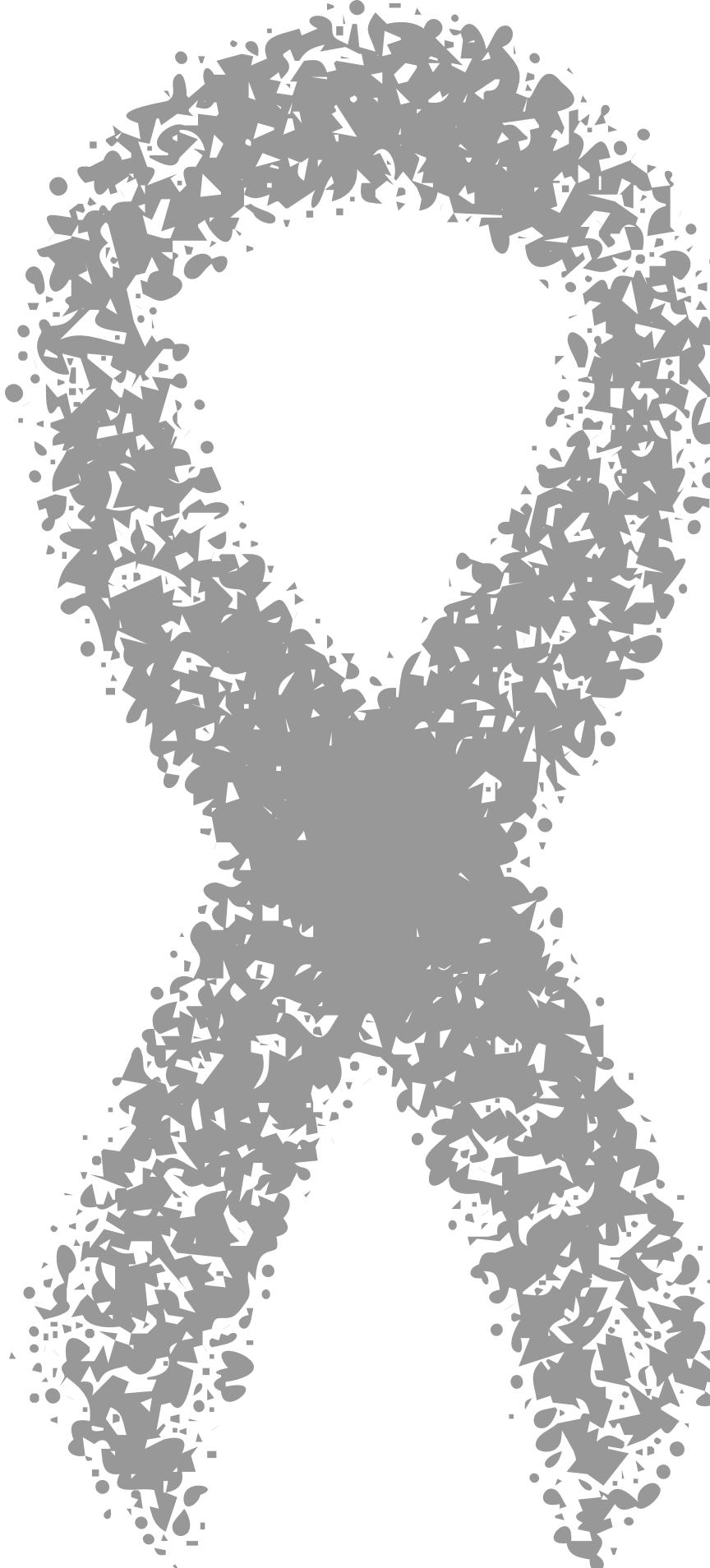
NOFE-2023, Trondheim

15 November 2023

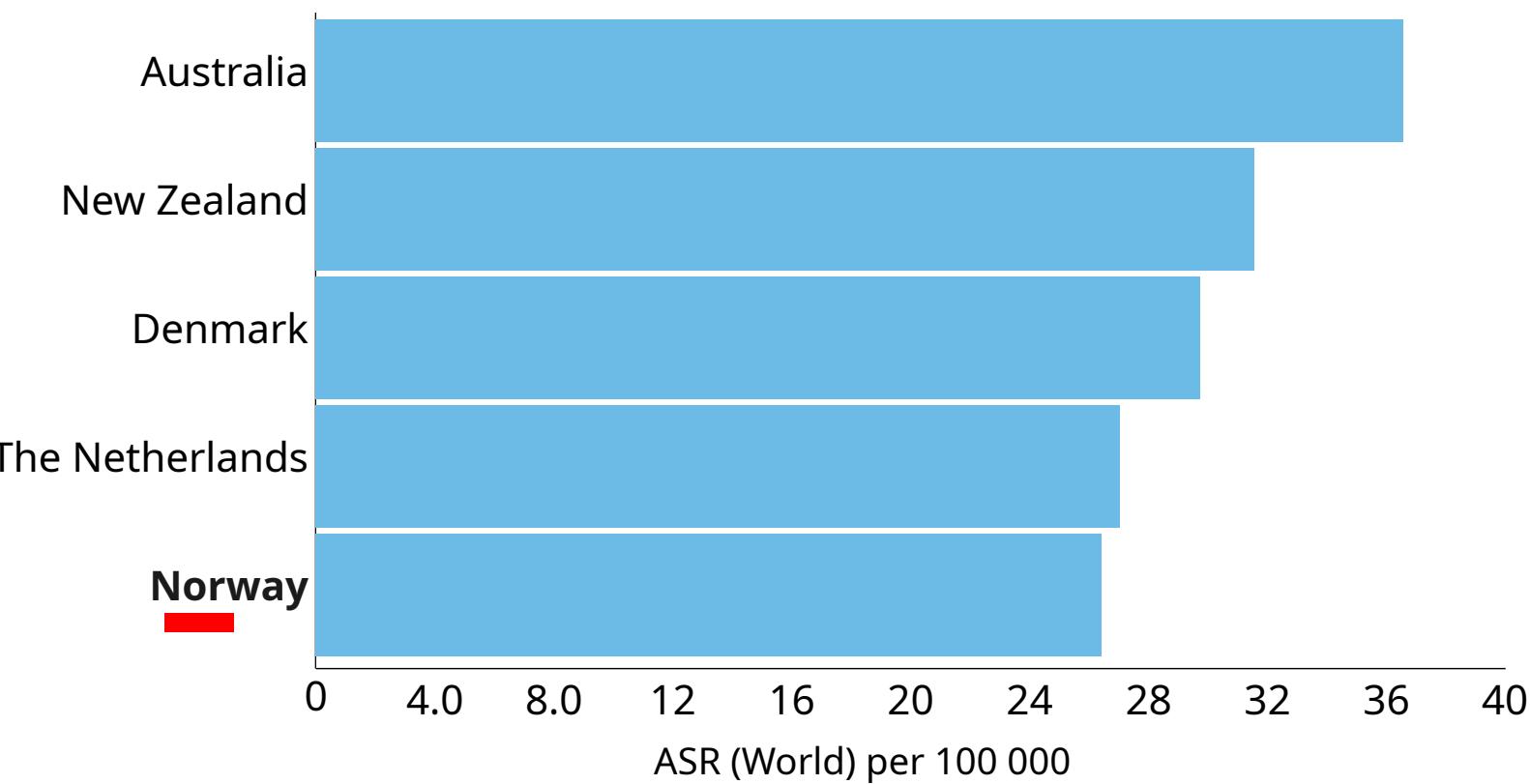


# BACKGROUND

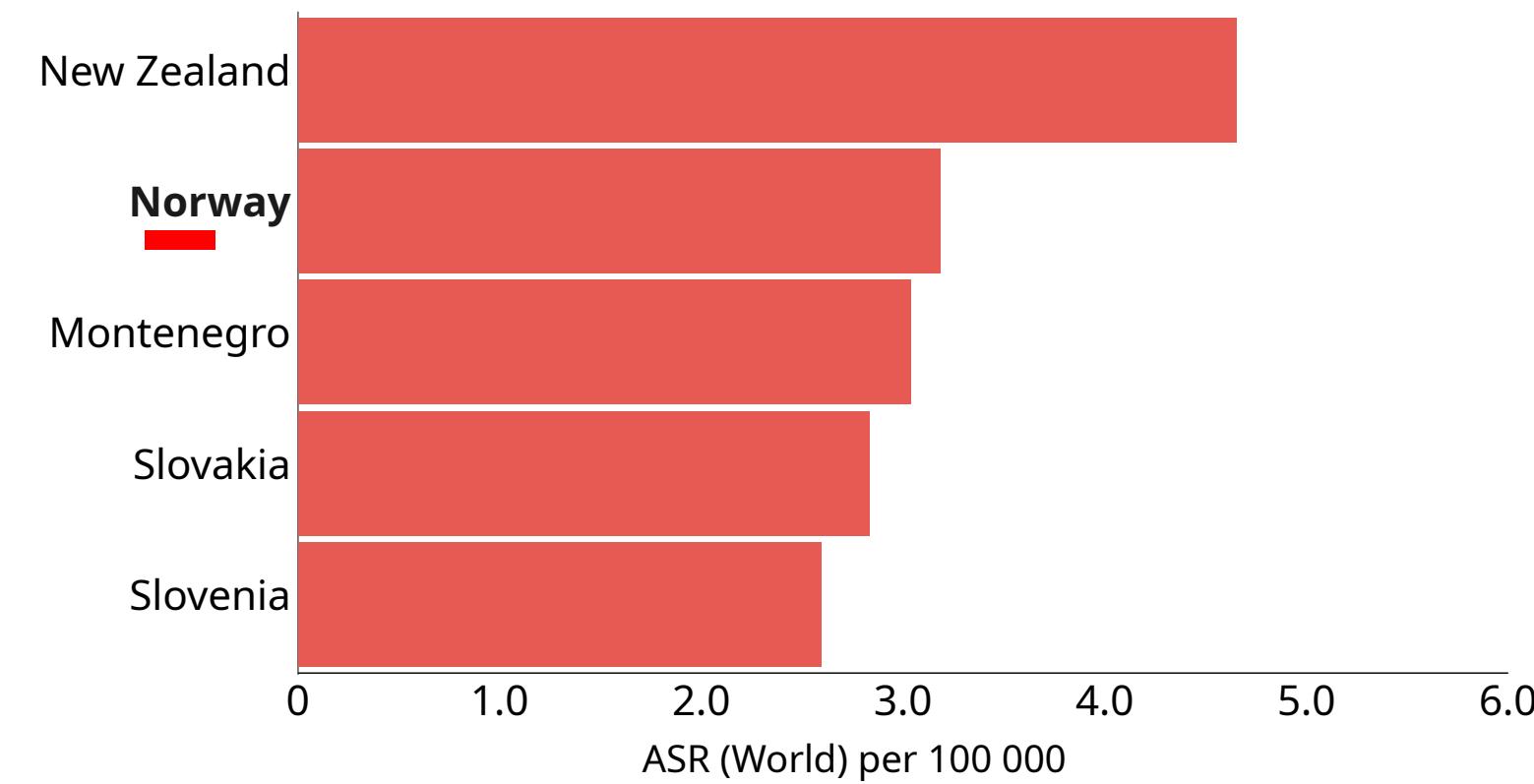




### Age-standardized incidence rates (World) in 2020



### Age-standardized mortality rates (World) in 2020

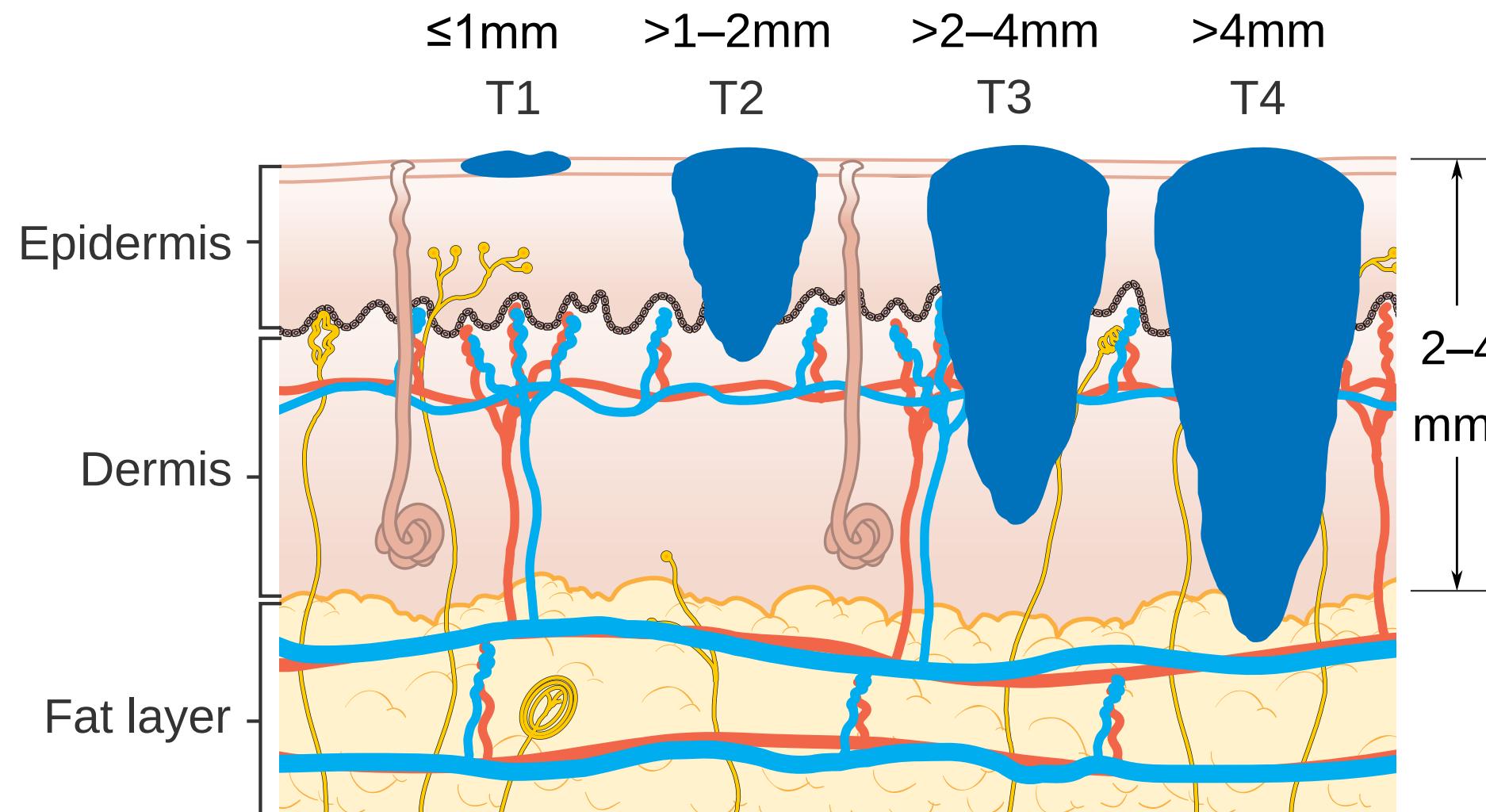


Data source: GLOBOCAN 2020  
 Graph production: Global Cancer Observatory (<http://gco.iarc.fr/>)  
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International Agency for Research on Cancer  
 World Health Organization

