

Munich Cancer Registry



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Munich Cancer Registry at Munich Cancer Center
Marchioninstr. 15
Munich, 81377
Germany

<http://www.tumorregister-muenchen.de/en>

Cancer statistics: Survival

C43: Malignant melanoma

| | |
|-------------------|------------|
| Year of diagnosis | 1988-2012 |
| Patients | 15,957 |
| Diseases | 16,641 |
| Cases evaluated | 8,993 |
| Creation date | 03/25/2014 |
| Export date | 02/12/2014 |
| Population | 4.5 m |



http://www.tumorregister-muenchen.de/en/facts/surv/surv_C43__E.pdf

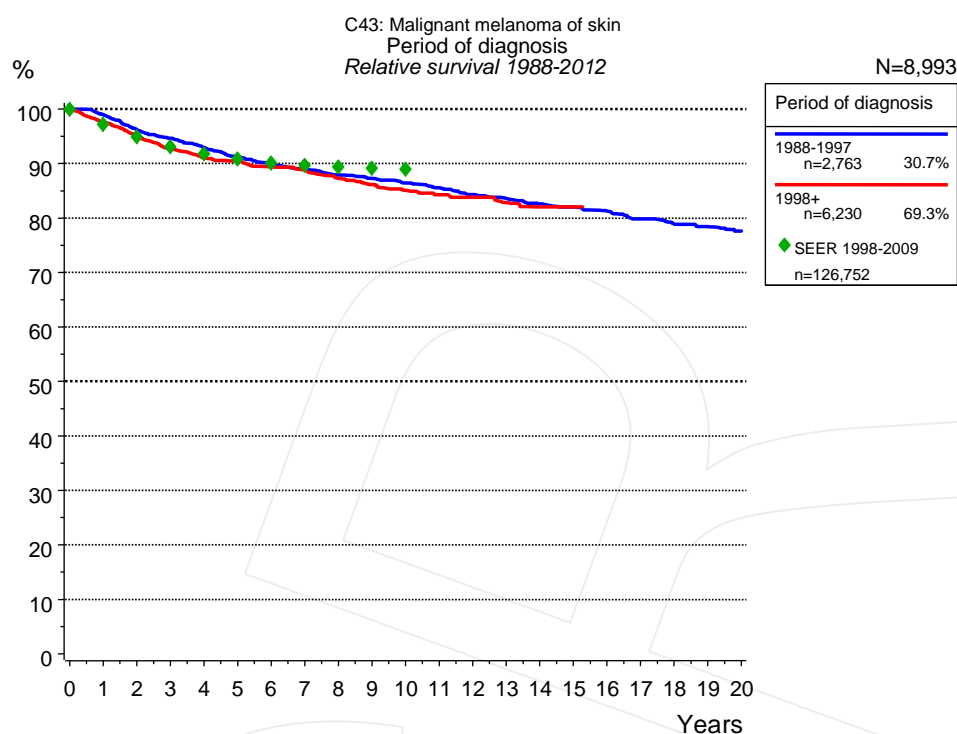


Figure 1a. Relative survival of patients with malignant melanoma by period of diagnosis. Included in the evaluation are 8,993 cases diagnosed between 1988 and 2012.

The survival results of the SEER program (Surveillance, Epidemiology, and End Results) of the American National Cancer Institute (NCI) are summarized as the period of diagnosis from 1998 to 2009, and are represented by green diamonds in order to facilitate comparisons between MCR and SEER.

The presented survival curves are derived from clinical records with valid follow-up informations, which means that death certificate cases (DCO) cases are omitted from the analysis. With this one restriction, the MCR has provided population-based statistics since 1988, collecting data on all cancer cases in the region of southern Bavaria. Historical data of previous time periods can be heavily selected, therefore, univariate survival comparisons of the presented time periods must be carefully considered. Nonetheless, all calculable survival curves are depicted to facilitate the comparison of long time follow-up analyses of relative survival between particular cancers.

| Years | Period of diagnosis | | | |
|-------|---------------------|--------|---------|--------|
| | 1988-1997 | | 1998+ | |
| | n=2,763 | | n=6,230 | |
| | obs. % | rel. % | obs. % | rel. % |
| 0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 1 | 97.1 | 98.9 | 95.8 | 97.6 |
| 2 | 92.6 | 96.1 | 91.5 | 95.0 |
| 3 | 89.5 | 94.6 | 87.7 | 92.6 |
| 4 | 86.2 | 92.9 | 84.8 | 91.1 |
| 5 | 83.2 | 91.3 | 82.7 | 90.4 |
| 6 | 80.5 | 90.0 | 80.3 | 89.4 |
| 7 | 78.3 | 89.0 | 78.4 | 88.8 |
| 8 | 76.0 | 87.9 | 75.7 | 87.3 |
| 9 | 74.1 | 87.2 | 73.5 | 86.2 |
| 10 | 72.0 | 86.4 | 71.4 | 85.1 |
| 11 | 70.0 | 85.5 | 69.6 | 84.3 |
| 12 | 67.7 | 84.3 | 68.1 | 83.8 |
| 13 | 65.9 | 83.6 | 65.9 | 82.8 |
| 14 | 63.9 | 82.6 | 64.1 | 82.0 |
| 15 | 62.5 | 82.0 | 63.7 | 82.0 |
| 16 | 60.6 | 81.2 | | |
| 17 | 58.4 | 79.8 | | |
| 18 | 56.5 | 78.8 | | |
| 19 | 55.1 | 78.4 | | |
| 20 | 53.5 | 77.6 | | |

Table 1b. Observed (obs.) and relative (rel.) survival of patients with malignant melanoma by period of diagnosis for period 1988-2012 (N=8,993).

