Dissemination of Guideline Therapy for Localized Breast Cancer Patients

Results from a NPCR's Pattern of Care Study

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Objectives

- Determine proportions of women with localized breast cancer receiving the standards of care.
- Examine factors associated with receipt of the standards of care.

Standards of Care for Localized Breast Cancer Patients based on NIH Consensus Development Conference statements and clinical alerts, 1988 and 1990

Primary Treatment

- Lumpectomy with radiation therapy or mastectomy

Systemic adjuvant therapies

- Multi-agent chemotherapy for patients with ER-negative breast tumors ≤ 3 cm or with tumors >3 cm regardless of ER status.
- Hormonal therapy for patients with ER-positive breast tumors ≤ 3 cm.
- No adjuvant therapy for patients with breast tumors < 1 cm

Methods – eligibility criteria

- Female breast cancer (ICD-O-2: C50.0-C50.9) diagnosed in 1997.
- Localized disease (summary stage=1)
- Sequence number=00
- Not bilateral synchronous breast tumors and Paget's disease.

Methods- statistical analyses

- Univariate analysis: Chi-square test was used to examine associations of receipt of the standards of care with each of the study factors. Logistic regression was used to calculate odds ratios.

- Multivariate analysis: Logistic regression was used to identify the factors that are statistically significantly associated with receipt of the standards of care adjusting for other significant factors.

Lumpectomy (breast conserving surgery) with Radiation Therapy or Mastectomy

Results

- Total 2,506 localized breast cancer patients

Age Distribution

Age	Count	Percent
< 50 years old	551	22.0
50-64 years	814	32.5
65-74 years	606	24.2
75 years and older	534	21.3

Results

Distribution of Race and Ethnicity

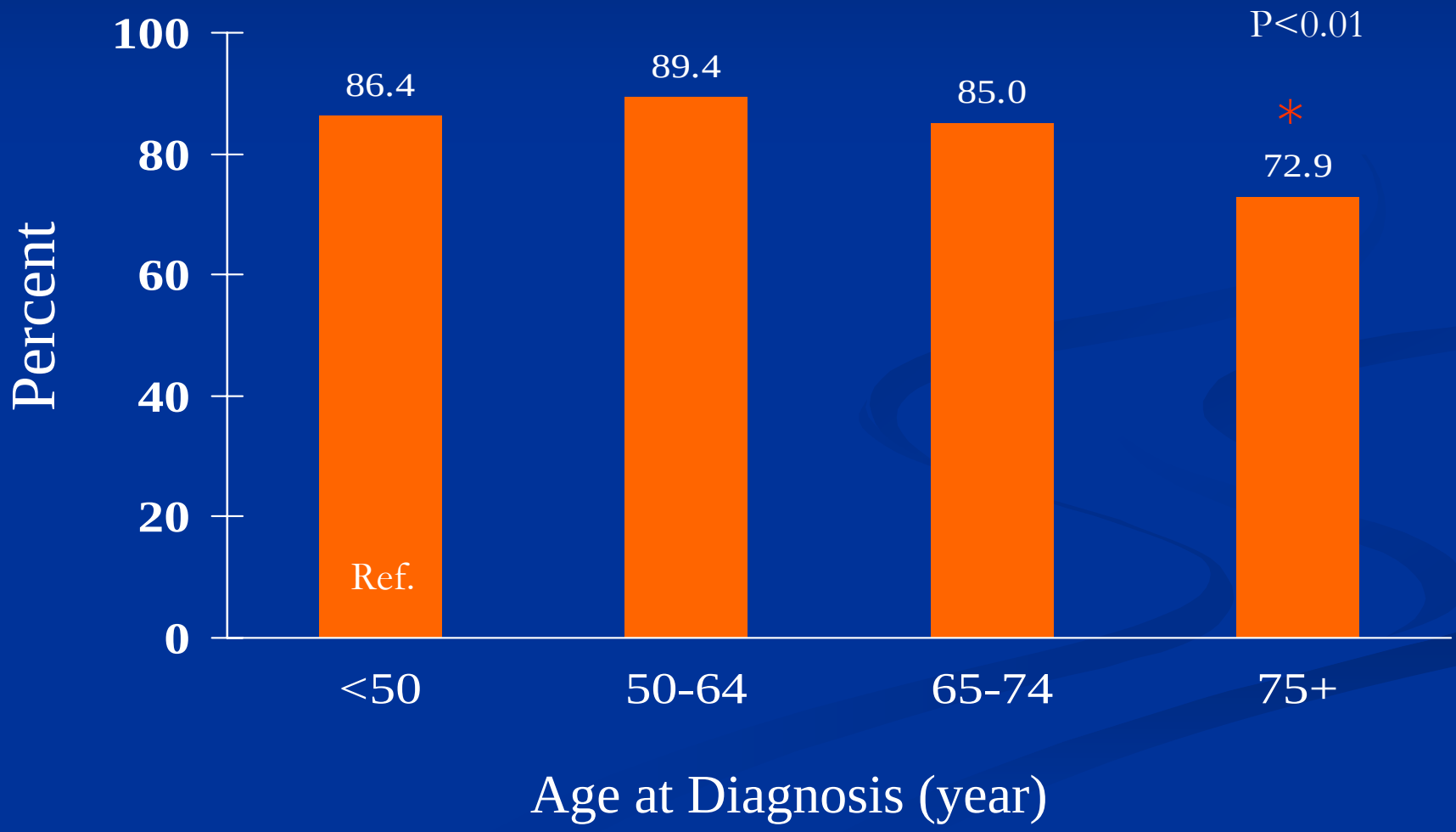
Race/ethnicity	Count	Percent
NHW	2,119	84.6
NHB	214	8.5
NHO	102	2.2
Hispanic	51	4.0
Unknown	20	0.7

* NHO: non-Hispanic others

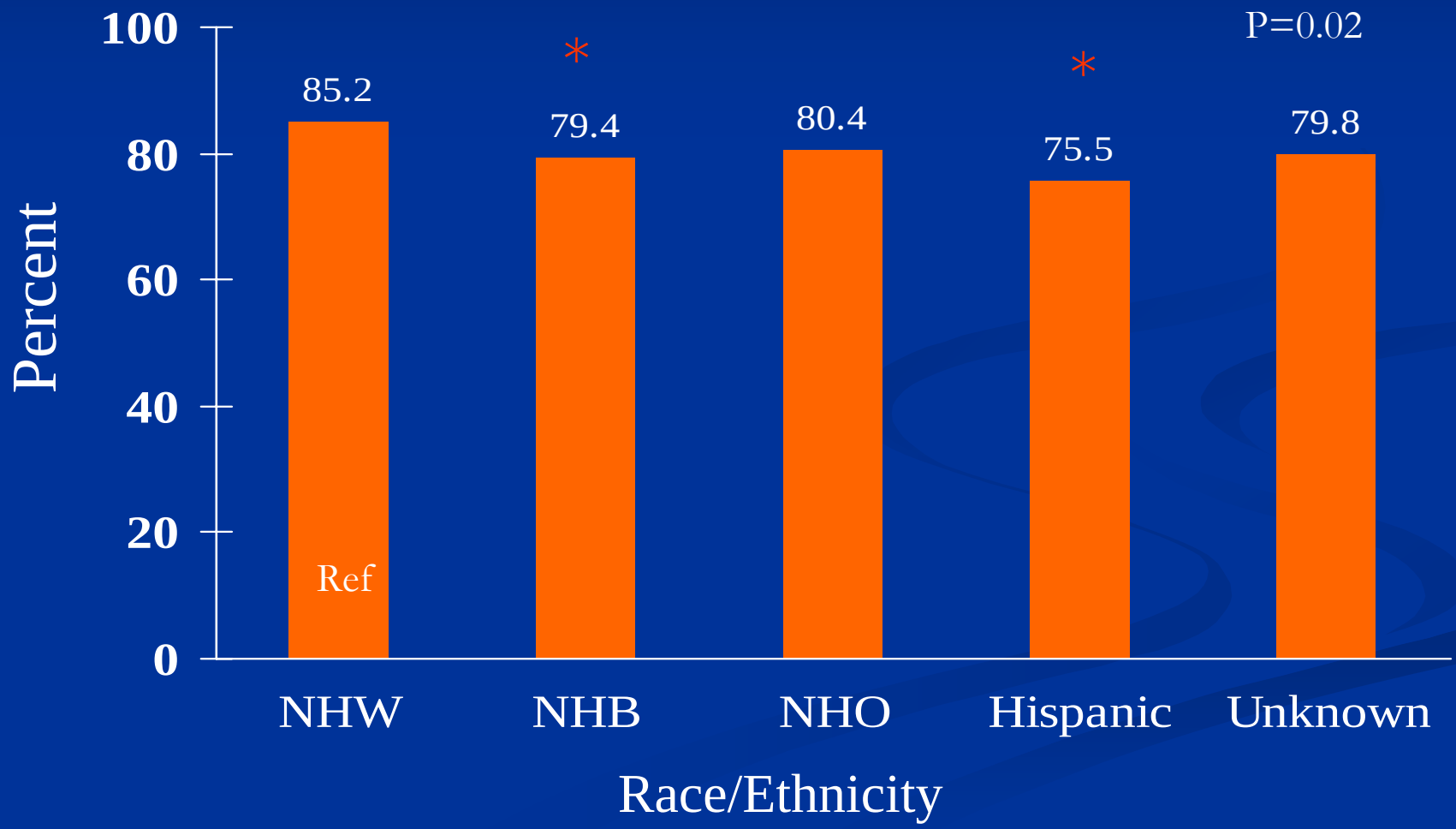
Results

- Overall, 84% of localized breast cancer patients received either lumpectomy with radiation therapy or mastectomy.
- 16% of the patients received lumpectomy without radiation therapy.
- 0.2% of the patients did not receive any surgery.