# Melanoma staging and tumour thickness

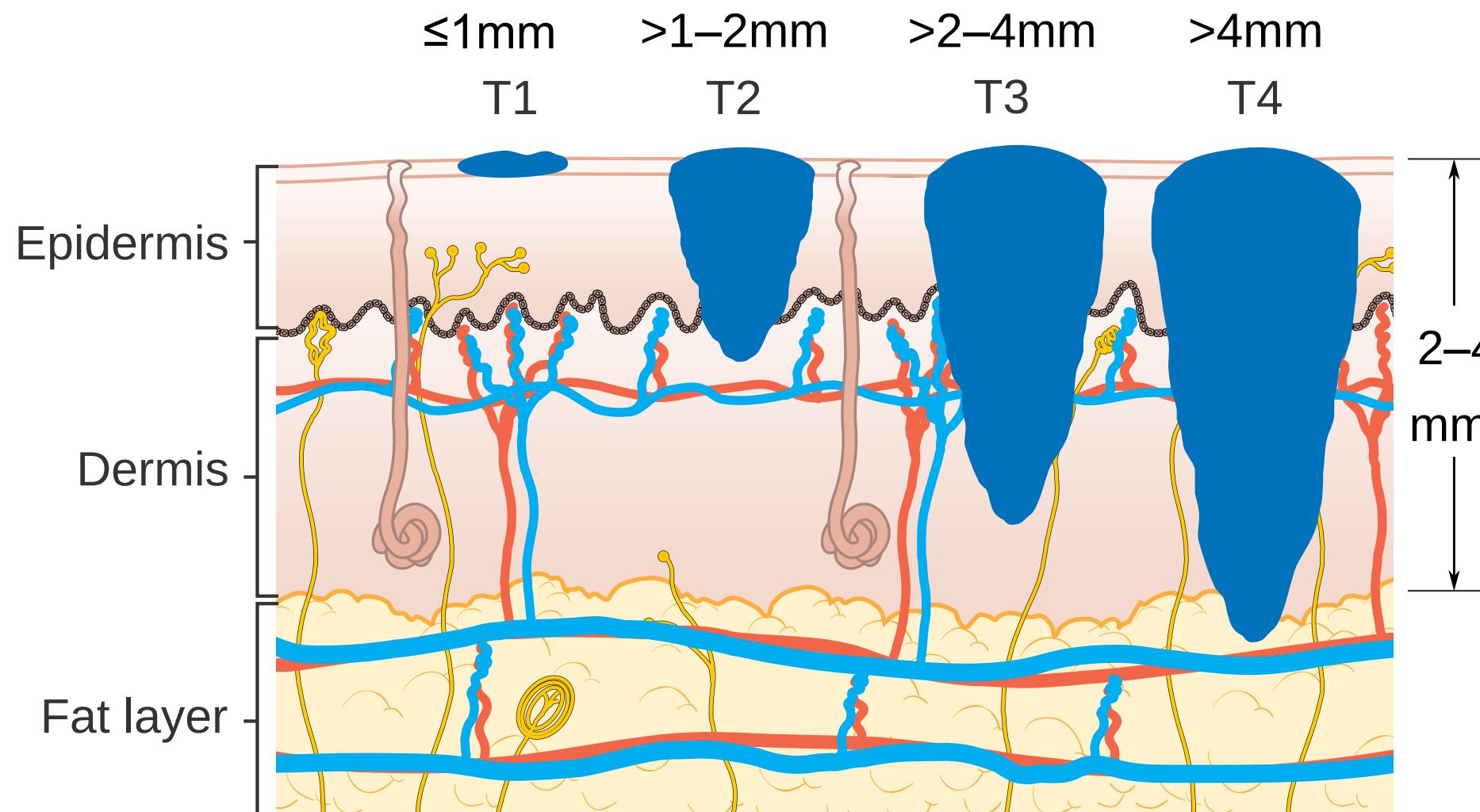
## Tumour thickness (T categories)



Source: <https://www.cancerresearchuk.org/about-cancer/melanoma/stages-types/tnm-staging>

# Melanoma staging and tumour thickness

## Tumour thickness (T categories)



## Clinical stages

### Localized

No spread

### Regional Metastasis

Spread to nearby structure or lymph nodes

### Distant Metastasis

Spread to distant body parts

Source: <https://www.cancerresearchuk.org/about-cancer/melanoma/stages-types/tnm-staging>

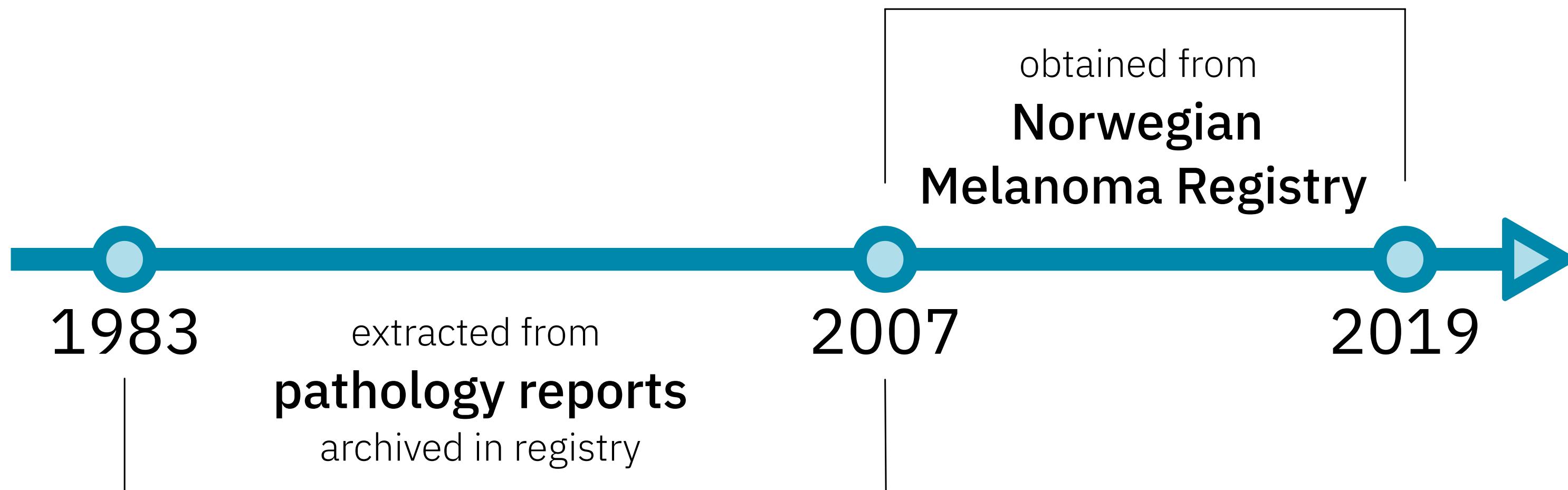
# Research Objective

To examine *mortality* and *survival* by *tumour thickness* overall and in important subgroups such as sex and *clinical stage* in a unique nationwide case series over a 35-year period.

# | CASE SERIES



# Data from Cancer Registry of Norway



- All histologically verified first primary invasive melanoma
  - Aged between 15 and 90



# Basic characteristics of data

## Age and Thickness

	<b>Men</b>	<b>Women</b>
Frequency	21,864	23,053
Percentage	48.7	51.3
<b>Age at diagnosis<sup>1</sup></b>	64 (52-74)	60 (46-73)
<b>Tumour thickness<sup>1</sup></b>	1.1 (0.7-2.5)	1 (0.6-1.9)

<sup>1</sup> Median (IQR)

Men were diagnosed at older age and more advanced stage.

## Clinical stage

78% cases were localized melanoma

50% of localized were in T1 category

T3/T4 were more common in cases with regional and distant metastases

70% distant metastasis cases had unspecified thickness

# ANALYSIS & RESULTS



# Net survival

**Net survival compares the survival of people with melanoma with those who don't over a certain period of time.**

Computed as the proportion of observed survivors to the expected survivors in a comparable cohort of patients.

