# Bleeding hearts, profiteers, or both: specialist physician fees in an unregulated market

Key words: Physician fee; price discrimination; fee gap; Australia

**Abstract**

This study shows that, in an unregulated fee-setting environment, specialist physicians practice price discrimination on the basis of their patients' income status. Our results are consistent with profit maximisation behaviour by specialists. These findings are based on a large population survey that is linked to administrative medical claims records. We find that, for an initial consultation, specialist physicians charge their high-income patients AU$26 more than their low-income patients. This gap equates to a 19% lower fees for the poorest patients (bottom 25% of the household income distribution), though it is unlikely to remove the substantial financial barriers they face in accessing specialist care. There are large variations across specialties, with neurologists exhibiting the largest fee gap between the high- and low-income patients. Several possible channels for deducing the patient's income are examined. We find that patient characteristics such as age, health concession card status and private health insurance status are all used by specialists as proxies for income status. These characteristics are particularly important to further practice price discrimination among the low-income patients, but are less relevant for the high-income patients.

'The Government can make laws regarding the payment of benefits for medical and dental services; it has no authority to control the amount doctors charge for their services as this would amount to civil conscription. Doctors are free to determine their own value of the health service they provide…they may alter their fees for particular individuals if they choose to.'

The Australian Department of Health and Ageing, 2009

## 1. Introduction

In this study, we take advantage of a unique setting of the Australian market for out-of-hospital services, which has unregulated doctor fees. To examine how doctors use this freedom, we draw on a large population survey that is linked to administrative data records. Specifically, we ask the question: do specialist doctors charge higher fees to their high-income patients and extract a greater surplus for the same services than they do for their low-income patients?

In Australia, the tax-financed universal public health insurance, Medicare, provides a government-determined fixed rebate for each type of medical service. These rebates set a floor price for a given service but there are no controls over the maximum fees that doctors can charge to their patients. The patient pays the gap between the doctor's fee and the Medicare rebate as an out-of-pocket (OOP) cost. OOP costs are equal to zero when the doctor's fee is equal to the rebate. No private health insurance can be purchased for out-of-hospital services that are covered by Medicare.

With a gatekeeping system, patients need a referral from their general practitioner (GP) to see a specialist. Johar (2012) shows that fee discrimination by patient income exists at the

GP level where high-income patients pay on average 25% (AU$9.28) more than low-income patients for a standard GP consultation with the same GP. This gap is found despite the fact that in Australia patients can go to the GP of their choice.[1] Johar's study is the first paper that exposes GPs' fee-setting behaviour at the GP level, and uses direct observation of the patients' own income. In this study, we use the same datasets but examine the market for specialist consultations.

There are several distinguishing features of the specialist market that underline the importance of this study. First, patients face considerably higher OOP costs for specialist care than they do for GP care. As at June 2014, patients on average, incurred around AU$102 in OOP costs per specialist and around AU$5 per GP visit. Furthermore, patients face zero OOP costs for 84% of all GP consultations, whereas the corresponding figure for specialist attendance is only 39% (Department of Health, 2014). Hence, the degree of price discrimination among specialists is likely to have greater bearing on the equity of access. Second, there are higher transaction costs for patients who switch their specialist provider. Patients not only need a referral from their GP, but their referral letter is specific to a named specialist. Switching specialists would require another appointment with a GP to obtain a new referral letter. These restrictions pose barriers to price competition and may lead to greater price discrimination, compared to the GP market. Third, GPs are financially encouraged to price discriminate through Medicare, whilst specialists are not. A GP will receive an additional financial incentive if their fee is the same as the Medicare rebate for patients who are less than 16 years old, or those who are concession card holders. Most people aged 65 and older have a concession card, as well as those who are on low incomes

[1] There is no restriction by geographic area or by insurance membership e.g., fund holding GP system in the UK, where patients can go to GPs who are part of the arrangement.

or who are eligible for specific government pensions or allowances. Finally, Australians see their specialists less frequently than their GP. In our survey sample, only 55% of respondents had a consultation with a specialist in a given year;[2] of those, 30% visited a specialist once and 20% visited twice. This provides specialists with fewer opportunities to obtain information on patient characteristics (such as income) that could be used as the basis for price discrimination.

The main objective of this paper is to determine whether there is a significant gap between the fees charged by specialists to low- and high-income patients for a homogenous service - an initial attendance. In addition, we examine heterogeneity in the fee gaps for different types of specialists, and investigate several patient characteristics that could help specialists identify their low- and high-income patients.