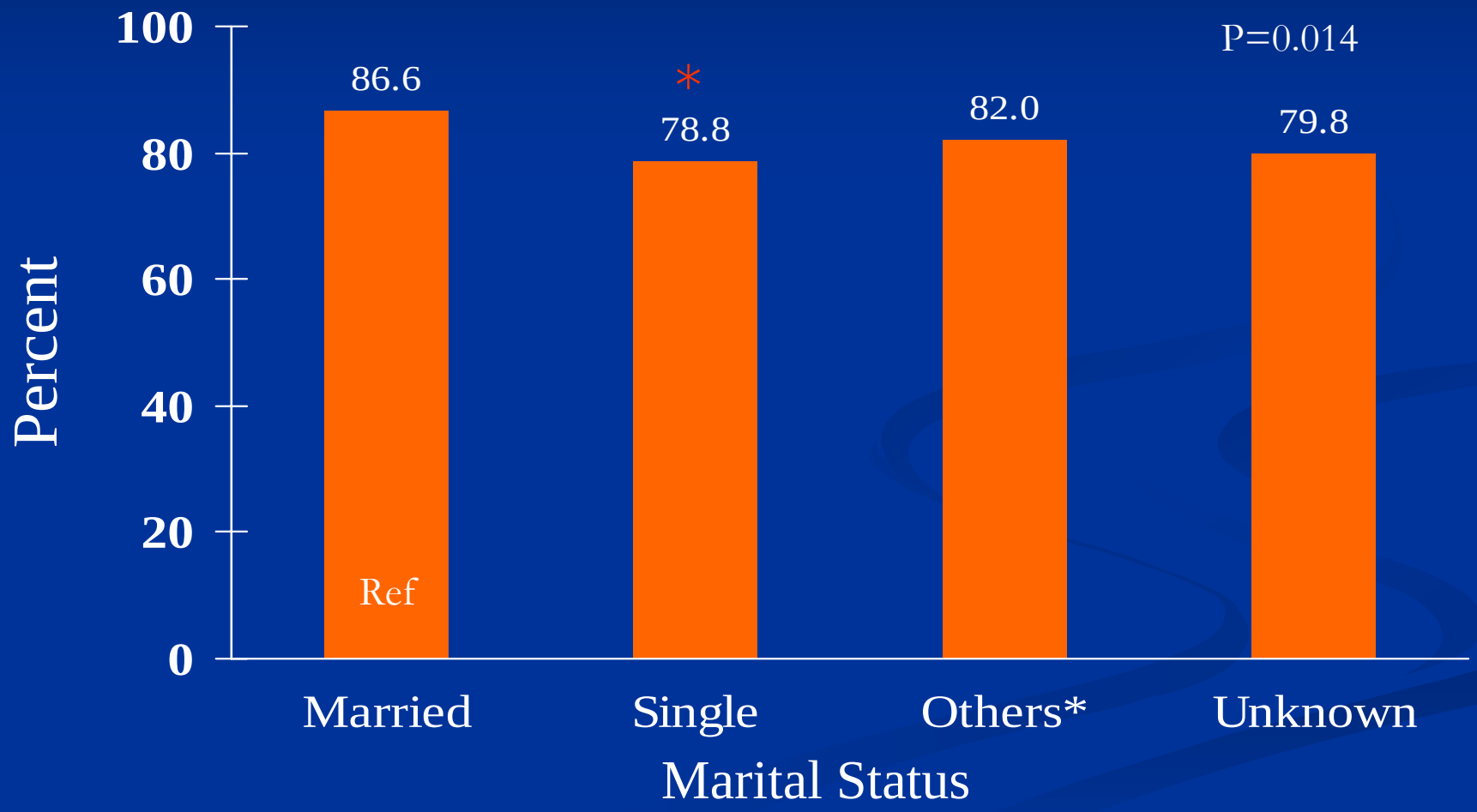
Percentage of Localized Breast Cancer Patients Receiving either Lumpectomy with Radiation or Mastectomy by Age Group, 1997



Percentage of Localized Breast Cancer Patients Receiving either Lumpectomy with Radiation or Mastectomy by Race/Ethnicity, 1997

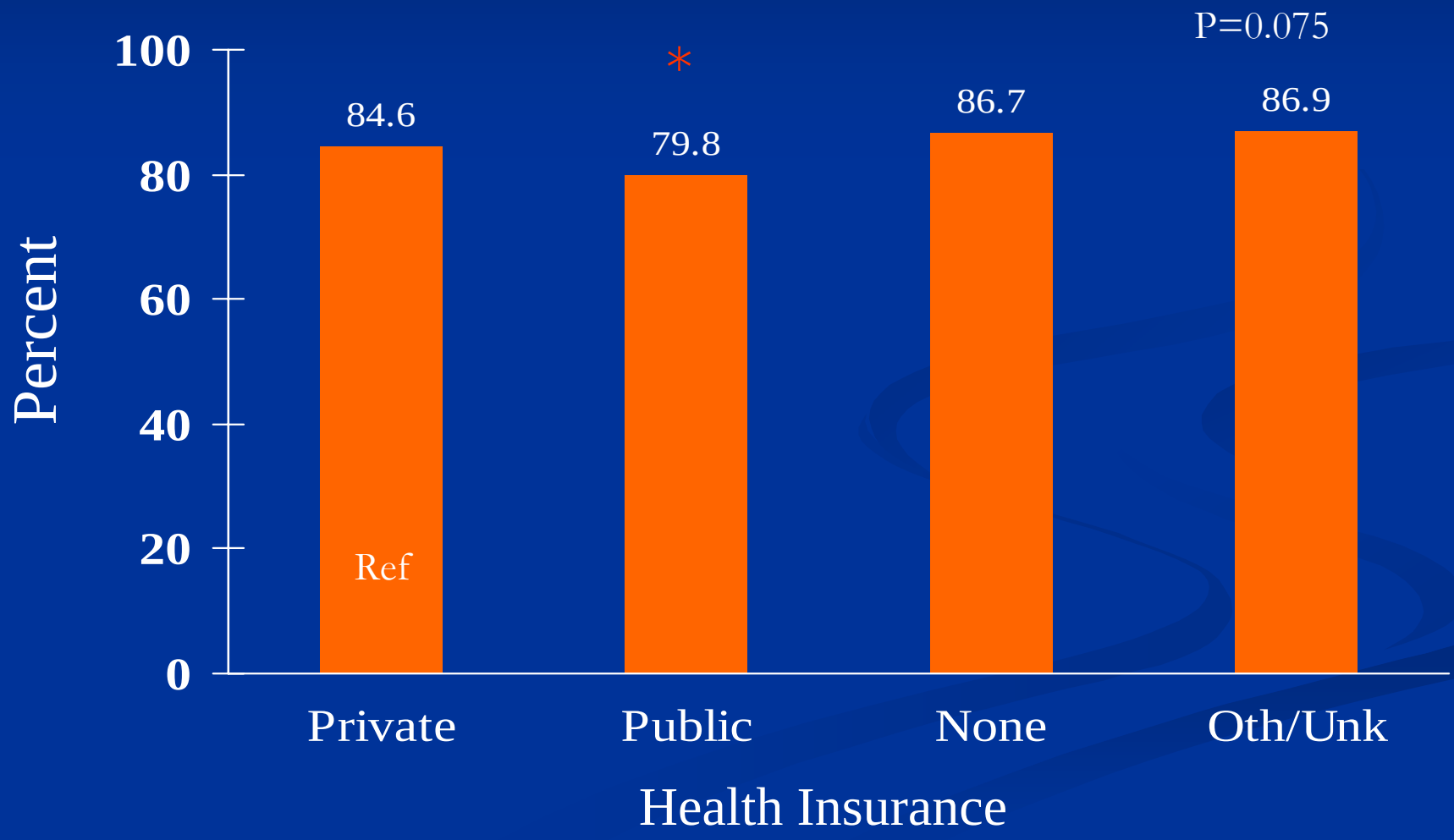


Percentage of Localized Breast Cancer Patients Receiving either Lumpectomy with Radiation or Mastectomy by Marital Status, 1997