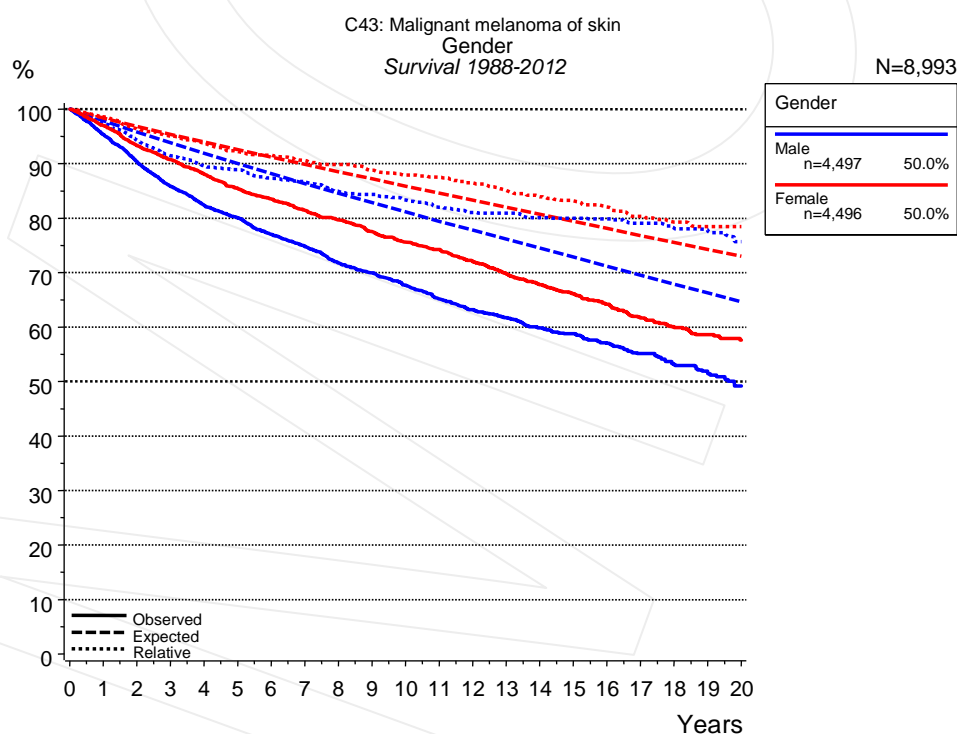


Figure 2a. Survival of patients with malignant melanoma by gender. Included in the evaluation are 8,993 cases diagnosed between 1988 and 2012.

| Years | Gender | | | |
|-------|-----------------|--------|-------------------|--------|
| | Male n=4,497 | | Female n=4,496 | |
| | obs. % | rel. % | obs. % | rel. % |
| 0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 1 | 95.3 | 97.4 | 97.0 | 98.6 |
| 2 | 90.3 | 94.3 | 93.3 | 96.4 |
| 3 | 85.8 | 91.5 | 90.7 | 95.1 |
| 4 | 82.4 | 89.6 | 88.1 | 93.7 |
| 5 | 80.1 | 88.9 | 85.4 | 92.3 |
| 6 | 77.0 | 87.3 | 83.5 | 91.5 |
| 7 | 74.8 | 86.6 | 81.4 | 90.6 |
| 8 | 71.8 | 84.9 | 79.6 | 89.8 |
| 9 | 69.9 | 84.3 | 77.5 | 88.8 |
| 10 | 67.7 | 83.4 | 75.6 | 87.9 |
| 11 | 65.1 | 82.0 | 74.2 | 87.5 |
| 12 | 63.2 | 81.0 | 72.0 | 86.5 |
| 13 | 61.7 | 80.9 | 69.8 | 85.1 |
| 14 | 59.8 | 80.1 | 67.7 | 83.9 |
| 15 | 58.8 | 80.0 | 66.1 | 83.2 |
| 16 | 57.0 | 79.9 | 64.2 | 82.0 |
| 17 | 55.1 | 79.0 | 61.7 | 80.3 |
| 18 | 53.2 | 78.1 | 59.9 | 79.3 |
| 19 | 51.4 | 77.6 | 58.6 | 78.5 |
| 20 | 49.2 | 75.7 | 57.6 | 78.5 |

Table 2b. Observed (obs.) and relative (rel.) survival of patients with malignant melanoma by gender for period 1988-2012 (N=8,993).