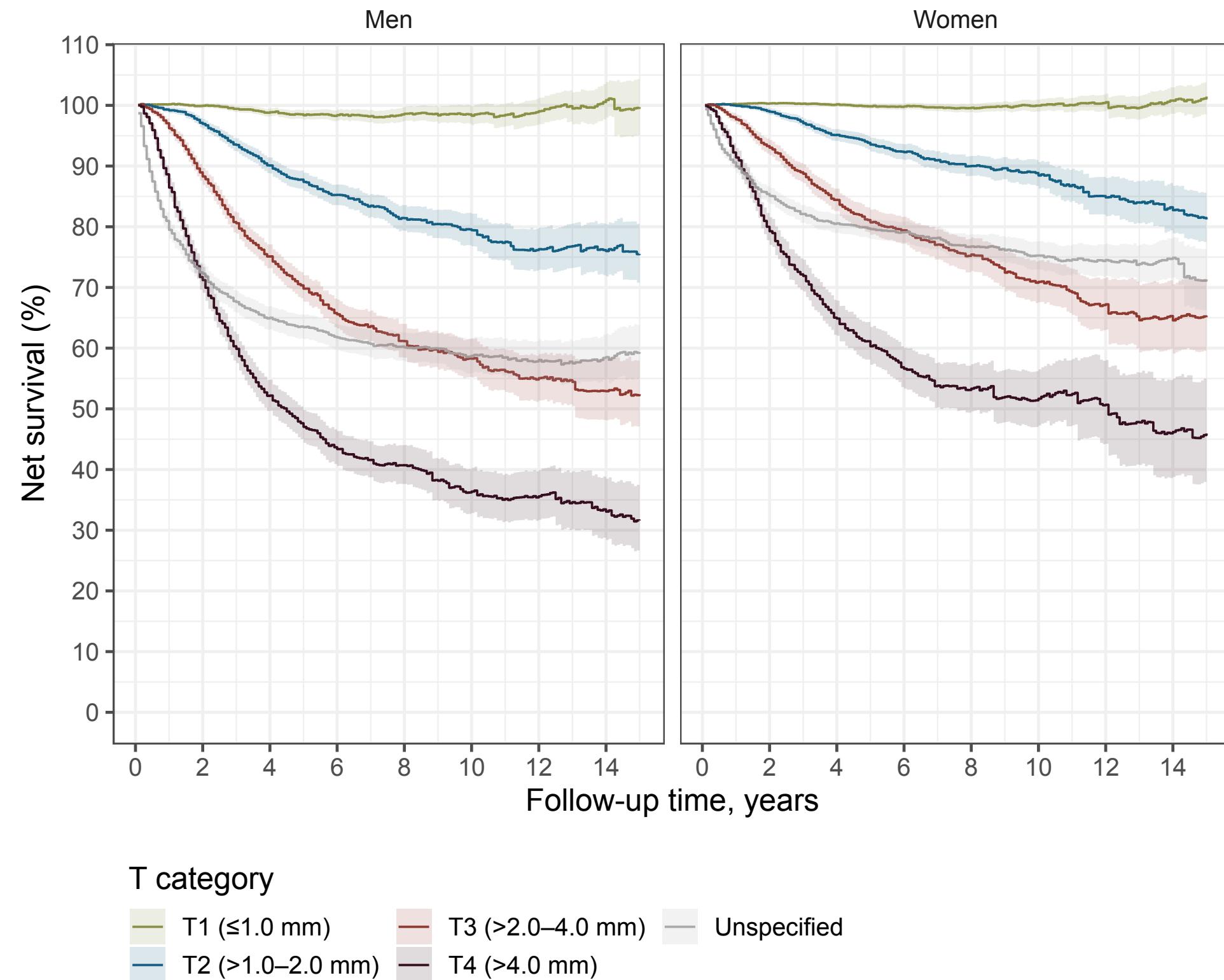
Estimated with Pohar-Perme method and age-adjusted using International International Cancer Survival Standards (ICSS2) weights.

# Net survival

## By sex and T category

More than 10% decrease in net survival with one step increase in T category

Lower net survival in men than women

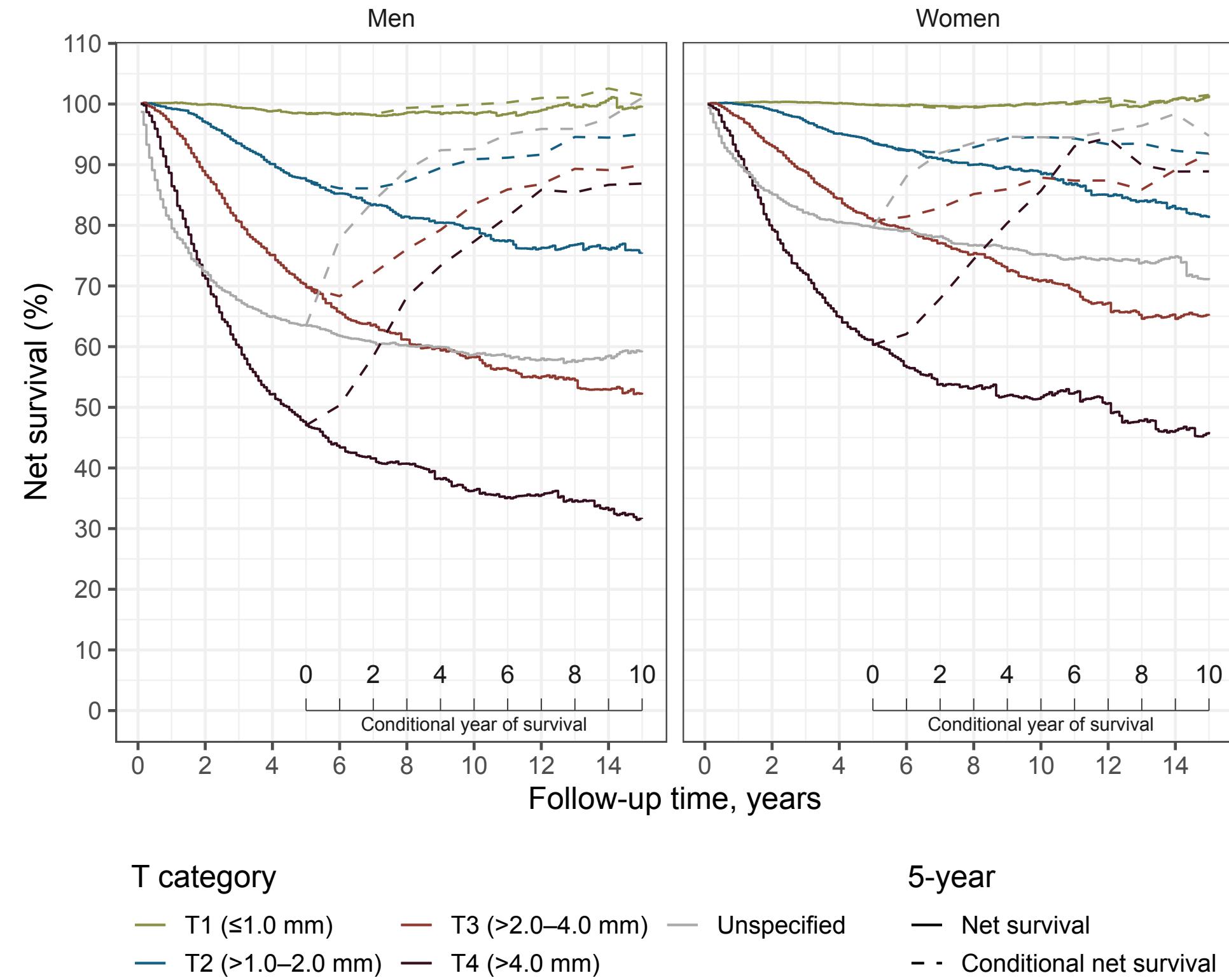


# Net survival

## Conditional net survival

5-year net survival becomes more similar in all T categories after surviving for a certain number of years.