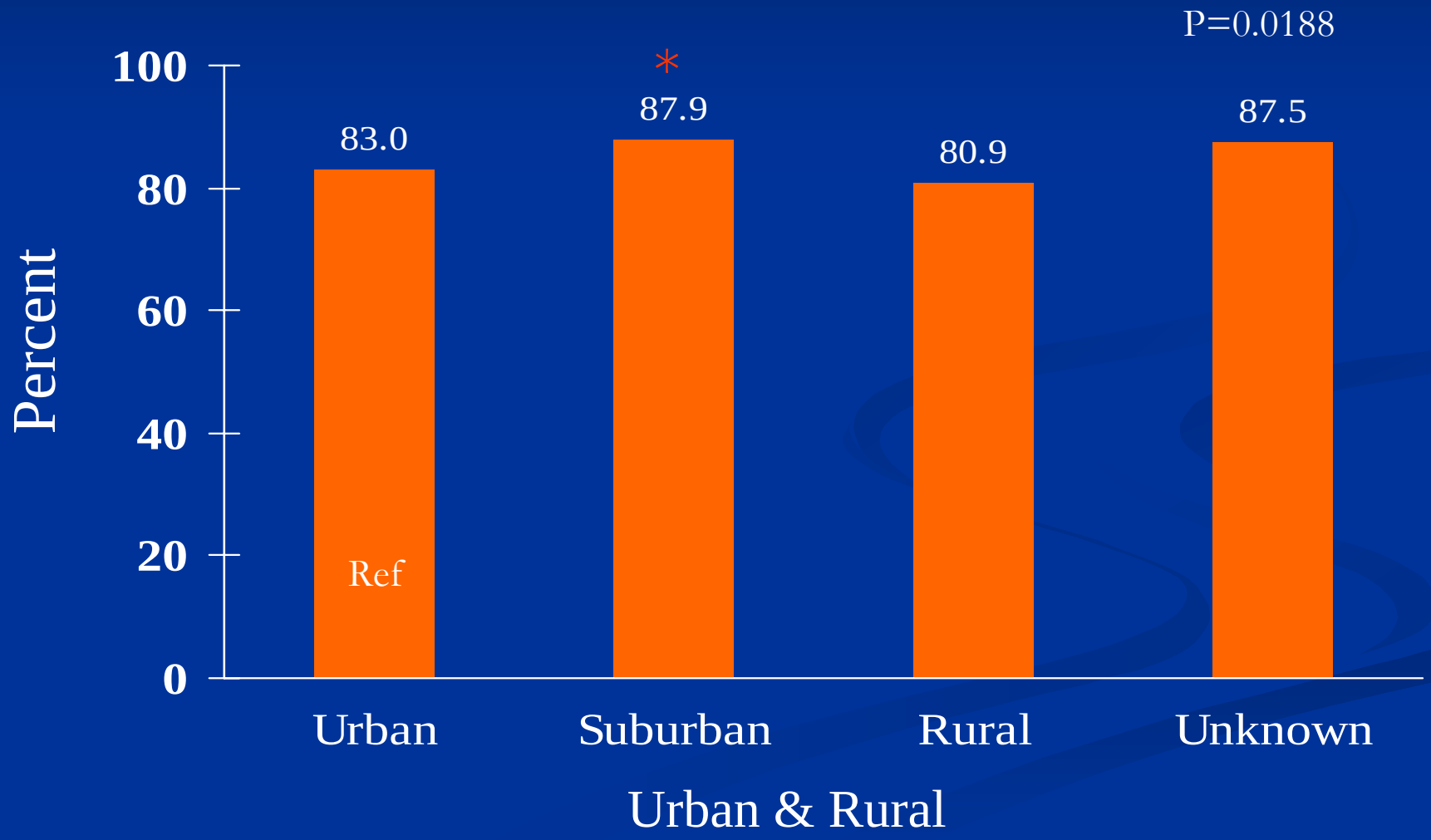


* "Others" includes separated, divorced, and widowed

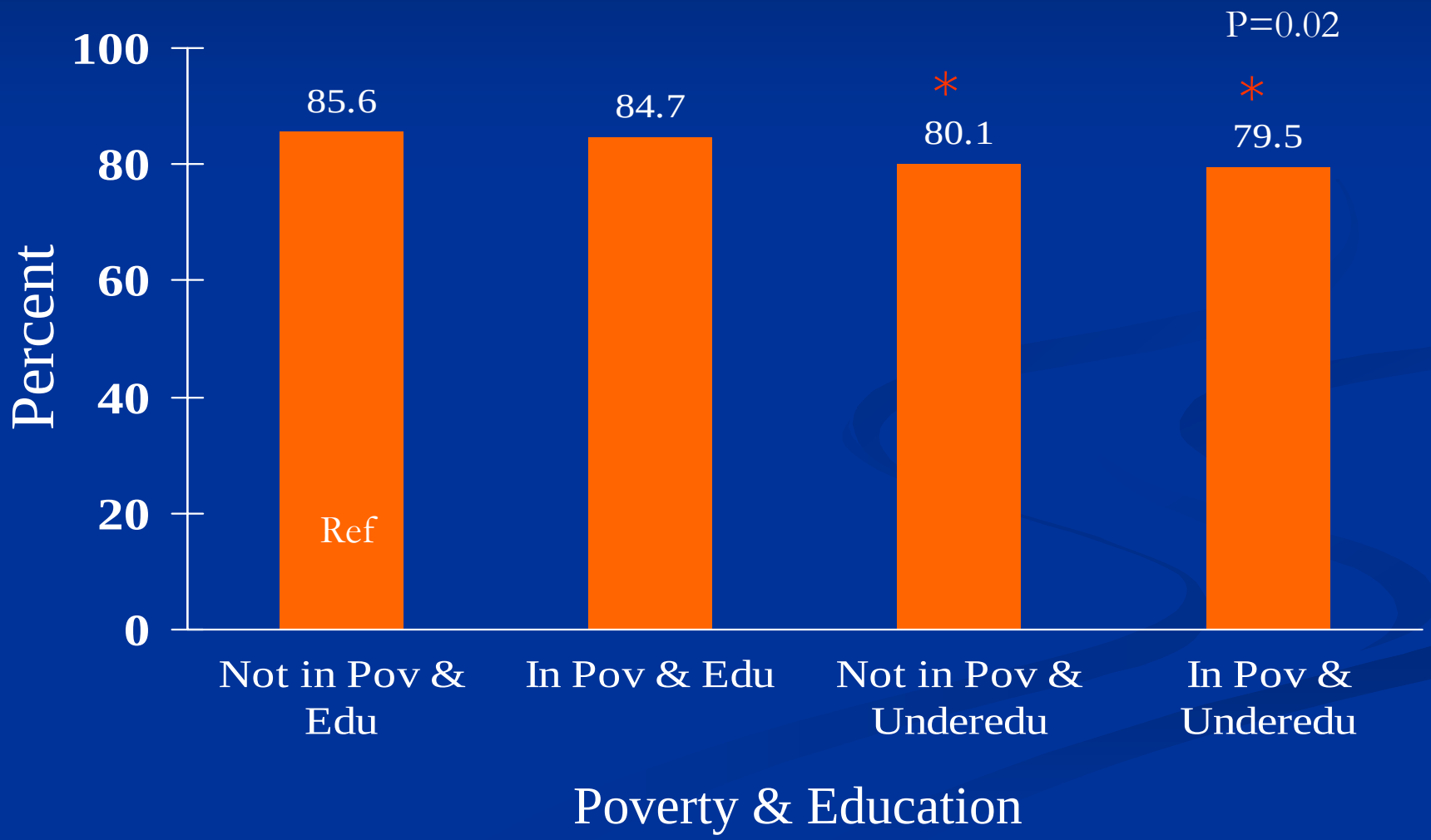
Percentage of Localized Breast Cancer Patients Receiving either Lumpectomy with Radiation or Mastectomy by Health Insurance, 1997



Percentage of Localized Breast Cancer Patients Receiving either Lumpectomy with Radiation or Mastectomy by Urban and Rural Residence, 1997



Percentage of Localized Breast Cancer Patients Receiving either Lumpectomy with Radiation or Mastectomy by Census Track-Level Poverty and Education, 1997