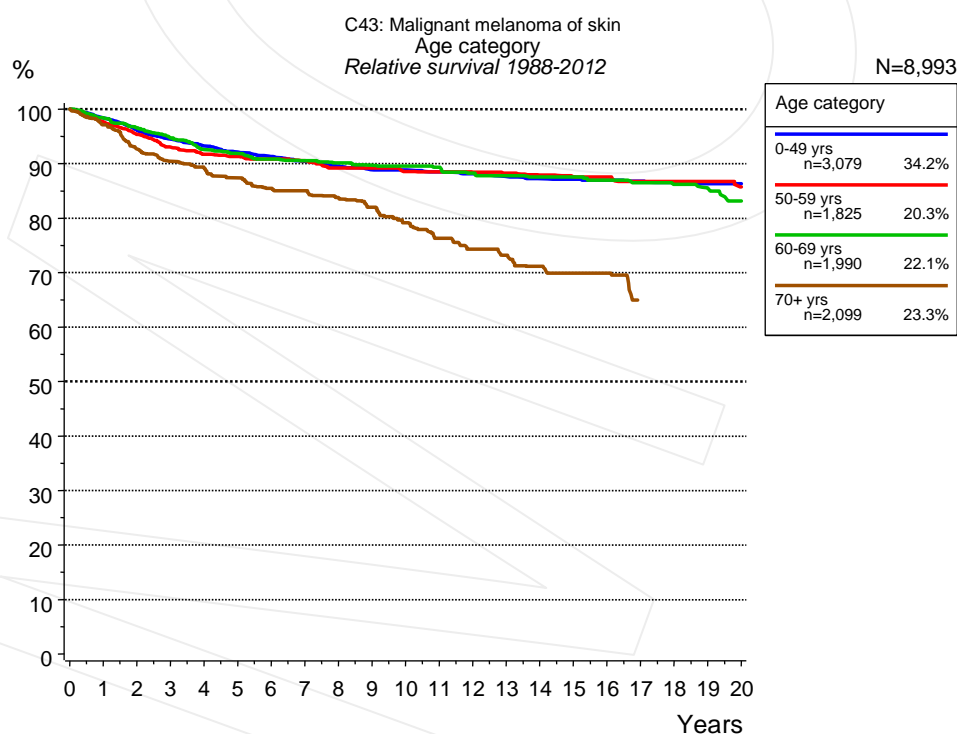


Figure 3a. Relative survival of patients with malignant melanoma by age category. Included in the evaluation are 8,993 cases diagnosed between 1988 and 2012.

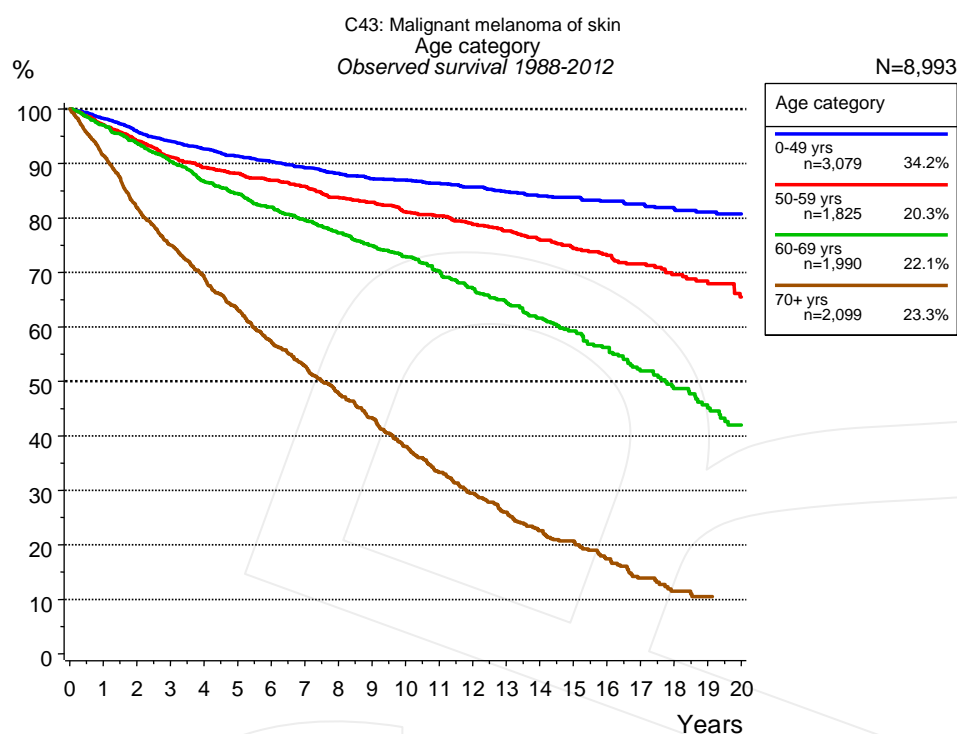


Figure 3b. Observed survival of patients with malignant melanoma by age category. Included in the evaluation are 8,993 cases diagnosed between 1988 and 2012.

