

Breast Cancer Survival Insights

Overview

This dashboard provides a comprehensive analysis of the METABRIC breast cancer dataset. It visualizes patient demographics, tumor characteristics, treatment patterns, and survival outcomes to support clinical research and cohort profiling. Use these visualizations to identify key trends, outcome disparities, and actionable insights for further investigation.

Overall Insights

- Breast Invasive Ductal Carcinoma is the dominant cancer type, comprising 74% of the cohort; Mixed Ductal/Lobular (10.7%) and Invasive Lobular Carcinoma (~7.6%) are the next most common, all other types are minor fractions.
- Median overall survival declines with increasing age at diagnosis: ~140 months (age 40–49) down to ~40.7 months (age 90–99), with the steepest decreases after age 60 and particularly beyond 70.
- Higher histologic grade is linked to worse outcomes: Grade 3 has substantially more deaths than living patients (579 deceased vs 374 living), while Grade 1 shows better prognosis (93 living vs 76 deceased).
- Median overall survival decreases as tumor stage advances (Stage 0 ≈ 80.4 mo → Stage 4 ≈ 43.33 mo), and percent living falls sharply by stage (Stage 0: 83.3% → Stage 4: 10%), indicating markedly worse survival with higher stage.
- Stage 1 shows an unusually high median survival (~152.3 months) relative to Stage 0, likely reflecting small sample size for Stage 0 (n=12) or sample composition effects.



Median Survival (Months)

116.47



Total Patients

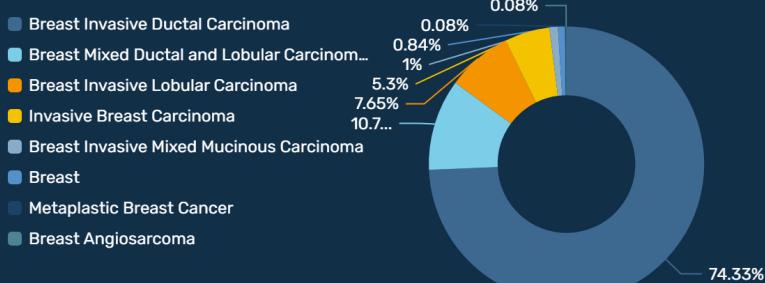
2509



Relapse Rate

40.27%

Cancer Type Detailed Proportions



Key Insights

- Breast Invasive Ductal Carcinoma overwhelmingly dominates the cohort (~74%), indicating it is the primary cancer type represented
- The next most common types are Mixed Ductal/Lobular (~10.7%) and Invasive Lobular Carcinoma (~7.6%), with all other types comprising only a small fraction

Key Insights

- Median overall survival declines steadily with older age at diagnosis, from ~140 months in the 40–49 bin down to ~40.7 months in the 90–99 bin
- The largest drops appear after age 60, indicating worse prognosis with increasing age, particularly beyond 70

Median Overall Survival by Age at Diagnosis



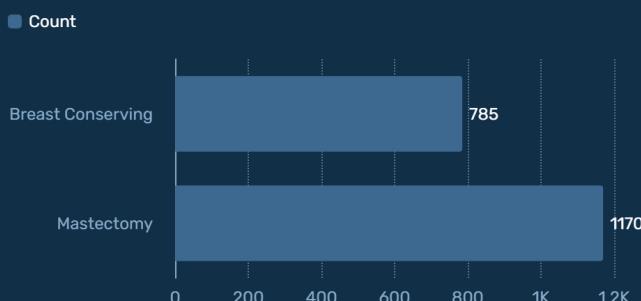
Survival Status by Histologic Grade



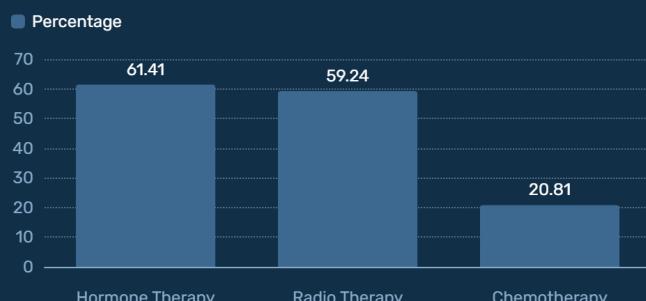
Key Insights

- Higher histologic grade is associated with more deaths: Grade 3 shows the largest deceased count (579) versus living (374)
- Grade 1 has a higher proportion living than deceased (93 living vs 76 deceased), suggesting better prognosis at lower grade

Distribution of Breast Surgery Types



Therapy Usage Rates



Mutation Count vs. Survival



Key Insights

- Median overall survival decreases as tumor stage increases (Stage 0: 80.4 mo → Stage 4: 43.33 mo), showing worse outcomes with advanced stage
- Percent living also falls sharply with stage (Stage 0: 83.3% → Stage 4: 10%), confirming survival probability declines by stage; Stage 1 has unexpectedly high median survival (152.3 mo) relative to Stage 0, likely influenced by small Stage 0 sample (n=12)

Survival by Tumor Stage

Tumor Stage	Patient Count	Median Overall Survival	Percent Living
0	12	80.4	83.30%
1	501	152.3	54.50%
2	825	108.6	39.80%
3	118	54.75	26.30%
4	10	43.33333333	10.00%

Recurrence by Therapy Type

Therapy	Patients Received	Recurred Count	Percent Recurred
Chemotherapy	412	222	53.90%
Hormone Therapy	1216	485	39.90%
Radio Therapy	1172	482	41.10%