- Poverty level

  In poverty: ≥20% of persons lived below federal poverty level

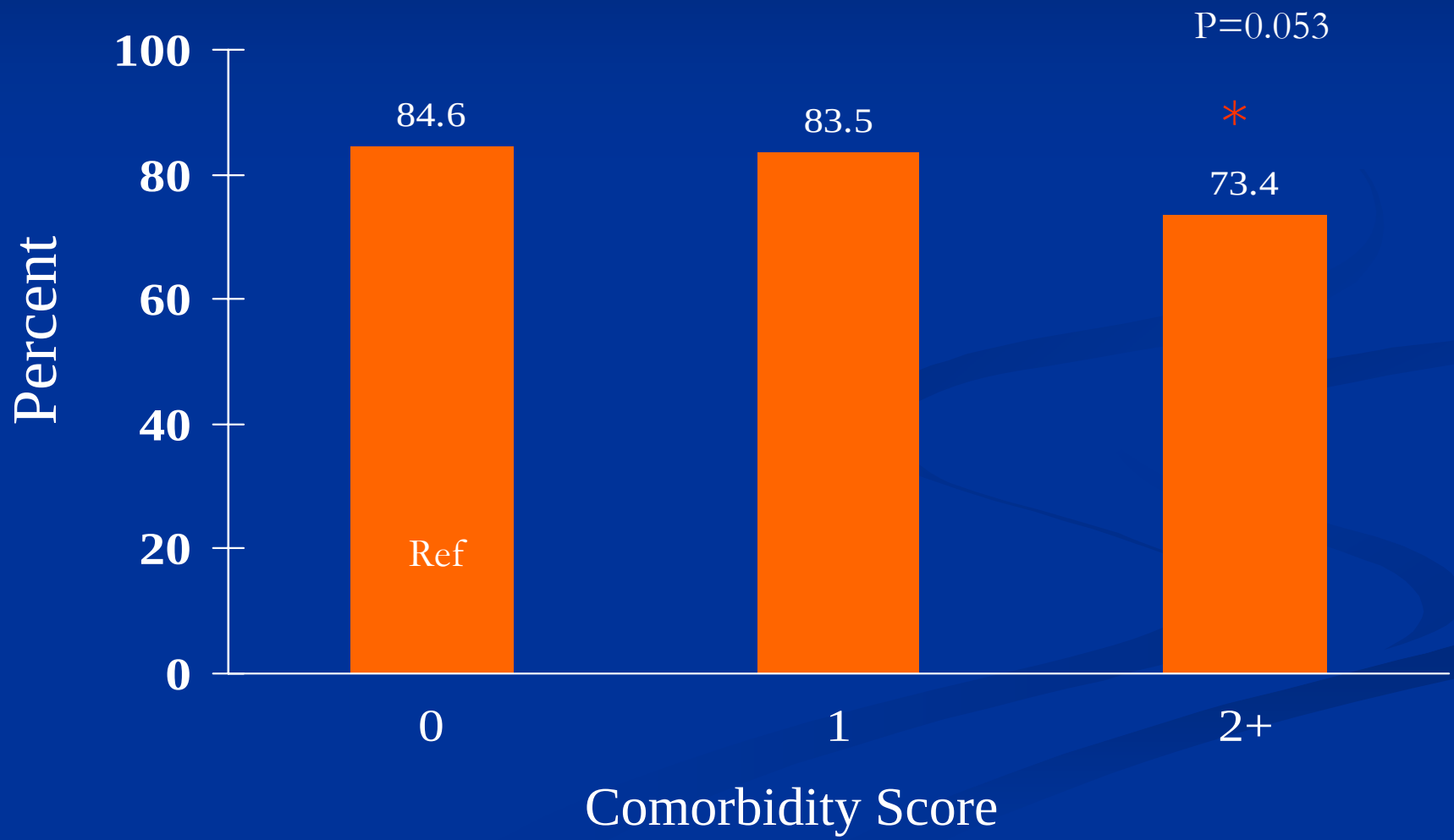
  Not in poverty: <20%

- Education

  Undereducated: ≥25% of adults (age≥25 yrs old) with less than high school

  Educated: <25%

Percentage of Localized Breast Cancer Patients Receiving either Lumpectomy with Radiation or Mastectomy by Comorbidity Score, 1997



Multivariate analysis

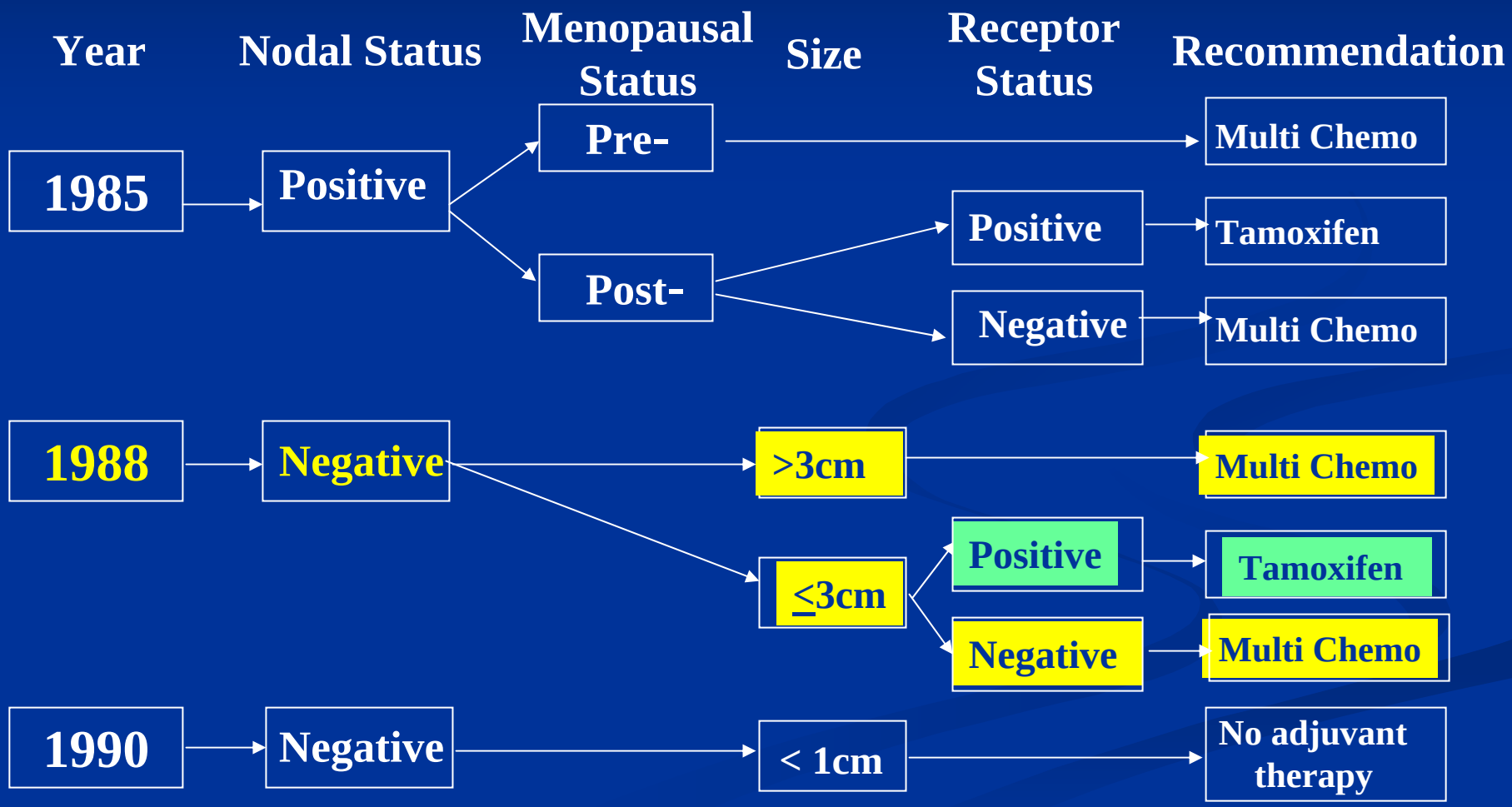
Multivariate Logistic model showed the following factors are statistically significantly associated with receipt of lumpectomy with radiation or mastectomy after adjusting for other significant factors.

Factors	Odd ratio (95% CI)
Age 75+ vs. age <50 yrs	0.40 (0.28-0.56)
Hispanic vs. NHW	0.53 (0.32-0.88)
Single vs. Married	0.66 (0.46-0.95)
Not in Pov & Underedu vs. Not in Pov & Edu	0.61 (0.41-0.92)
In Pov & Underedu vs. Not in Pov & Edu	0.37 (0.15-0.94)

Multi-agent Chemotherapy

Source: 2005 Annual Report to the Nation

Based on NIH Consensus Development Conference statements and clinical alerts



Results

- Total 527 node-negative patients with ER negative breast tumors $\leq$ 3 cm or tumors > 3 cm regardless of ER Status. Total 44% of the patients received multi-agent chemotherapy.

