

## INTRODUCTION

Deprivation, ethnicity and older age are associated with the late presentation of breast cancer but there is concern that older women may be denied surgical treatment on the grounds of age alone. Comorbidity may be a confounding factor and this can be estimated using Hospital Episode Statistics (HES) for England.

## METHODS

Data for individual patients diagnosed with breast cancer in 2007 were obtained from the National Cancer Data Repository (NCDR) and linked to Hospital Episode Statistics (HES) data. The likelihood of presenting with early breast cancer was correlated to the Nottingham Prognostic Index (NPI) Excellent and Good Prognostic Groups (EPG/GPG) and tumours  $\leq 20$ cm. The likelihood of late presentation was correlated to the NPI Poor Prognostic Group (PPG) and not receiving surgery.

The four criteria were analysed against age by decade, deprivation quintile, Black/Asian ethnicity (BAE), screen-detection (SD) and the Charlson Comorbidity Index.

## RESULTS

### No Surgery and poor prognosis breast cancer

In 2007, 37,113 women in England presented with primary invasive breast cancer, of whom 30,318 (82.7%) had their first surgical treatment within 6 months of their diagnosis recorded in the NCDR.

Women aged 70+, with a Charlson Comorbidity Index score of 2 or more were statistically significantly more likely not to have an operation [Figure 1]. Women with screen-detected breast cancers were statistically significantly less likely not to have an operation ( $p < 0.05$ ).

Women of black and minority ethnic background were statistically significantly more likely to present with a poor prognosis breast cancer [Figure 2] ( $p < 0.05$ ); women with screen detected breast cancers or aged 60-69 less likely.