For example, patients diagnosed with T2 and T3 melanoma have quite similar 5-year net survival after surviving 10 years.

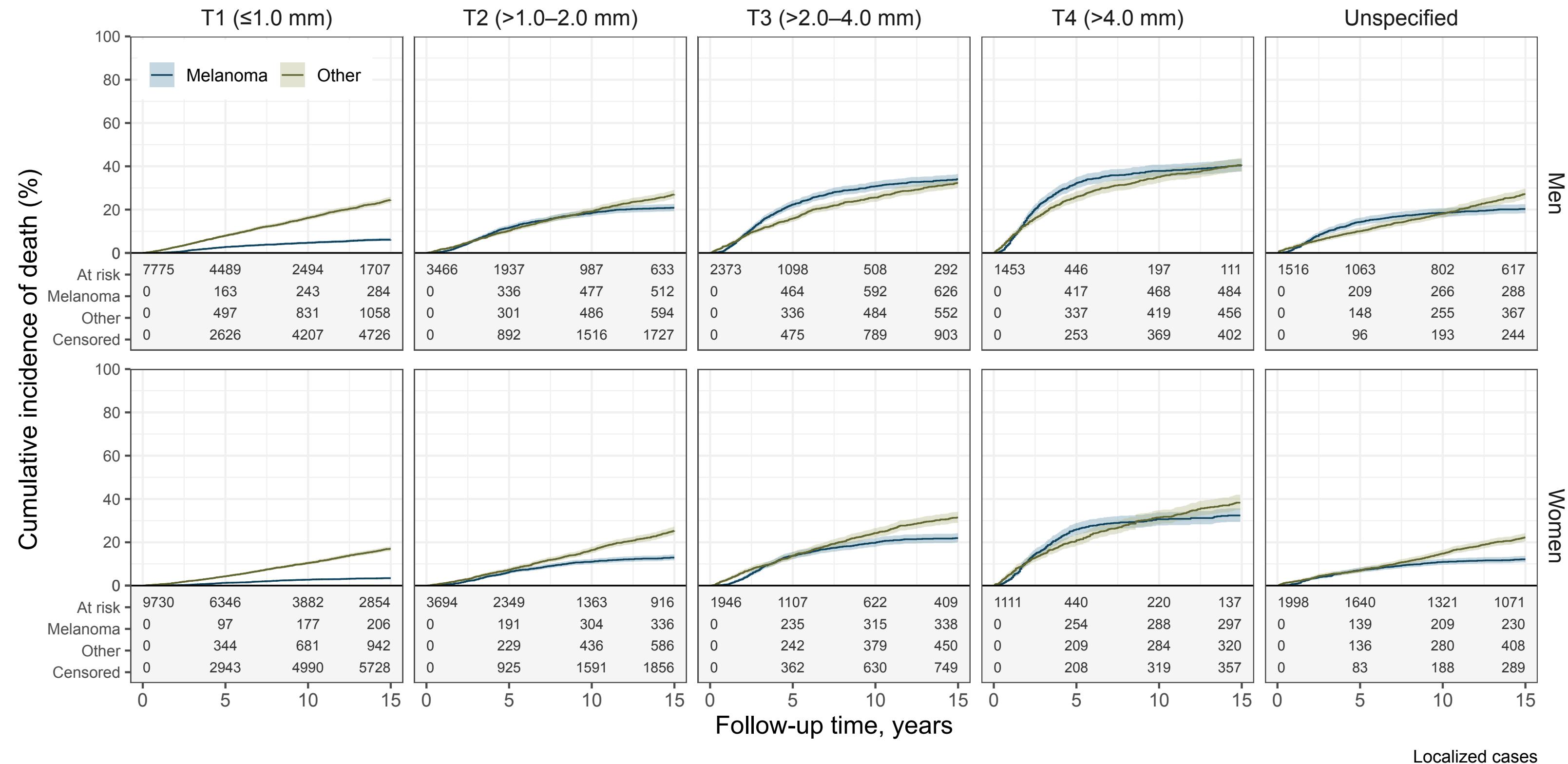


# Cumulative mortality

(Cumulative incidence of death)

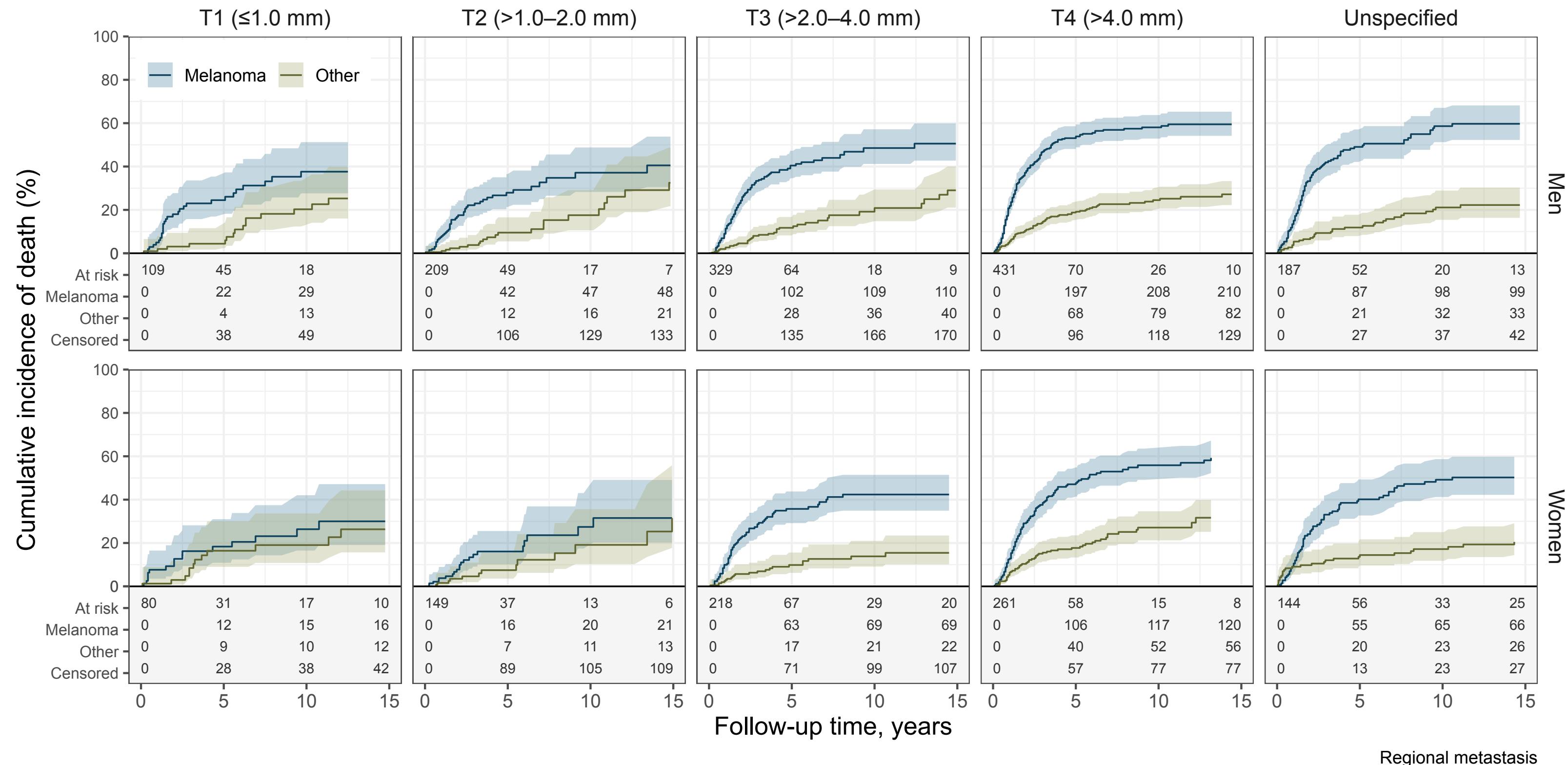
The cumulative incidence of death up to a given time is the probability of an individual dying by that time.