Age Distribution

Age	Count	Percent
< 50 years old	165	31.3
50-64	176	33.4
65-74	96	18.2
75 and older	90	17.1

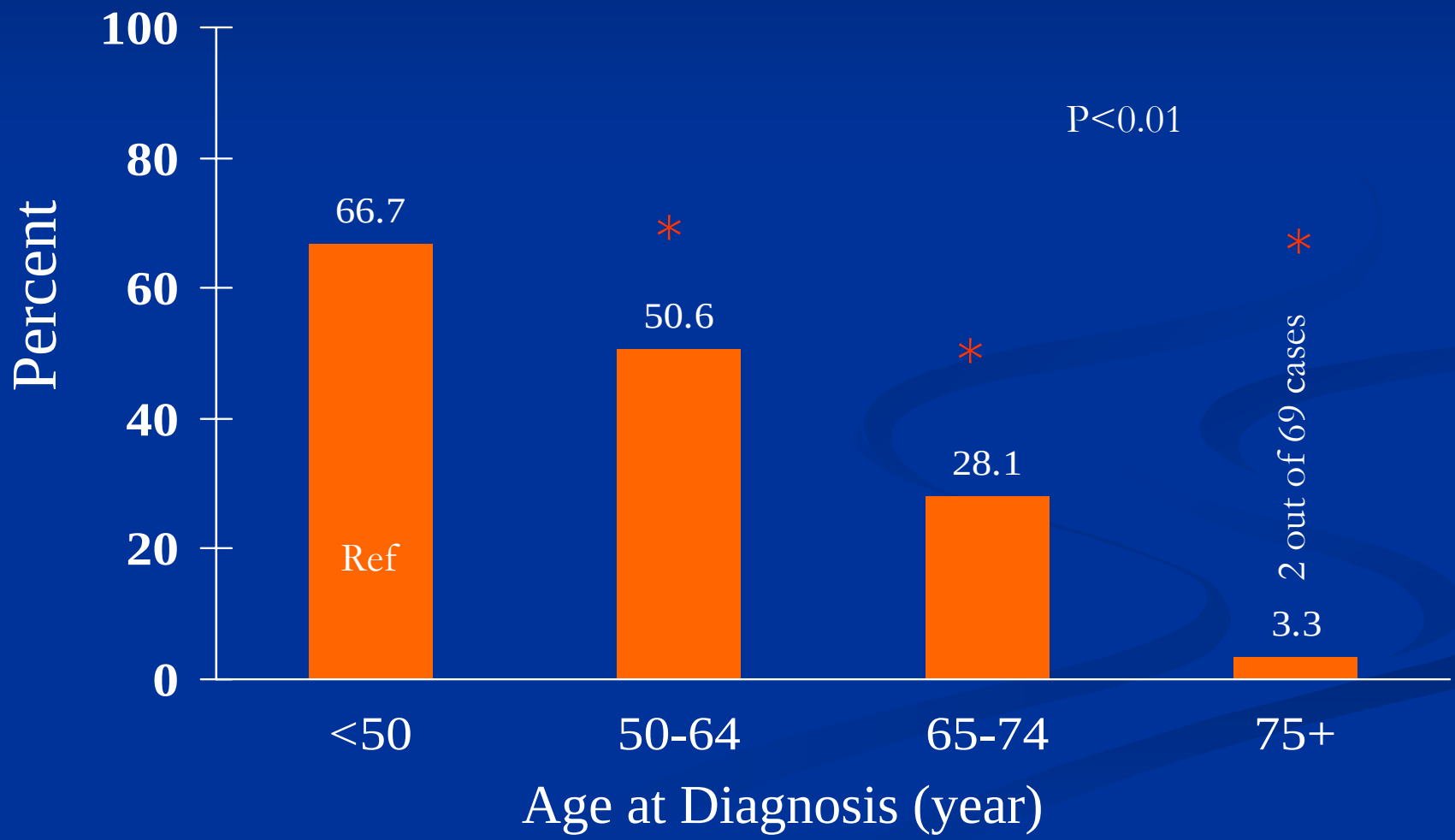
Results

Distribution of Race and Ethnicity

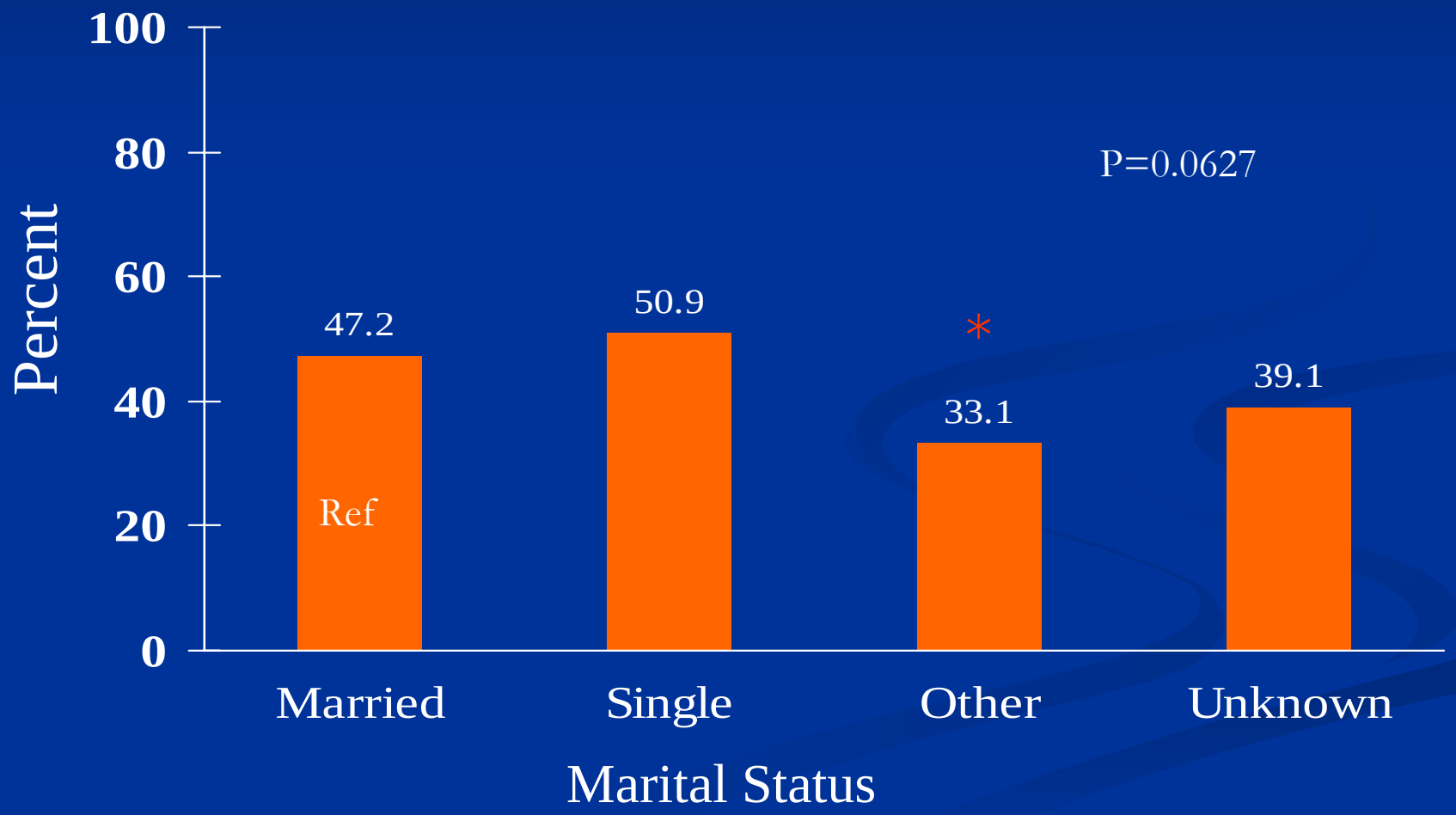
Race/ethnicity	Count	Percent
NHW	416	78.9
NHB	74	14.0
NHO	10	1.9
Hispanic	24	4.6
Unknown	3	0.6

* NHO: non-Hispanic others

Percentage of Node Negative Patients with ER Negative Breast Tumors ≤ 3 cm or Tumors > 3cm regardless of ER Status, Receiving Multi-agent Chemotherapy by Age, 1997