## 2. Data and method

Our patient data are derived from the 45 and Up Study. It is the largest follow-up health study conducted in the southern hemisphere, involving more than 267,000 non-institutionalised people aged 45 and over in the state of New South Wales (NSW) in Australia (45 and Up Study collaborators, 2008). NSW is the most populous state in Australia and men and women aged 45+ in NSW were randomly selected to participate in this study. Individuals were only surveyed once during the period 2006-10, with the majority of data being collected in 2008. The representativeness of the sample has been documented in Johar *et al*. (2012). The 45 and Up Study is linked to multiple health administrative datasets by the Sax Institute, including the Medicare Benefits Schedule (MBS) data from the Department of Human Services between 2005 and 2011. The MBS data contain records of

[2] This number matches well with the findings of the Patient Experiences in Australia 2013-2014 survey by the Australian Bureau of Statistics (http://www.abs.gov.au/ausstats/abs@.nsf/mf/4839.0).

medical services provided out of hospital by a range of health providers, and have information on the type of services and the total fees charged by the providers. Each provider is distinguished by a de-identified provider ID, which identifies his/her patient pool.

With this linked dataset, we obtain the medical claims information for the survey respondents, whom we refer to as 'patients' in this study. The 45+ population is a major consumer group of health care services, absorbing around 62% of the nation's total health expenditure (AIHW, 2010). The large sample size of the 45 and Up Study gives us a large number of observed services provided by many different providers. In fact, we observe more than 530,000 specialist consultation services each year.

For the purpose of this paper, we need to focus on a homogenous service. We choose the initial consultation with a specialist (MBS item number 104). The Medicare rebate for this service item was AU$68.75 in 2010, but the average fee charged by specialists was AU$124.62.

We obtain patient income information from the 45 and Up Study data. We focus on the top and bottom income groups, with high-income patients defined as those with household income in the top 25% of the income distribution (more than AU$70,000 per year). Low-income patients are those with household income in the bottom 25% (less than AU$20,000 per year).[3]

For this analysis, we refine our sample as follows. First, we select specialists who charge at least one item 104 (initial attendance) to 45 and Up study participants over a two year period. This observation period equates to 12 months before and after the participant's survey completion date. Though a longer observation period is available in the

[3] There are 8 income categories in the survey, with the top group top-coded at AU$70,000.

administrative data, this restriction minimises potential errors that may be caused by changes in patient income (which has been collected only once). We identify 4,202 specialists within this observation period. Since the survey dates vary among individuals, we normalised the fees to the price level in 2010. Second, for patients with multiple services under item 104 with a specialist during the two-year period, which may occur due to the treatment of a different health condition, only the earliest consultation is used in the analysis.[4] Only 8% of patients had multiple services under item 104. Among these patients, 94.3% visited the specialist twice and most of these visits were charged the same price. Furthermore, we restrict our sample to specialists who have the capacity to discriminate their fees for high- and low-income earners. As such, we include only specialists who see at least one low-income patient (bottom 25% of the household income distribution) and one high-income patient (top 25%) during the observation period. This reduces the sample to 2,325. We also exclude observations with missing values on a specialist's practice location and specialty ($n = 8$). Finally, we exclude specialists who charge all their patients a fee that is equivalent to the Medicare rebate, leaving a final sample size of 2,124.

Sample selection may be a concern since only specialists with both low- and high-income patients are included in our sample. As fee setting behaviour may be substantially different for the other specialists with only low- or high-income patients, we check the coefficient of variation (standard deviation/mean) of the fees charged by the various specialists and find that they are comparable at around 0.32-0.38 (details can be found at Appendix A, Table A1). This suggests that specialists practice a similar extent of fee variation, even when they have only low or high income patients. We also find there is a similar extent of price

[4] As this is arbitrary, we also used the most expensive fee and average fee, and found that the results are robust. There are only a small number of people with multiple services under item 104.

discrimination at least towards low-income patients. As our definition for low-income (bottom 25%) uses three income categories in the survey instrument, we can define patients in the lowest two income categories as the "bottom-low" and designate the third income category as the "top-low" group. The average fee gaps between the "top-low-" and "bottom-low-" income patients among specialists who see both high- and low-income patients and specialists who see only low-income patients are $3.14 and $5.77 respectively, and they are not significantly different from each other[5].

As we can identify an individual specialist, we conduct person-level analysis and compute the fee gap between high-income patients and low-income patients for each specialist. We then take the average of the fee gaps across specialists. There is no information about the specialists' characteristics such as their gender or education. However, this limitation does not restrict our person-level analysis as a specialist's characteristics are fixed across their own patients. To check for heterogeneity in fee gaps, we compute the fee gaps by practice location (major cities vs regional/remote areas and socioeconomically advantaged vs disadvantaged areas) and by medical specialty.

## 3. Results

Figure 1 presents the distribution of the gap between fees charged to high- and low-income patients. Around 80% of specialists charge higher average fees to their high-income patients. The median fee gap is AU$24.76, while 20% of specialists charge at least AU$50 more to their high-income patients compared to their low-income patients.

[5] Unfortunately, we cannot do the same disaggregation for the richest patients because the top 25% of the income distribution is captured by a single income category in the dataset.