# Localized



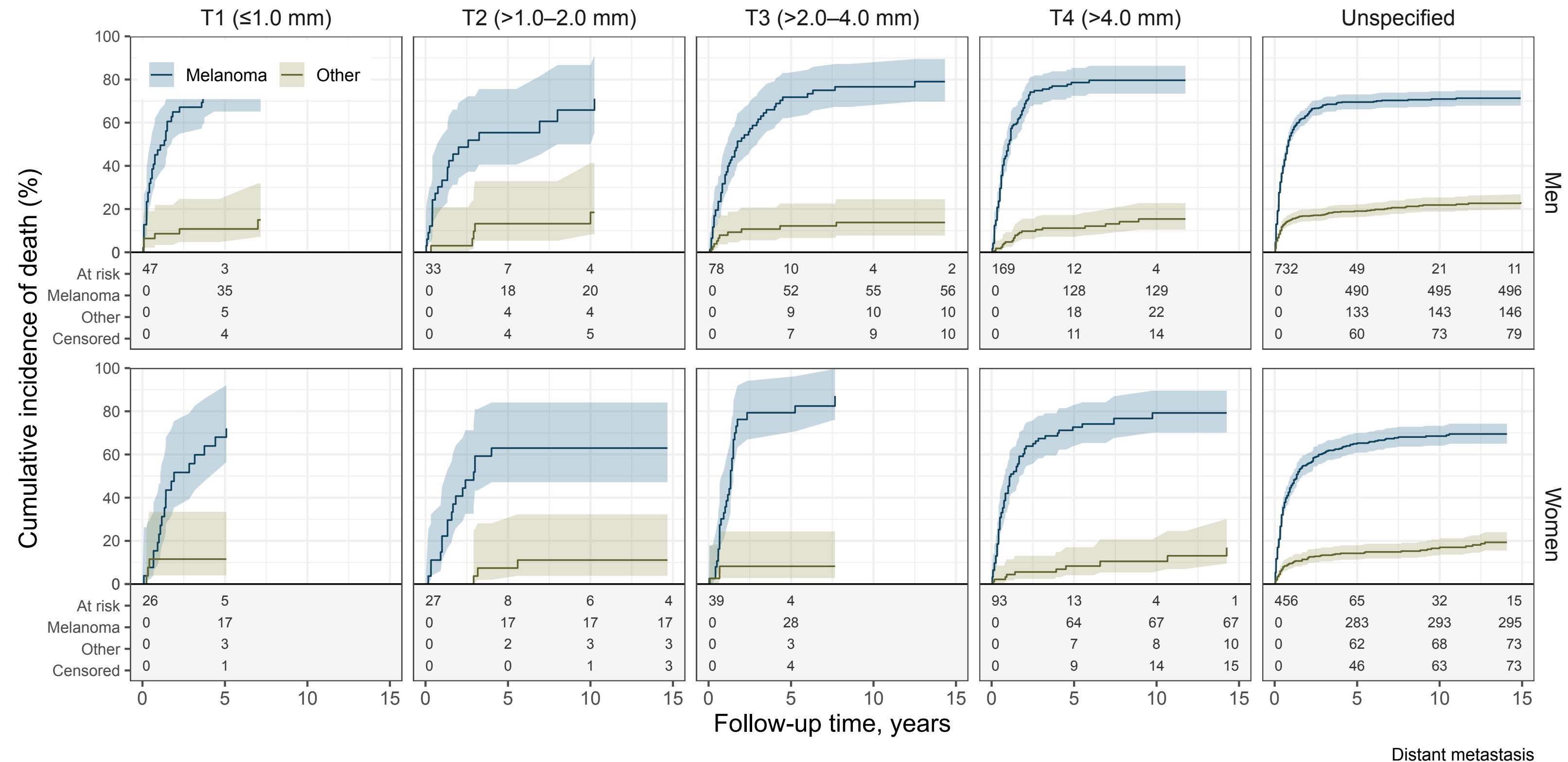
- In T1, more people die from other causes than melanoma.

# Regional metastasis



- More people die from melanoma than other causes in all T categories.

# Distant metastasis



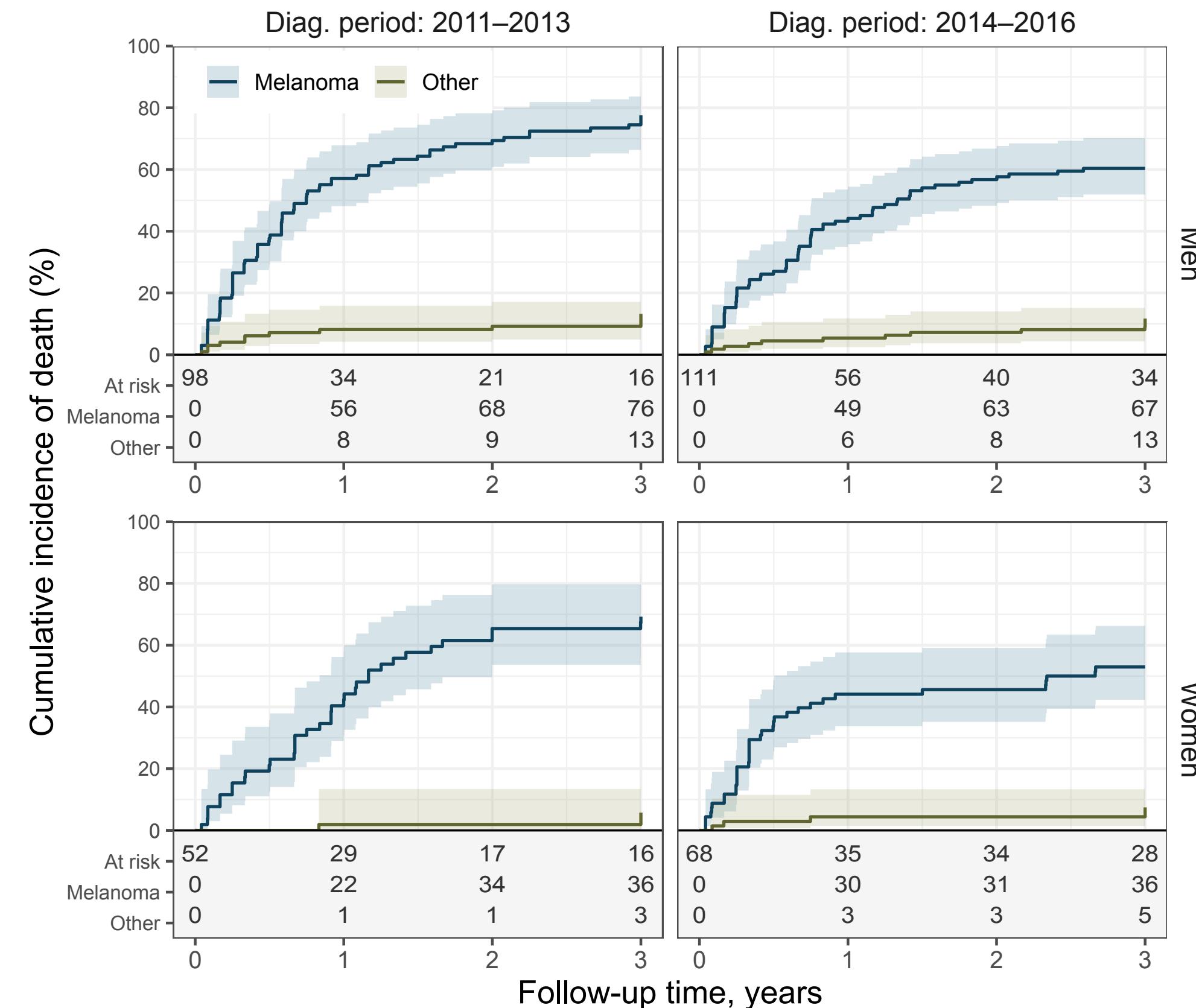
- Few cases of thin melanoma, not possible with long follow-up.
- Cases with unspecified tumour thickness had mortality similar to T3/T4 melanoma.