| Years | Age category | | | | | | | |
|-------|---------------------|--------|----------------------|--------|----------------------|--------|--------------------|--------|
| | 0-49 yrs n=3,079 | | 50-59 yrs n=1,825 | | 60-69 yrs n=1,990 | | 70+ yrs n=2,099 | |
| | obs. % | rel. % | obs. % | rel. % | obs. % | rel. % | obs. % | rel. % |
| 0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 1 | 98.3 | 98.4 | 97.1 | 97.7 | 97.0 | 98.4 | 91.5 | 97.1 |
| 2 | 95.8 | 96.1 | 94.2 | 95.4 | 93.8 | 96.6 | 81.8 | 92.7 |
| 3 | 94.1 | 94.5 | 91.2 | 93.0 | 90.4 | 94.7 | 75.0 | 90.4 |
| 4 | 92.6 | 93.2 | 89.2 | 91.7 | 86.7 | 92.5 | 69.2 | 89.3 |
| 5 | 91.4 | 92.1 | 88.2 | 91.3 | 84.5 | 91.9 | 63.2 | 87.4 |
| 6 | 90.3 | 91.3 | 86.9 | 90.8 | 81.9 | 90.8 | 57.2 | 85.4 |
| 7 | 89.2 | 90.4 | 85.8 | 90.5 | 79.7 | 90.5 | 52.8 | 85.1 |
| 8 | 88.2 | 89.6 | 83.8 | 89.2 | 77.2 | 90.1 | 47.8 | 83.8 |
| 9 | 87.2 | 88.9 | 82.9 | 89.2 | 74.9 | 89.7 | 43.3 | 82.0 |
| 10 | 87.0 | 88.8 | 81.1 | 88.5 | 72.9 | 89.6 | 38.1 | 79.2 |
| 11 | 86.4 | 88.5 | 80.4 | 88.5 | 70.2 | 89.3 | 33.3 | 76.3 |
| 12 | 85.7 | 88.1 | 78.8 | 88.4 | 67.1 | 88.3 | 29.5 | 74.3 |
| 13 | 84.8 | 87.6 | 77.6 | 88.3 | 64.4 | 87.8 | 26.0 | 73.1 |
| 14 | 84.1 | 87.2 | 76.0 | 87.9 | 61.6 | 87.5 | 22.6 | 71.1 |
| 15 | 83.8 | 87.1 | 74.4 | 87.6 | 59.3 | 87.5 | 20.7 | 69.9 |
| 16 | 83.1 | 87.0 | 73.1 | 87.5 | 56.3 | 87.0 | 17.4 | 69.9 |
| 17 | 82.5 | 86.8 | 71.6 | 86.7 | 51.9 | 86.5 | 13.9 | 65.0 |
| 18 | 81.7 | 86.4 | 69.6 | 86.7 | 48.7 | 86.2 | | |
| 19 | 81.1 | 86.3 | 67.9 | 86.7 | 45.1 | 85.5 | | |
| 20 | 80.8 | 86.3 | 65.5 | 85.8 | 42.0 | 83.1 | | |

Table 3c. Observed (obs.) and relative (rel.) survival of patients with malignant melanoma by age category for period 1988-2012 (N=8,993).

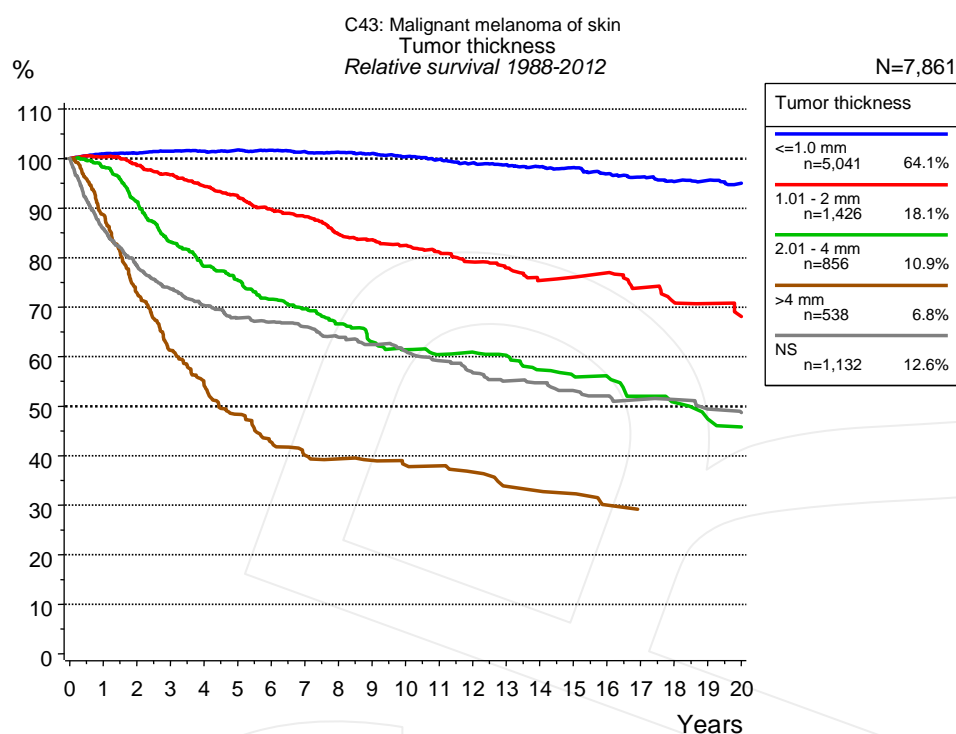


Figure 4a. Relative survival of patients with malignant melanoma by tumor thickness. For 8,576 of 8,993 cases diagnosed between 1988 and 2012 valid data could be obtained for this item. For a total of 7,861 cases an evaluable classification was established. The grey line represents the subgroup of 1,132 patients with missing values regarding tumor thickness (12.6% of 8,993 patients, the percent values of all other categories are related to n=7,861).