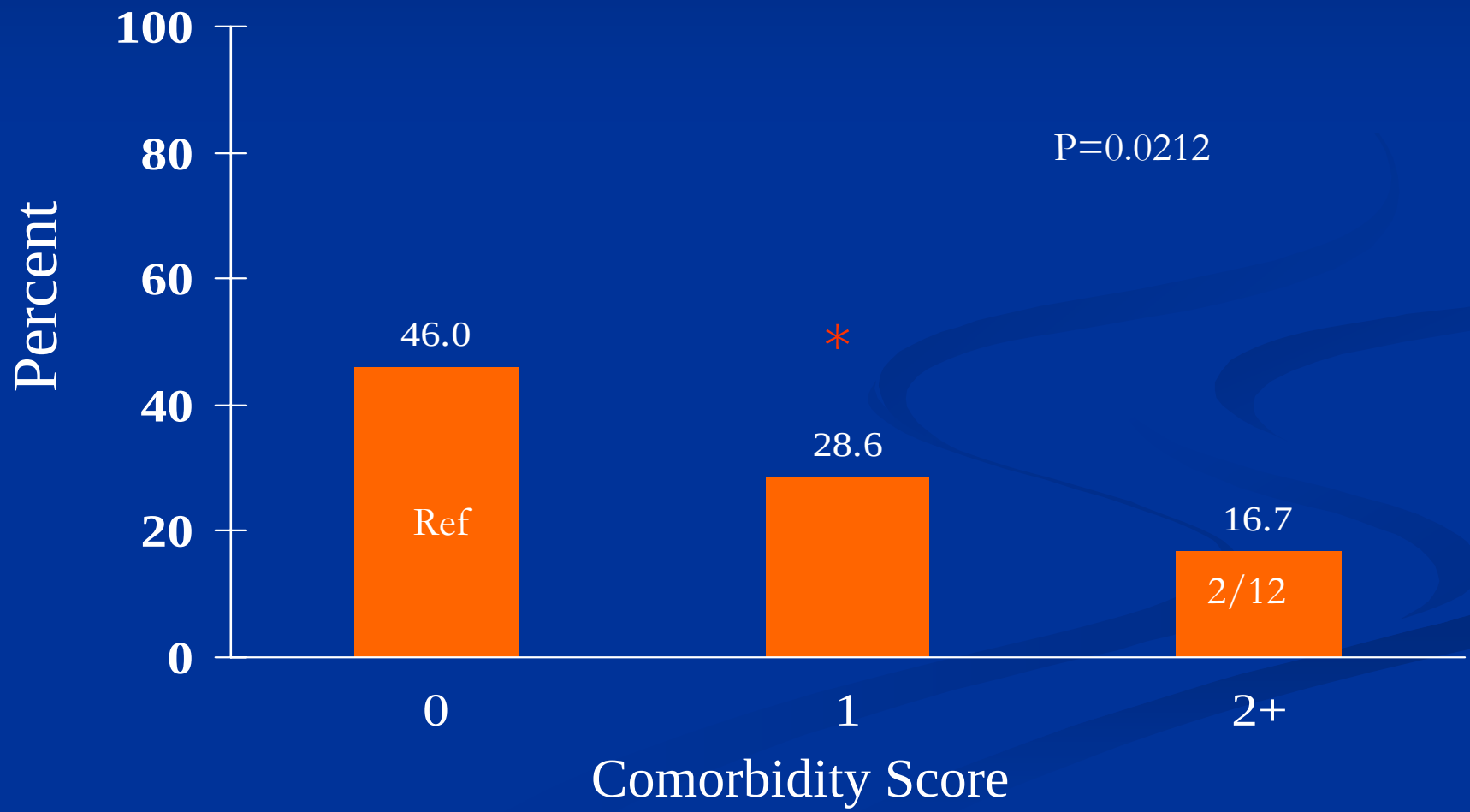


Percentage of Node Negative Patients with ER Negative Breast Tumors ≤ 3 cm or Tumors > 3cm Regardless of ER Status, Receiving Multi-agent Chemotherapy by Marital Status, 1997



"Others" includes separated, divorced, and widowed

Percentage of Node Negative Patients with ER Negative Breast Tumors ≤ 3 cm or Tumors > 3cm Regardless of ER Status, Receiving Multi-agent Chemotherapy by Comorbidity Score, 1997



Results

- Percentage of the patients receiving multi-agent chemotherapy (standard of care) did not differ statistically significantly by race/ethnicity, health insurance, urban/rural residence, census track-level of poverty & education.

Multivariate data analysis

Age, marital status, and comorbidity score were included in multivariate Logistic model. The result showed that age is the only factor that is statistically significantly associated with receipt of multi-agent chemotherapy after adjusting for other significant factors.

Factors	Odd ratio (95% CI)
Age 50-64 vs. age <50 yrs	0.51 (0.32-0.80)
Age 65-74 vs. age <50 yrs	0.19 (0.11-0.34)
Age 75+ vs. age <50 yrs	0.02 (0.01-0.06)

Hormonal Therapy

Results

- Total 1,391 node-negative patients with ER positive breast tumors ≤ 3 cm. Total 57% of the patients received hormonal therapy.

Age Distribution

Age	Count	Percent
< 50 years old	264	19.0
50-64	448	32.2
65-74	360	25.9
75 and older	319	22.9