# Is this the effect of treatment?

## Melanoma with distant metastasis

Around year 2014, immunotherapy was introduced in Norway for stage IV melanoma.

Improved survival was observed in 2014–2019 compared to 2008–2013.



# Summary

- Men had worse net survival than women in all T categories



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- With every increase in T category, net survival decreased by more than 10% in both sexes.



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- After surviving a certain number of years, thickness was less relevant



# Summary

- Men had worse net survival than women in all T categories
- With every increase in T category, net survival decreased by more than 10% in both sexes.
- After surviving a certain number of years, thickness was less relevant
- Improved survival in Stage-IV melanoma after introduction of immunotherapy.



# Collaborators



UNIVERSITY  
OF OSLO



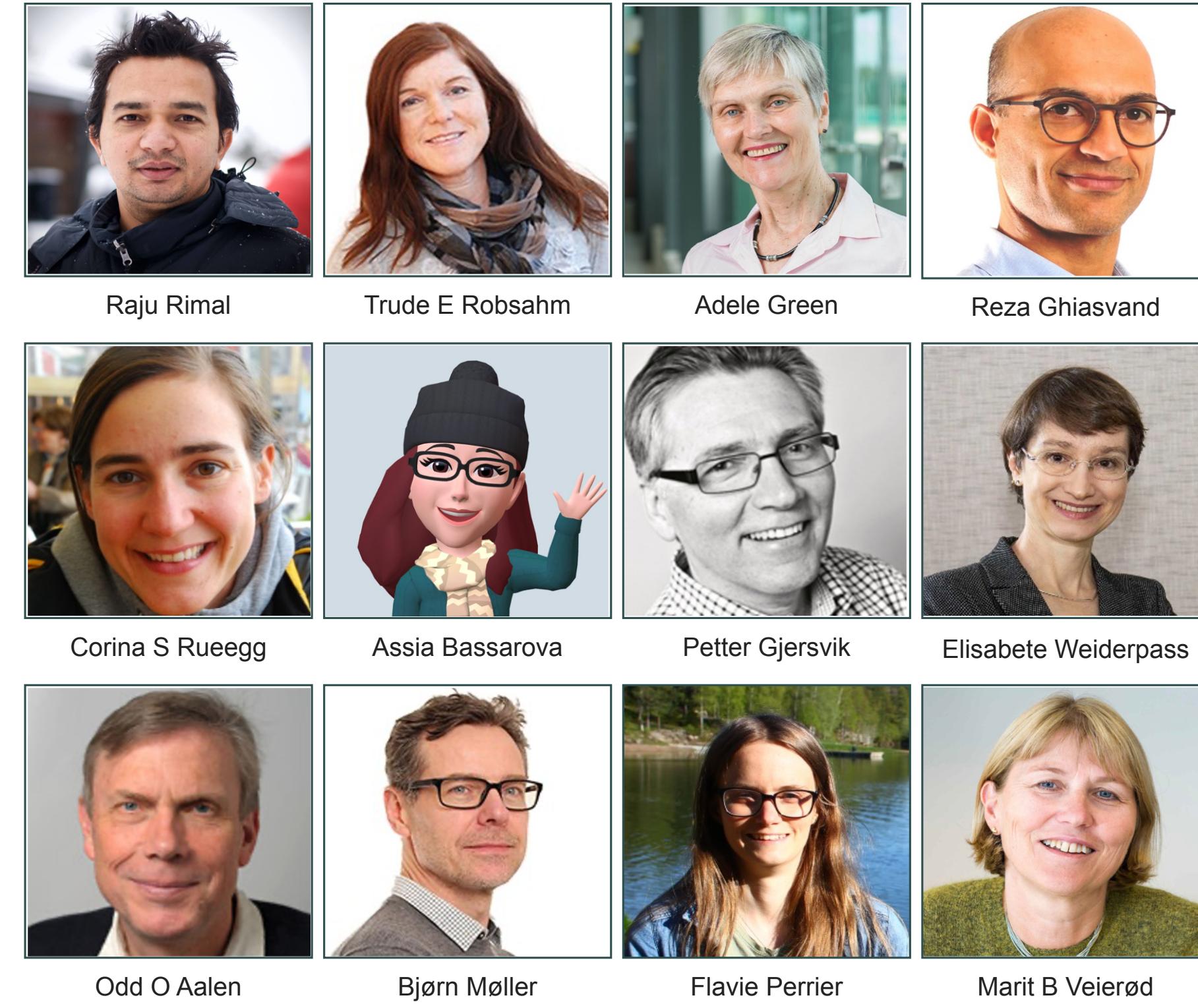
[International Agency for Research on Cancer](#)



Funded by:



# Coauthors



# EXTRA SLIDES

# Basic characteristics of data

## Localized

	T1	T2	T3	T4	Un	Sum
<b>Local</b>						
frequency	17505	7160	4319	2564	3514	35062
% overall	39.0%	15.9%	9.6%	5.7%	7.8%	78.1%
% within Clinical stage	49.9%	20.4%	12.3%	7.3%	10.0%	100.0%
% within T category	87.5%	83.3%	75.6%	64.1%	53.3%	
T1: ≤1.0 mm, T2: >1.0–2.0 mm, T3: >2.0–4.0 mm, T4: >4.0 mm, Un: Unspecified						

- More than 78% of cases are localized melanoma out of which almost 40% were in T1 category.
- Out of all localized melanoma almost 50% cases had thinner tumour upto 1mm.

# Basic characteristics of data

## Regional metastasis

	T1	T2	T3	T4	Un	Sum
<b>Regional metastasis</b>						
frequency	189	358	547	692	331	2117
% overall	0.4%	0.8%	1.2%	1.5%	0.7%	4.7%
% within Clinical stage	8.9%	16.9%	25.8%	32.7%	15.6%	100.0%
% within T category	0.9%	4.2%	9.6%	17.3%	5.0%	
T1: ≤1.0 mm, T2: >1.0–2.0 mm, T3: >2.0–4.0 mm, T4: >4.0 mm, Un: Unspecified						

Thicker cases (T3 and T4 categories) were common in melanoma with regional metastasis