| Years | Tumor thickness | | | | | | | | | |
|-------|-----------------|--------|-------------|--------|-------------|--------|--------|--------|---------|--------|
| | <=1.0 mm | | 1.01 - 2 mm | | 2.01 - 4 mm | | >4 mm | | NS | |
| | n=5,041 | | n=1,426 | | n=856 | | n=538 | | n=1,132 | |
| | obs. % | rel. % | obs. % | rel. % | obs. % | rel. % | obs. % | rel. % | obs. % | rel. % |
| 0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 1 | 99.5 | 100.9 | 98.6 | 100.3 | 95.8 | 98.3 | 85.1 | 88.6 | 83.8 | 85.9 |
| 2 | 98.1 | 101.1 | 95.2 | 98.6 | 86.9 | 91.3 | 67.4 | 72.9 | 74.7 | 78.3 |
| 3 | 97.0 | 101.5 | 91.8 | 96.7 | 77.1 | 83.2 | 54.8 | 61.3 | 68.8 | 73.6 |
| 4 | 95.5 | 101.5 | 88.1 | 94.4 | 70.8 | 78.2 | 47.3 | 54.4 | 64.4 | 70.4 |
| 5 | 94.2 | 101.7 | 84.8 | 92.5 | 66.7 | 75.4 | 40.6 | 48.4 | 60.7 | 67.8 |
| 6 | 92.6 | 101.7 | 80.9 | 89.7 | 61.7 | 71.6 | 34.9 | 42.7 | 58.9 | 67.0 |
| 7 | 90.9 | 101.4 | 78.1 | 88.3 | 58.6 | 69.6 | 31.8 | 40.1 | 57.0 | 66.1 |
| 8 | 89.3 | 101.3 | 73.6 | 84.7 | 54.8 | 66.6 | 30.6 | 39.3 | 54.1 | 63.9 |
| 9 | 87.6 | 101.0 | 71.4 | 83.6 | 50.7 | 63.0 | 29.7 | 39.0 | 51.7 | 62.5 |
| 10 | 85.6 | 100.4 | 69.1 | 82.4 | 48.3 | 61.4 | 28.2 | 38.1 | 49.8 | 61.1 |
| 11 | 83.7 | 99.8 | 66.6 | 81.1 | 46.5 | 60.4 | 27.7 | 38.0 | 47.2 | 59.2 |
| 12 | 81.7 | 99.1 | 63.9 | 79.1 | 45.8 | 60.9 | 25.9 | 36.7 | 44.3 | 56.7 |
| 13 | 80.0 | 98.8 | 61.7 | 77.9 | 44.3 | 60.2 | 23.2 | 33.8 | 42.3 | 55.1 |
| 14 | 78.2 | 98.3 | 58.6 | 75.4 | 41.3 | 57.3 | 22.5 | 32.8 | 41.3 | 54.7 |
| 15 | 76.8 | 98.2 | 58.2 | 76.0 | 39.8 | 56.1 | 21.7 | 32.3 | 39.2 | 53.1 |
| 16 | 74.3 | 96.9 | 57.9 | 76.9 | 38.6 | 56.0 | 19.0 | 30.1 | 38.0 | 52.1 |
| 17 | 72.4 | 96.3 | 54.3 | 73.9 | 35.2 | 52.0 | 17.8 | 29.1 | 36.7 | 51.3 |
| 18 | 70.4 | 95.4 | 51.4 | 70.9 | 33.5 | 50.8 | 17.8 | 27.9 | 35.6 | 51.3 |
| 19 | 69.3 | 95.6 | 50.0 | 70.7 | 30.4 | 47.4 | | | 33.6 | 49.4 |
| 20 | 67.5 | 95.0 | 47.6 | 68.1 | 29.4 | 45.8 | | | 32.6 | 48.7 |

Table 4b. Observed (obs.) and relative (rel.) survival of patients with malignant melanoma by tumor thickness for period 1988-2012 (N=7,861).