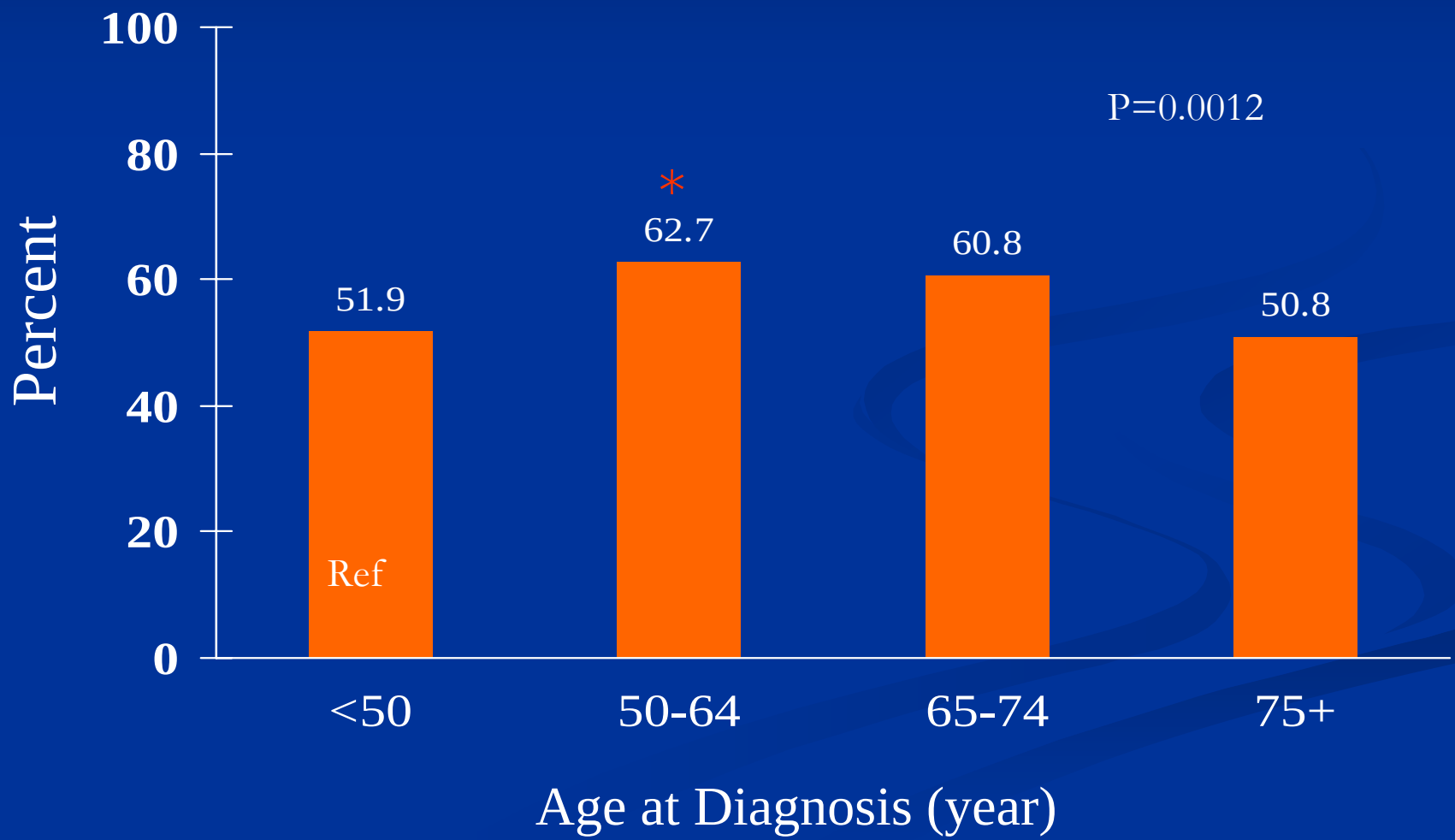
Results

Distribution of Race and Ethnicity

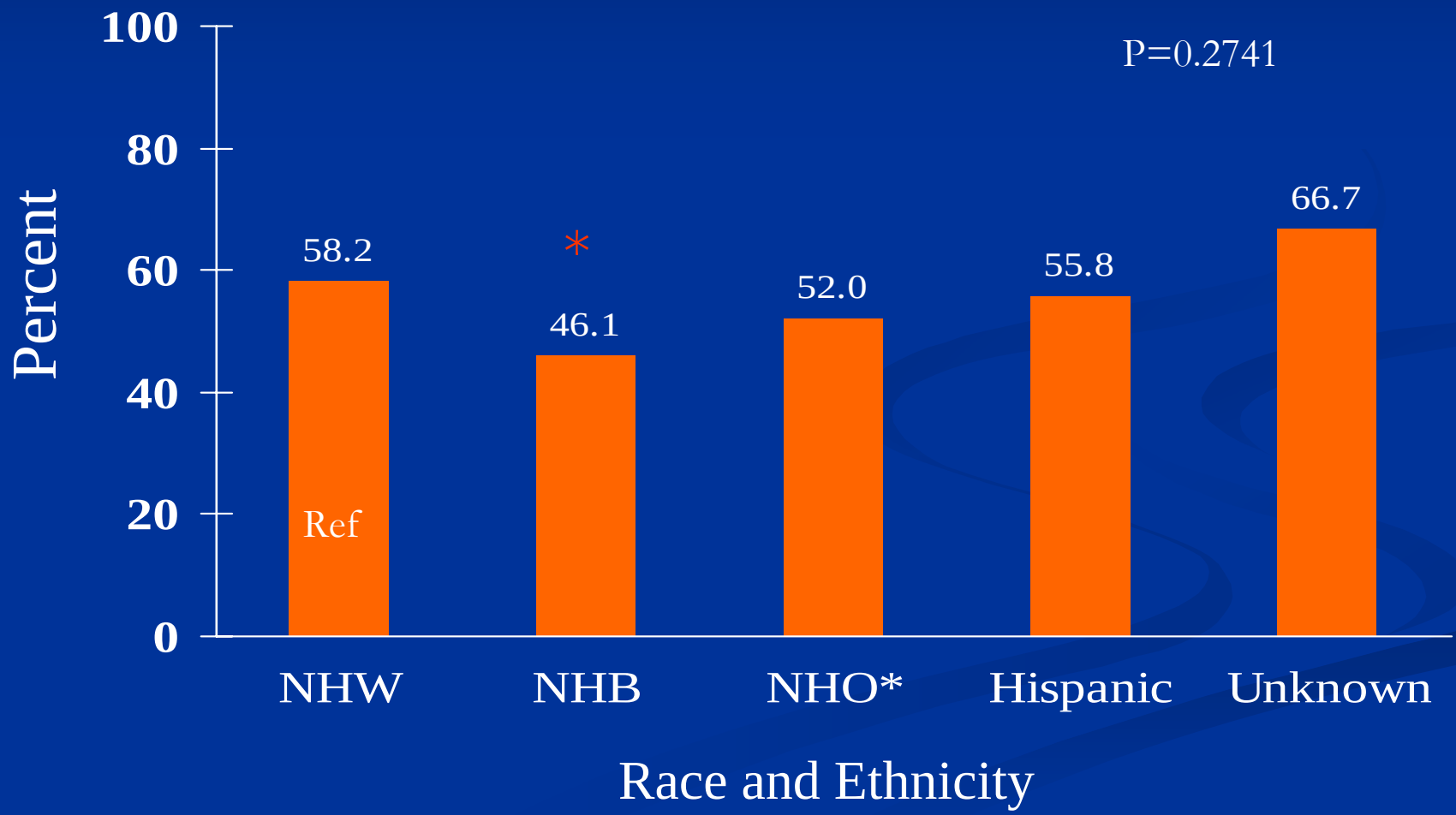
Race/ethnicity	Count	Percent
NHW	1,226	88.1
NHB	76	5.5
NHO	25	1.8
Hispanic	52	3.7
Unknown	12	0.9

* NHO: non-Hispanic others

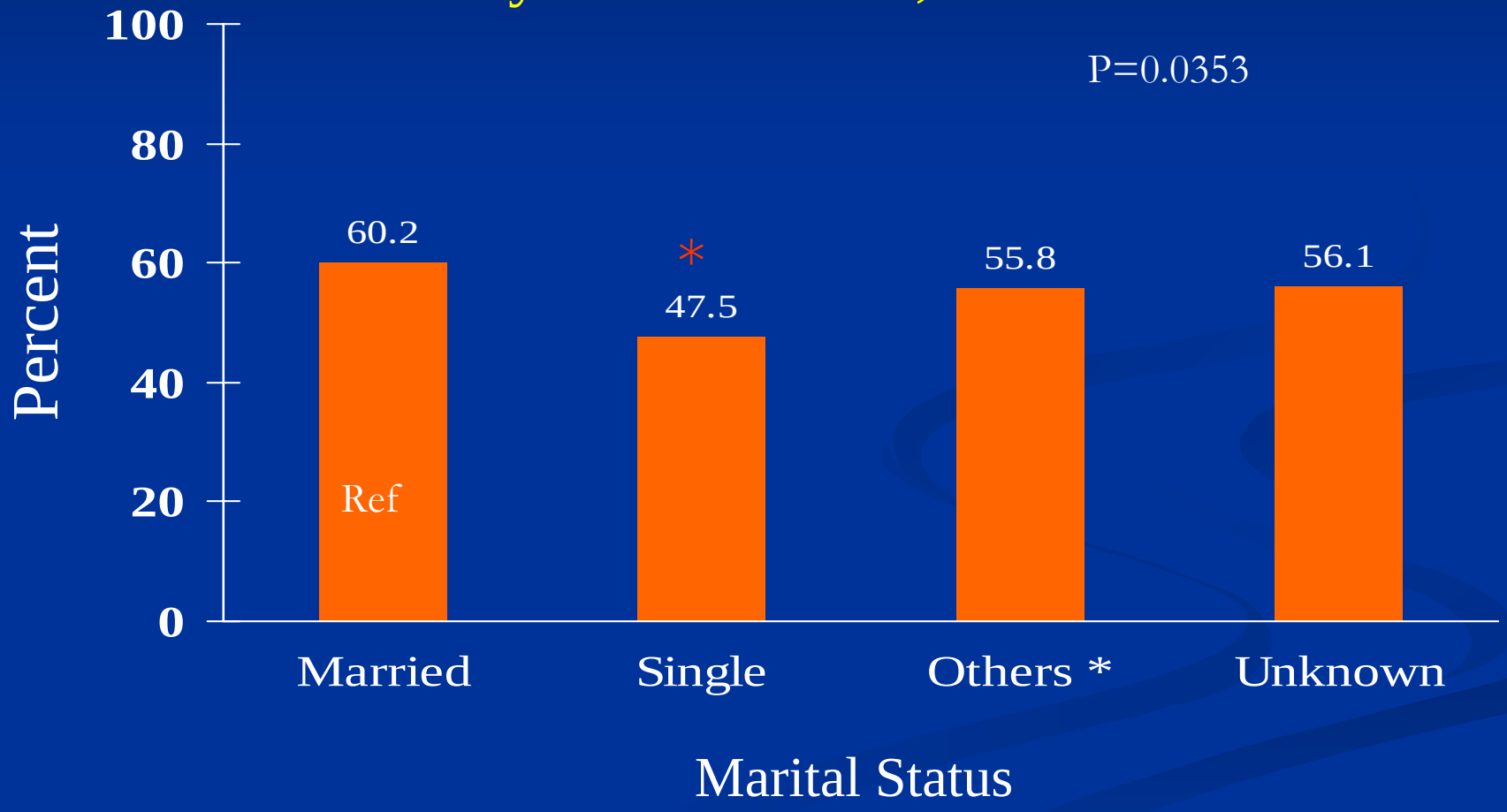
Percentage of Node Negative Patients with ER Positive Breast Tumors ≤3 cm Receiving Hormonal Therapy by Age Group, 1997



Percentage of Node Negative Patients with ER Positive Breast Tumors ≤3 cm Receiving Hormonal Therapy by Race/Ethnicity, 1997



Percentage of Node Negative Patients with ER Positive Breast Tumors ≤3 cm Receiving Hormonal Therapy by Marital Status, 1997