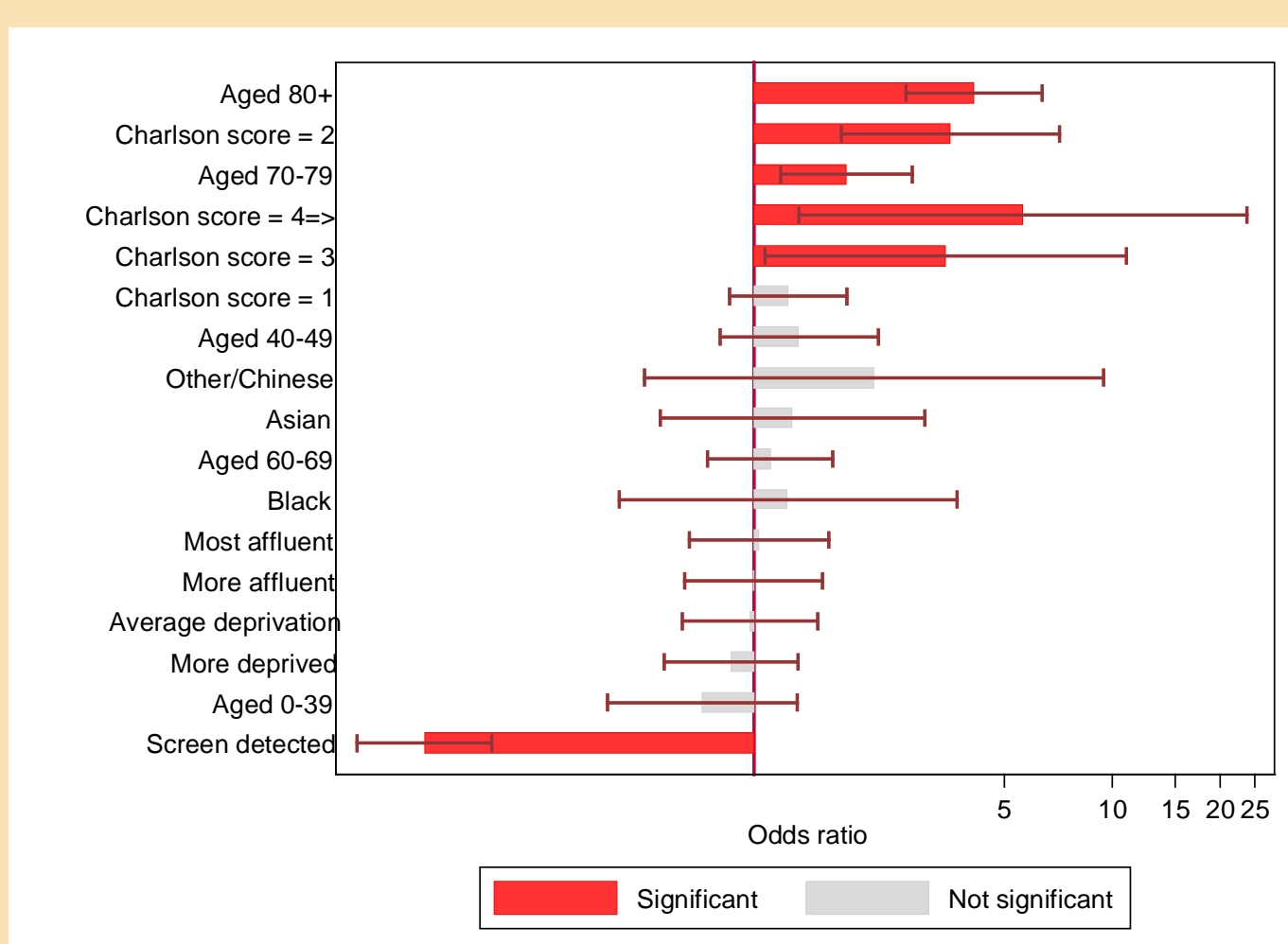


Figure 1. Likelihood of not having a surgical operation

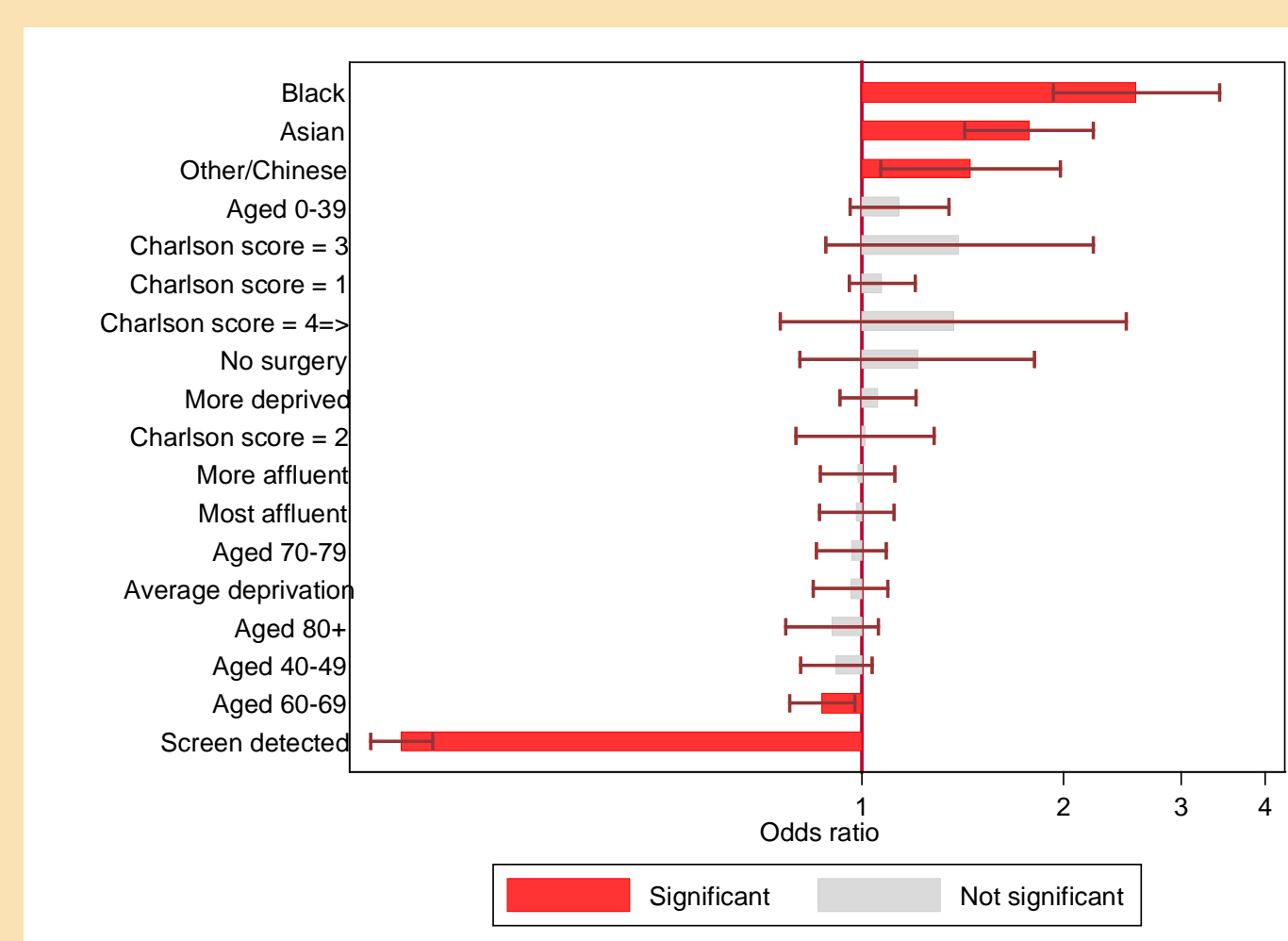


Figure 2. Likelihood of presenting with a PPG cancer

### Good prognosis and small breast cancer

Women with screen-detected cancers, women from the average, the more and most affluent cohorts (quintiles 3 - 5); women aged 40-49 years and 60-69 years were significantly more likely to present with small breast cancers ( $\leq 20$ mm) [Figure 3]. Women of BAE, women aged 70-79 years and 80 years or over were statistically significantly less likely to have a breast cancer  $\leq 20$ mm in diameter.

EPG/GPG breast cancer [Figure 4] were more likely to be diagnosed in women whose breast cancer was screen-detected, women from the average and most affluent cohorts (quintiles 3 & 5), women aged 40-49 years, 60-69 years and 70-79 years. Women of BAE and women aged 0-39 years were statistically significantly less likely to have an EPG/GPG breast cancer.