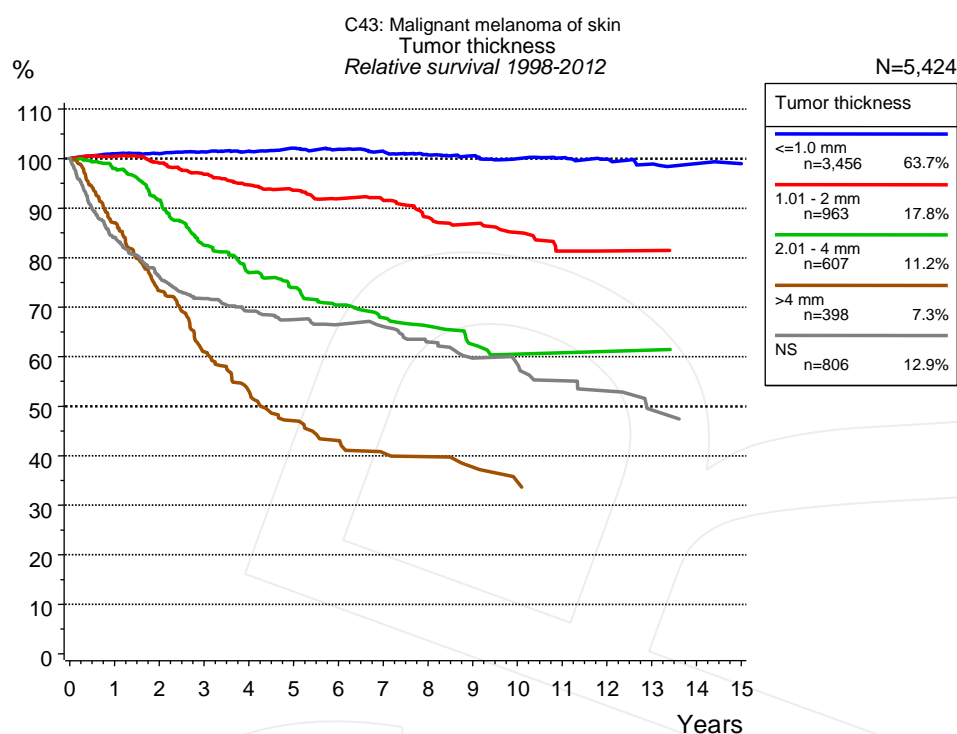


Figure 4c. Relative survival of patients with malignant melanoma by tumor thickness. For 5,941 of 6,230 cases diagnosed between 1998 and 2012 valid data could be obtained for this item. For a total of 5,424 cases an evaluable classification was established. The grey line represents the subgroup of 806 patients with missing values regarding tumor thickness (12.9% of 6,230 patients, the percent values of all other categories are related to n=5,424).

| Years | Tumor thickness | | | | | | | | | |
|-------|-----------------|--------|-------------|--------|-------------|--------|--------|--------|--------|--------|
| | ≤1.0 mm | | 1.01 - 2 mm | | 2.01 - 4 mm | | >4 mm | | NS | |
| | n=3,456 | | n=963 | | n=607 | | n=398 | | n=806 | |
| | obs. % | rel. % | obs. % | rel. % | obs. % | rel. % | obs. % | rel. % | obs. % | rel. % |
| 0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 1 | 99.6 | 101.0 | 98.7 | 100.4 | 95.4 | 98.0 | 83.7 | 87.1 | 82.0 | 84.0 |
| 2 | 98.1 | 101.0 | 95.8 | 99.1 | 86.9 | 91.6 | 67.8 | 73.3 | 72.5 | 76.1 |
| 3 | 97.1 | 101.3 | 92.0 | 96.8 | 76.3 | 82.5 | 54.5 | 61.0 | 66.7 | 71.7 |
| 4 | 95.8 | 101.5 | 88.5 | 94.7 | 69.3 | 76.9 | 46.6 | 52.9 | 63.1 | 69.2 |
| 5 | 94.9 | 102.1 | 86.0 | 93.6 | 65.1 | 73.9 | 39.8 | 47.0 | 60.2 | 67.5 |
| 6 | 93.2 | 101.9 | 82.9 | 91.9 | 60.5 | 70.4 | 35.7 | 43.0 | 58.1 | 66.5 |
| 7 | 91.5 | 101.4 | 81.4 | 91.6 | 57.0 | 67.8 | 32.4 | 40.6 | 56.6 | 66.1 |
| 8 | 89.3 | 100.7 | 76.9 | 88.1 | 54.3 | 66.2 | 31.5 | 39.8 | 52.6 | 62.9 |
| 9 | 87.9 | 100.5 | 74.5 | 86.8 | 50.2 | 62.4 | 29.2 | 37.7 | 48.6 | 59.7 |
| 10 | 86.0 | 100.0 | 71.6 | 85.1 | 47.8 | 60.5 | 26.4 | 34.7 | 47.0 | 58.4 |
| 11 | 84.9 | 100.1 | 66.9 | 81.3 | 47.8 | 60.8 | 24.8 | 32.0 | 43.6 | 55.1 |
| 12 | 83.3 | 99.8 | 66.0 | 81.4 | 47.8 | 61.0 | | | 41.2 | 53.0 |
| 13 | 81.2 | 98.9 | 66.0 | 81.4 | 47.8 | 61.3 | | | 36.6 | 49.2 |
| 14 | 80.0 | 99.0 | | | | | | | | |
| 15 | 79.2 | 99.0 | | | | | | | | |

Table 4d. Observed (obs.) and relative (rel.) survival of patients with malignant melanoma by tumor thickness for period 1998-2012 (N=5,424).