# Basic characteristics of data

## Distant metastasis

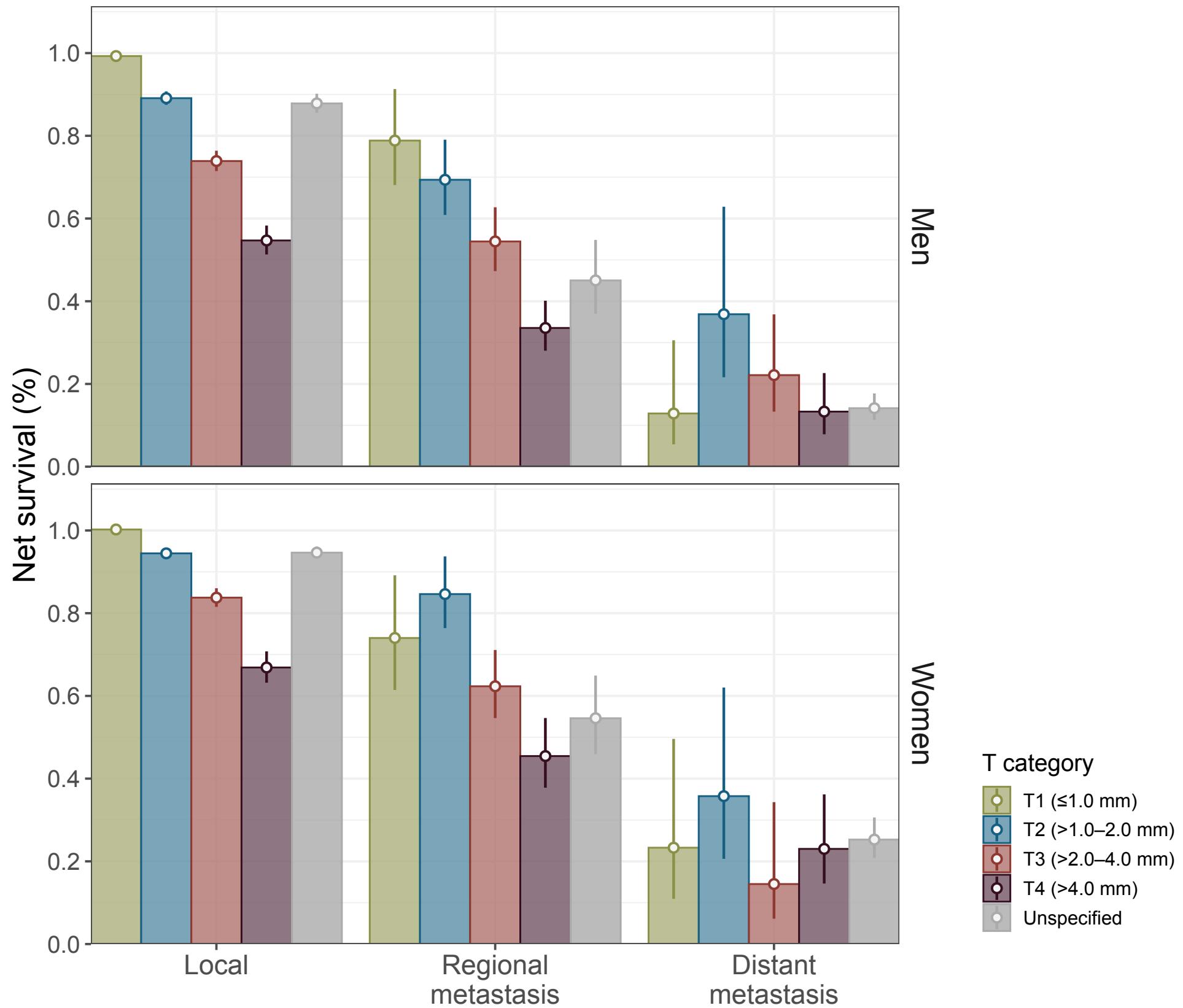
	T1	T2	T3	T4	Un	Sum
<b>Distant metastasis</b>						
frequency	73	60	117	262	1188	1700
% overall	0.2%	0.1%	0.3%	0.6%	2.6%	3.8%
% within Clinical stage	4.3%	3.5%	6.9%	15.4%	69.9%	100.0%
% within T category	0.4%	0.7%	2.0%	6.5%	18.0%	
T1: ≤1.0 mm, T2: >1.0–2.0 mm, T3: >2.0–4.0 mm, T4: >4.0 mm, Un: Unspecified						

- Almost 70% of the melanoma cases with distant metastasis had thickness unspecified.
- Around 13% of the cases had unspecified clinical stage and 3% had both clinical stage and thickness missing.

# Net survival

## By Clinical stage

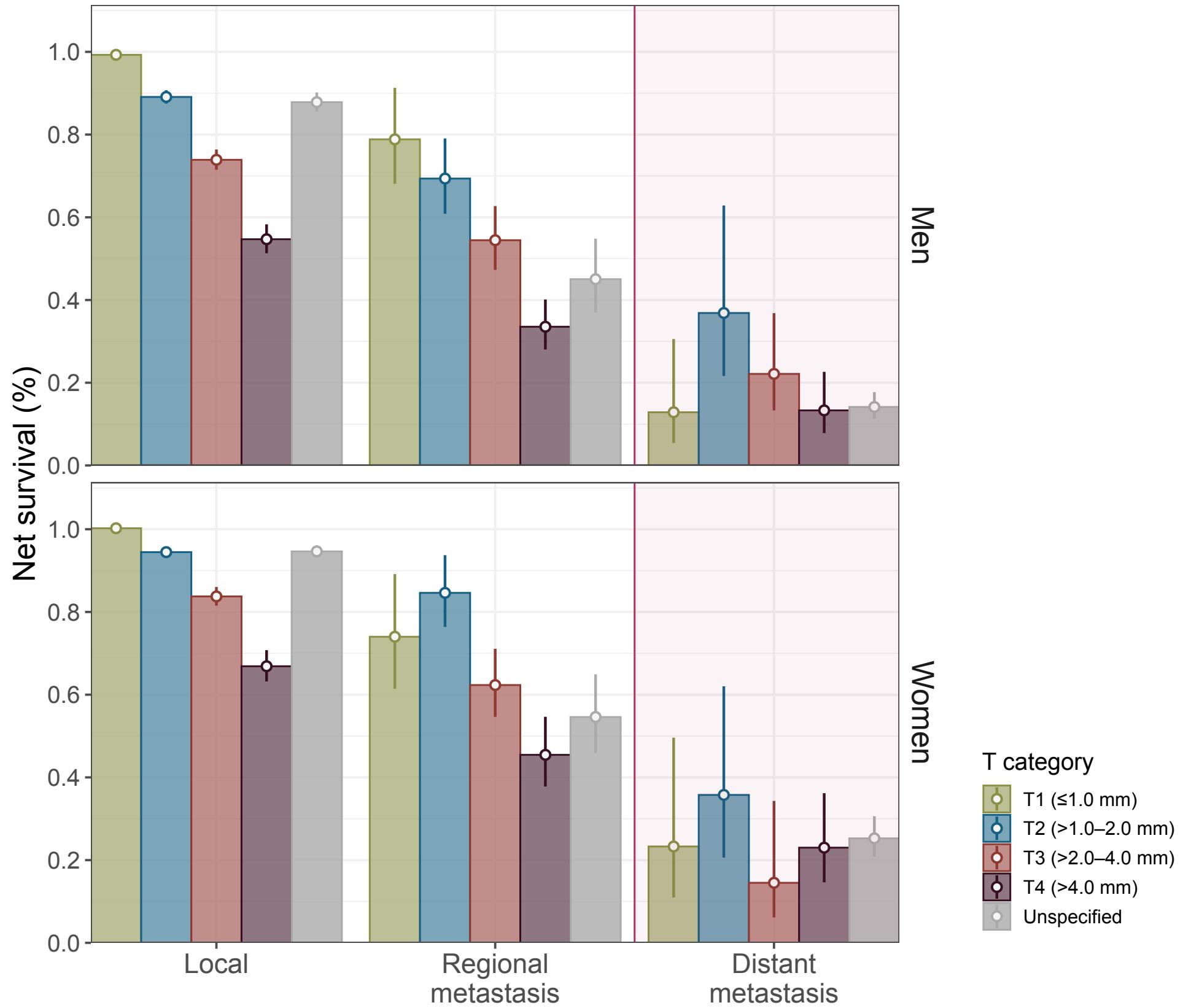
- Patients with thin (T1) localized melanoma have similar survival as general population.



# Net survival

## By Clinical stage

- Patients with thin (T1) localized melanoma have similar survival as general population.
- Distant metastasis cases have low net survival regardless of tumour thickness.





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