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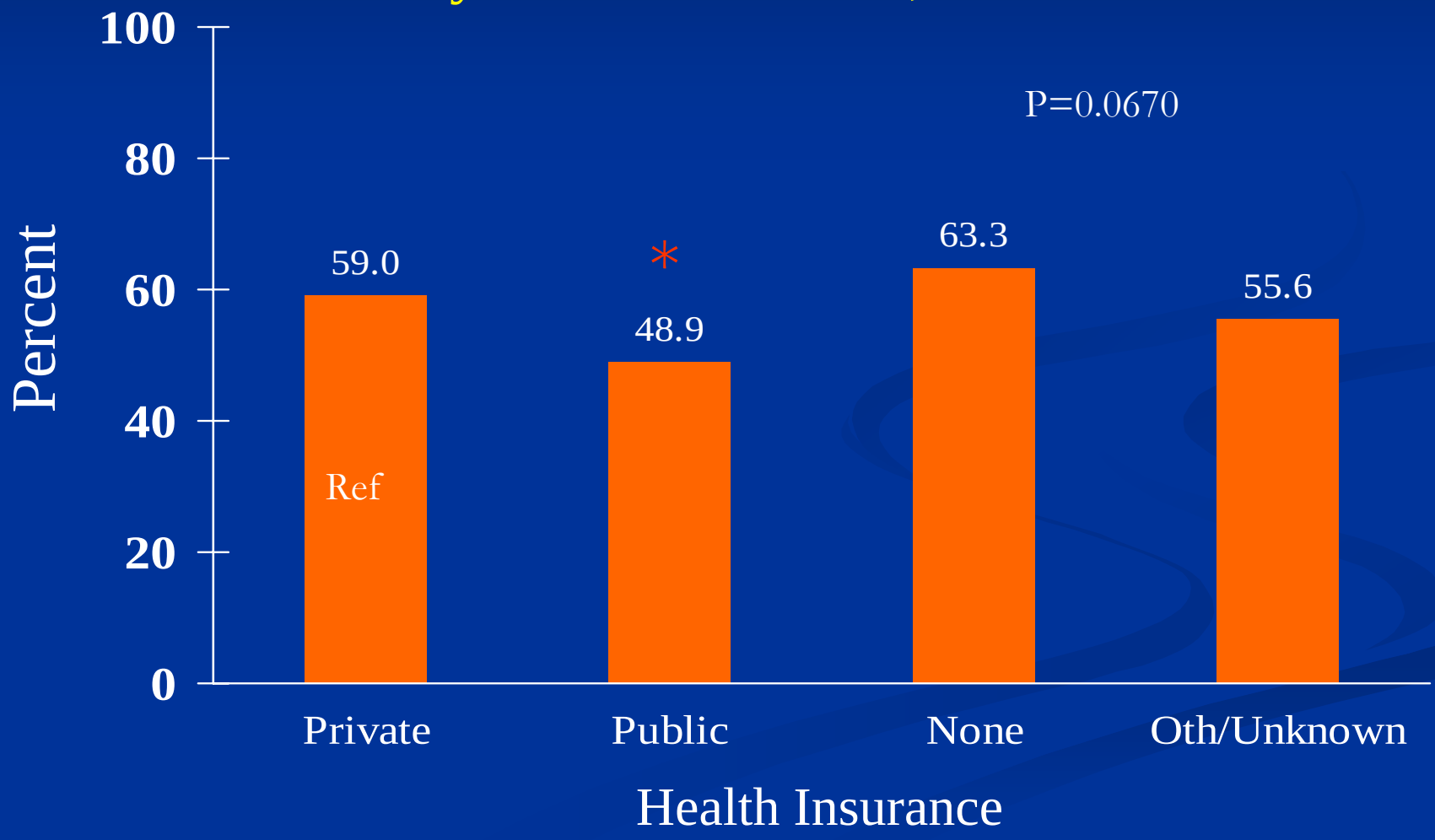
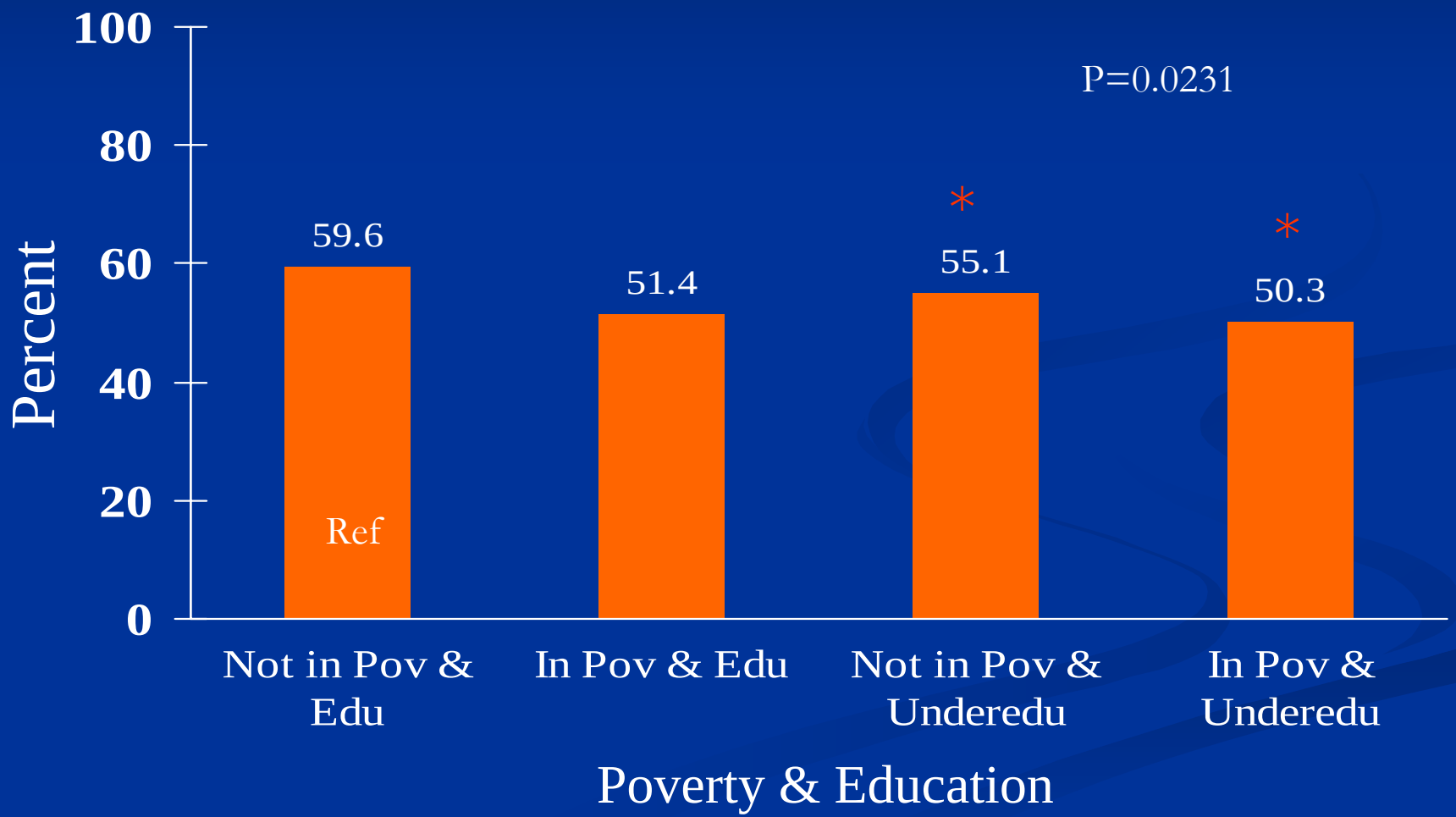
Percentage of Node Negative Patients with ER Positive Breast Tumors ≤3 cm Receiving Hormonal Therapy by Health Insurance, 1997



Percentage of Node Negative Patients with ER Positive Breast Tumors ≤3 cm Receiving Hormonal Therapy by Census Track-Level Poverty & Education,[1] 1997



Results

- Percentage of the patients receiving the hormonal therapy (standard of care) did not differ statistically significantly by urban/rural residence and comorbidity based on the univariate data analysis.

Multivariate data analysis

Multivariate Logistic model showed the following factors are statistically significantly associated with receipt of the standard of care (hormonal therapy) after adjusting for other significant factors.

Factors	Odd ratio (95% CI)
Age 65-74 vs. age <50 yrs	1.60 (1.17-2.19)
Age 75+ vs. age <50 yrs	1.52 (1.10-2.15)
Public Insurance vs. Private	0.69 (0.50-0.96)

No Adjuvant Therapy

Results

- Total 559 node-negative patients with breast tumors < 1 cm.
- 5.0% of the patients received chemotherapy.
- 39.4% of the patients received hormonal therapy.

Summary

Lumpectomy with radiation or mastectomy

- Overall, 84% of localized breast cancer patients received either lumpectomy with radiation therapy or mastectomy.
- Age, race/ethnicity, marital status, health insurance, urban/rural residence, area poverty & education, and comorbidity are statistically significantly associated with receipt of the standard of care in univariate data analysis.
- Age, race/ethnicity, marital status, and area poverty & education are statistically significantly associated with receipt of the standard of care in multivariate data analysis.

Multi-agent chemotherapy

- Overall, 44% of node-negative patients with ER negative breast tumors ≤ 3 cm or with tumors > 3 cm regardless of ER status receiving multi-agent chemotherapy.
- Age, marital status, and comorbidity are statistically significantly associated with receipt of multi-chemotherapy in univariate data analysis.
- Age is the only factor that statistically significantly associated with receipt of multi-agent chemotherapy in multivariate data analysis.

Hormonal therapy

- Only 57% of node-negative patients with ER positive tumors ≤ 3 cm receiving hormonal therapy.
- Age, race/ethnicity, marital status, health insurance, area poverty & education are statistically significantly associated with receipt of hormonal therapy in univariate data analysis.
- Age and health insurance are only two factors statistically significantly associated with receipt of hormonal therapy in multivariate data analysis.

Limitations

- Numbers of cases are too small for some of the groups. We may not have enough Power to detect some of the differences.

- Since we only collected coded comorbidities in medical records, information on comorbidity is far from complete. That may have prevented us from detecting the real impact of comorbidity on receiving the standards of care.