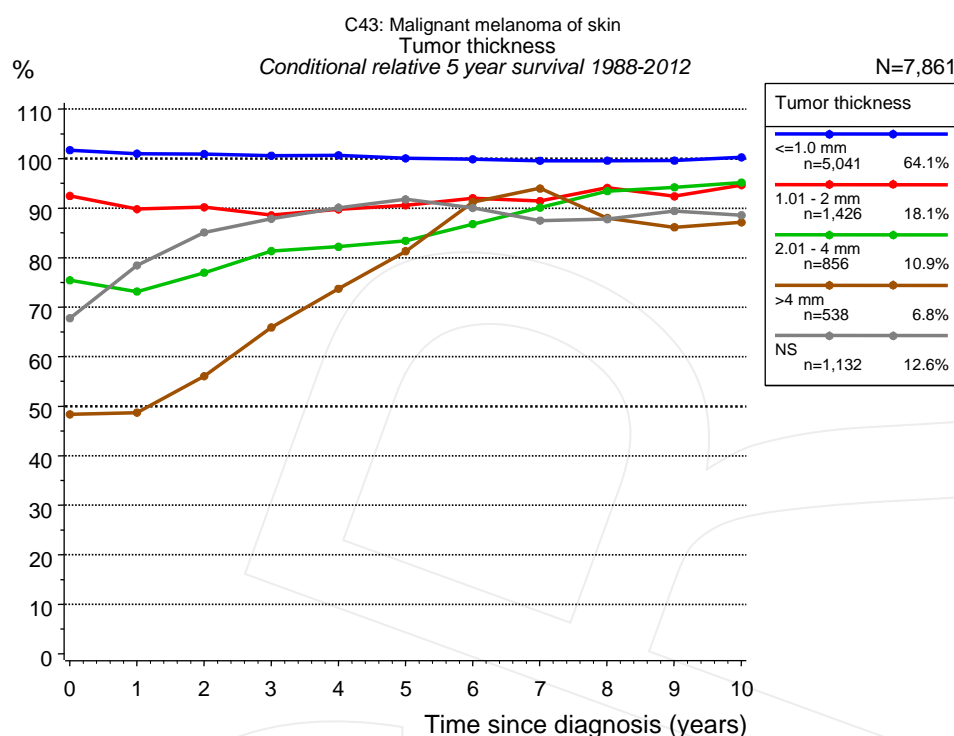


Figure 4e. Conditional relative 5-year survival of patients with malignant melanoma by tumor thickness. For 8,576 of 8,993 cases diagnosed between 1988 and 2012 valid data could be obtained for this item. For a total of 7,861 cases an evaluable classification was established. The grey line represents the subgroup of 1,132 patients with missing values regarding tumor thickness (12.6% of 8,993 patients, the percent values of all other categories are related to n=7,861).

| Years | Tumor thickness | | | | | | | | | |
|-------|-----------------|---------------------|-------------|---------------------|-------------|---------------------|-------|---------------------|-------|---------------------|
| | ≤1.0 mm | | 1.01 - 2 mm | | 2.01 - 4 mm | | >4 mm | | NS | |
| | n | Cond. surv. % 5 yrs | n | Cond. surv. % 5 yrs | n | Cond. surv. % 5 yrs | n | Cond. surv. % 5 yrs | n | Cond. surv. % 5 yrs |
| 0 | 5,041 | 101.7 | 1,426 | 92.5 | 856 | 75.4 | 538 | 48.4 | 1,132 | 67.8 |
| 1 | 4,818 | 101.0 | 1,357 | 89.8 | 785 | 73.1 | 437 | 48.7 | 901 | 78.4 |
| 2 | 4,351 | 100.9 | 1,224 | 90.2 | 664 | 77.0 | 312 | 56.0 | 743 | 85.1 |
| 3 | 3,905 | 100.6 | 1,078 | 88.5 | 543 | 81.3 | 217 | 65.9 | 633 | 87.8 |
| 4 | 3,496 | 100.7 | 932 | 89.7 | 457 | 82.2 | 168 | 73.7 | 531 | 90.1 |
| 5 | 3,113 | 100.0 | 810 | 90.6 | 387 | 83.4 | 128 | 81.3 | 438 | 91.8 |
| 6 | 2,708 | 99.9 | 684 | 92.0 | 315 | 86.8 | 93 | 91.2 | 376 | 90.0 |
| 7 | 2,447 | 99.6 | 598 | 91.4 | 272 | 90.1 | 79 | 94.0 | 336 | 87.5 |
| 8 | 2,198 | 99.6 | 520 | 94.1 | 227 | 93.4 | 73 | 88.0 | 291 | 87.8 |
| 9 | 1,964 | 99.6 | 452 | 92.4 | 196 | 94.2 | 64 | 86.1 | 251 | 89.4 |
| 10 | 1,745 | 100.2 | 390 | 94.6 | 173 | 95.2 | 56 | 87.1 | 223 | 88.6 |

Table 4f. Conditional relative 5-year survival of patients with malignant melanoma by tumor thickness for period 1988-2012 (N=7,861).

Conditional relative survival rates refer to the relative survival probability, in this case for 5 years after cancer diagnosis, compared to the age- and sex-matched population (=100%) under the condition of being alive for a certain time period (x-axis in Figure 4c). The results illustrate to what extent the cancer induced mortality of particular subgroups declines in the subsequent years after detection of the malignancy. For instance, according to the presented survival statistics, patients in the subgroup tumor thickness="≤1.0 mm", who are alive at least 3 years after cancer diagnosis, the conditional relative 5-year survival rate is 100.6% (n=3,905).