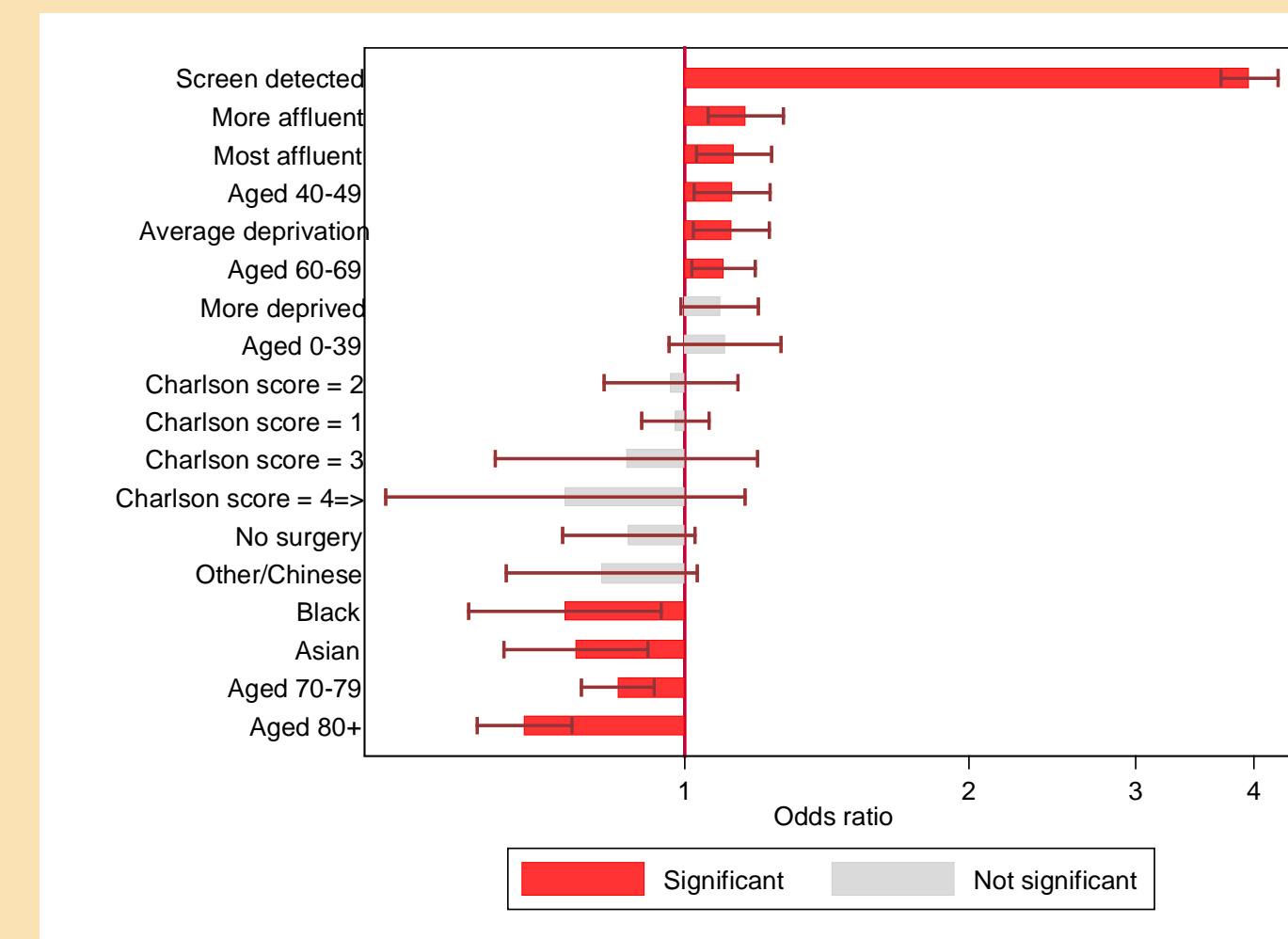


Figure 3. Likelihood of presenting with a small breast cancer ( $< 20$ mm)