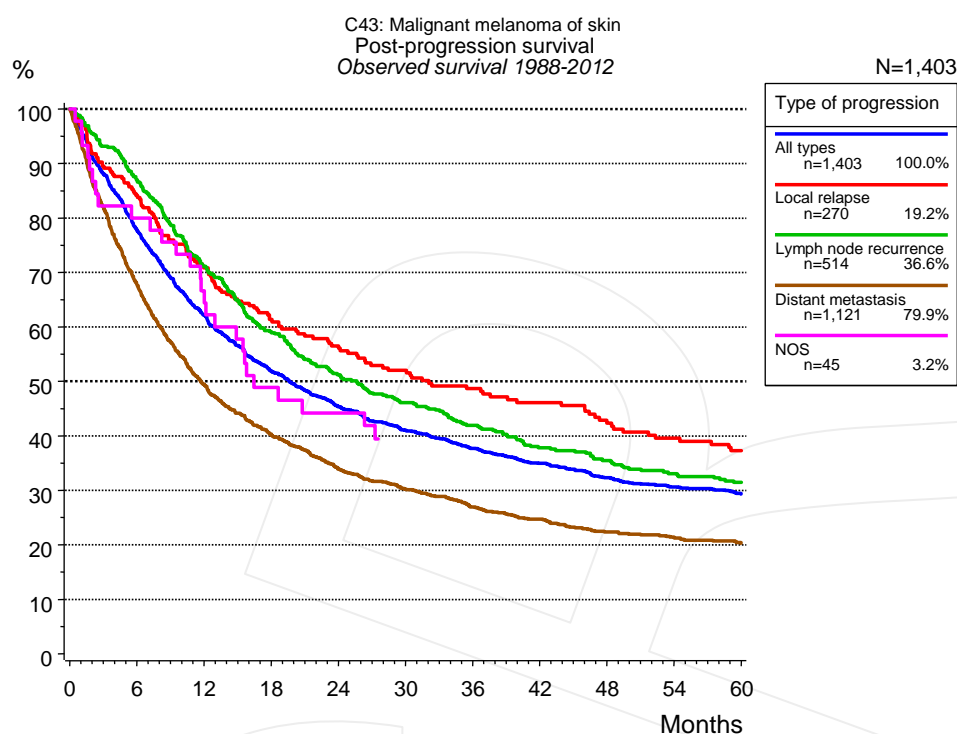


Figure 5a. Observed post-progression survival of 1,403 patients with malignant melanoma diagnosed between 1988 and 2012 (incl. M1). These 1,403 patients with documented progression events during their course of disease represent 15.6% of the totally 8,993 evaluated cases. Patients with cancer relapse documented via death certificates only were excluded (n=122, 1.4%). Multiple progression types on different sites are included in the evaluation even when not occurring synchronously. The NOS (not otherwise specified) class is included under the condition, that it is the one and only progression type during the course of disease.

Medical record documentation often lacks the linguistic severity to distinguish between local relapse, regional lymph node metastasis and distant spread in solid cancers. Frequently, the statement “not specified” is the only information in registries regarding relapse of the disease. The category “All types” denotes all cases who suffered from at least one relapse during the course of disease (incl. primary M1-status). Although, the real number of relapsed patients is likely to be much higher. The accumulated percentage of patients with local relapse or distant metastasis exceeds the 100% value because patients are potentially considered in more than one subgroup.

| Months | Type of progression | | | | |
|--------|---------------------------|-----------------------------|-------------------------------------|------------------------------------|------------------|
| | All types n=1,403 % | Local relapse n=270 % | Lymph node recurrence n=514 % | Distant metastasis n=1,121 % | NOS n=45 % |
| 0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 12 | 62.1 | 70.8 | 71.1 | 49.5 | 64.4 |
| 24 | 45.3 | 56.5 | 51.2 | 33.9 | 44.2 |
| 36 | 37.7 | 48.7 | 41.9 | 27.0 | |
| 48 | 32.3 | 42.3 | 35.5 | 22.3 | |
| 60 | 29.3 | 37.3 | 31.5 | 20.3 | |

Table 5b. Observed post-progression survival of patients with malignant melanoma for period 1988-2012 (N=1,403).

Shortcuts

| | |
|------|--|
| AS | Assembled survival chart (observed, expected, relative) |
| CS | Conditional survival |
| DCO | Death certificate only. The death certificate provides the only notification to the registry. |
| MCR | Munich Cancer Registry, Germany (Tumorregister München) |
| NA | Not available |
| NCI | National Cancer Institute, USA |
| NOS | Not otherwise specified |
| OS | Observed/overall survival (Kaplan-Meier estimate) |
| PPS | Post-progression survival |
| RS | Relative Survival. Ratio of observed and expected survival (derived from the normal population) |
| SEER | Surveillance, Epidemiology, and End Results, USA |
| TTP | Time to progression Date of entry: Date of diagnosis Event (Progression): First local recurrence, lymph node relapse or distant metastasis, unspecified recurrence First all-cause recurrence is illustrated by survival curves (Kaplan-Meier estimate). First local recurrence, lymph node relapse or distant metastasis are depicted cumulatively, where applicable ("reverse" Kaplan-Meier estimate). |
| UICC | Union for International Cancer Control, Geneva |

Recommended Citation

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