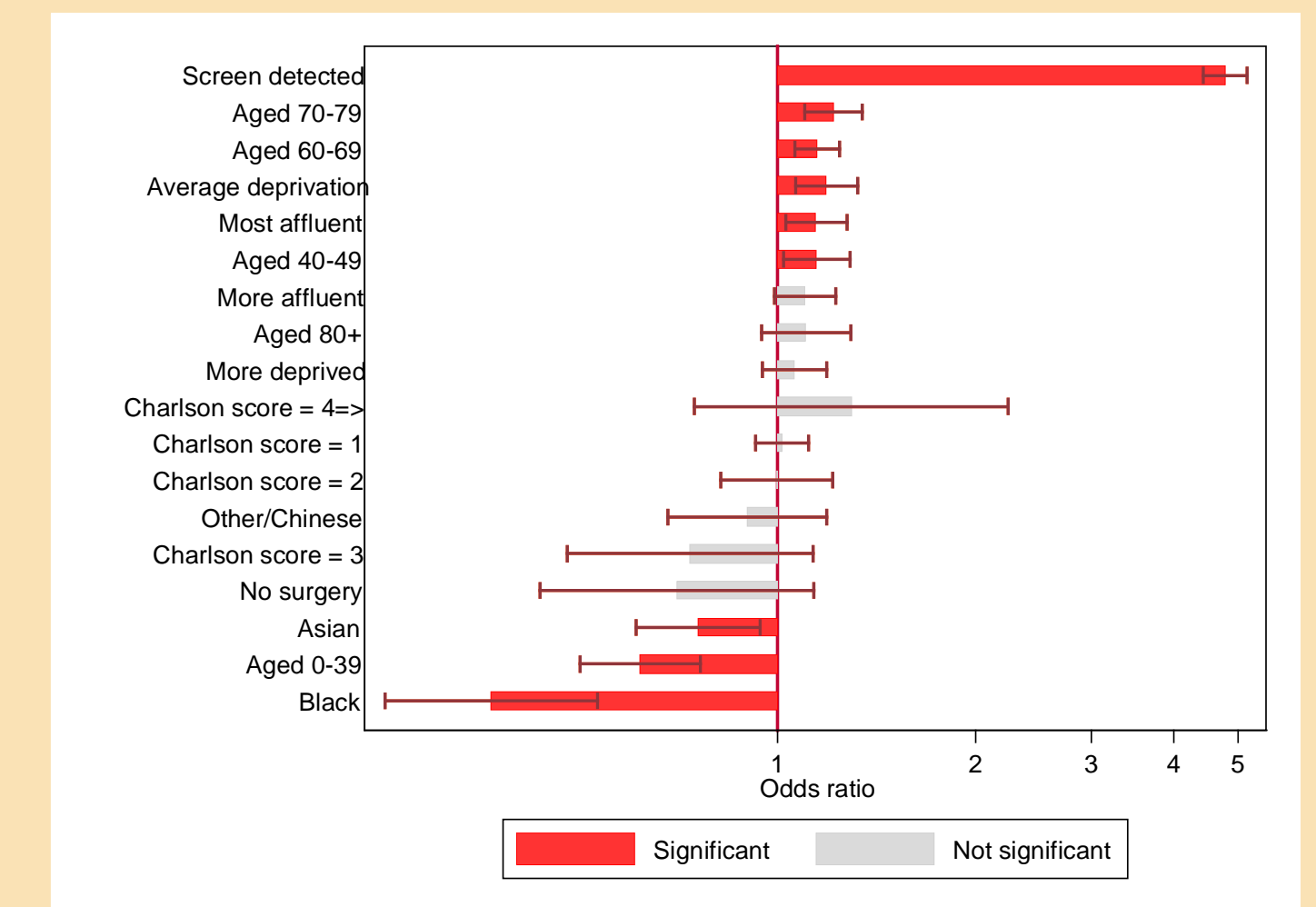


Figure 4. Likelihood of presenting with an EPG/GPG cancer

## DISCUSSION

This study analysed data from newly diagnosed breast cancers in England during 2007 where comorbidity data are available. We show that women with a Charlson Comorbidity Index (CCI) score of 2 or more, or who are aged 70+ have a significantly increased likelihood of not undergoing surgery for their breast cancer. Patients with a PPG breast cancer are more likely to be of black and minority ethnic background. The effect of the screening programme is evident by the significant increased likelihood of presenting with an EPG/GPG breast cancer, while the role of affluence plays a significant, if not complementary role for this group.

It is likely that comorbidity is only a contributory factor for the very low rate of surgical treatment for operable breast cancer in older age. Other factors such as tumour extent, age and patient choice are likely to play a more important role in whether surgical intervention is the most appropriate primary treatment for these patients.

## CONCLUSIONS

Patients at the extremes of age, deprived patients and certain ethnic groups may present with more advanced tumours. Conversely screen-detected breast cancers present earlier.

However, the failure to operate for early breast cancer in the elderly may be related to comorbidity as well as patient choice.

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