Table 1 summarises the average fees and fee gaps for high- and low-income patients in general and by practice locations. The overall average fee gap is AU$26.38 (about 38% of the Medicare rebate). The average fee for low-income patients is AU$47 above the Medicare rebate and AU$74 for high-income patients. Now to ascertain that this gap is not simply an artefact of the relationship between the specialist and the referring GP, we provide several supporting evidences. First, we trace each specialist consultation back to the referring GP and identify the specialists whom each GP refers to. It is possible that GPs tend to refer high income patients to specialists who typically charge high fees and poor patients to specialists who usually charge low fees. We classify specialists into 3 groups: specialists who see both high-income and low-income patients (SP1), low-income patients only (SP2), and high-income patients only (SP3) over the observation period. The figures in Appendix A, Table A2, show that the vast majority of high-income and low-income patients (over 95%) are referred to specialists who see both high- and low-income patients, suggesting no support for the hypothesis that the choice of specialist made by a GP which is matched with the income of his/her patients. Second, we also cross check the types of referral by the types of GPs. We classify GPs into the 3 groups: GPs who see both high-income and low-income patients (GP1), low-income patients only (GP2), and high-income patients only (GP3), and cross-tabulate GP and SP types. Appendix A Table A3 indicates that, although SP2 (SP3) do not have patients referred from GP3 (GP2), the majority of patients for all three groups of specialists are from GP1 (the mixed income group).

Panel A of Table 1 shows variations in fees and fee gaps by the remoteness of specialists' practice location. We use the Accessibility/Remoteness Index of Australia (ARIA)[6] to categorise practice locations into those located in a major city and those located in regional

[6] Produced by the Australian Population and Migration Research Centre at the University of Adelaide

or remote areas ('outside major city'). In the city, we may expect demand for specialist services to be larger, but the market is also more concentrated. Nevertheless, Table 1 shows that specialists in major cities can still charge very high fees to high-income patients, generating a larger fee gap compared to specialists who practise outside the city.

Panel B of Table 1 shows how fees and fee gaps vary by socio-economic status of the specialists' practice locations. We use the Australian Bureau of Statistics' Socio-Economic Indexes for Areas (SEIFA) Index of Relative Socio-Economic Disadvantage (IRSD) to define the most disadvantaged, the mid-disadvantaged and the least disadvantaged areas. It is found that the fees for both high- and low-income patients are positively correlated with the socio-economic wellness of the area. The average fee gap is the widest in the best-off areas; however, it is not the lowest in the most disadvantaged areas. This is because in mid-disadvantaged areas, low-income patients are charged relatively high fees. Importantly, the figures also indicate the pro-rich distribution of specialists' practice locations. In our sample, less than 10% of specialists are located in areas considered to be in the bottom 20% of the socio-economic advantage index, whereas almost 30% are located in areas identified to be in the highest 20% of socio-economic advantage index.

Table 2 shows variation in fees and fee gaps by type of specialists. We rank the speciality according to the fee gap to examine which type of specialist price discriminates patients the most.[7] Large variations in fee gaps are observed across different specialties - from the largest gap of AU$53.01 for neurosurgeons (about 77% of the Medicare rebate) to the smallest gap of AU$14.69 for oral surgeons (about 18% of the Medicare rebate).

[7] Of the 4,202 specialists considered in the sample, 220 specialists have more than one specialty recorded in the data. For those, we use their main specialty, defined as the one associated with the majority of their services.

Given the limited number of interactions between a patient and specialist at the time of the initial consultation, we examine possible pathways by which personal income information could be obtained. We test five possible income proxies: health concession card status, age, private health insurance status[8], employment status, and socio-economic characteristics of a patient's residential area (SEIFA-IRSD score). We calculate the mean fee gap between two patient subgroups classified by the selected individual characteristics (e.g. concession card vs non-concession card holders) within the high-income and low-income patient group separately. A non-zero fee gap indicates that there is fee discrimination based on these variables.

The results in Table 3 explore whether certain patient characteristics can help explain the mechanisms by which specialists identify low- and high-income patients. The results in Table 3 show that, firstly, the mean fees for high-income patients are always higher than the mean fees for low-income patients, even after accounting for the patient characteristics. For example, for those with a concession card the fee gap between high- and low-income earners is AU$22. Whilst this gap is smaller than the overall gap of AU$26 (Table 1), it suggests that specialists use additional means to determine price discrimination. Second, the fee gaps are significantly smaller for high-income groups than for low-income groups (p-values of 0.00 from classical two sample mean tests), with the exception of health card status and SEIFA. This suggests that age, private health insurance status and work status play bigger roles in the price discrimination among low-income patients than for high-income patients. An explanation for this is that specialists can identify high-income patients

[8] Note that private health insurance does not cover out-of-hospital consultations, and does not directly affect the reimbursement of specialists' services studied here.

easily, but need additional information about patient characteristics to identify low-income patients.

## 4. Conclusions

This study shows that in an unregulated fee-setting environment the vast majority of specialists charge higher fees to higher income patients. This is particularly relevant in the Australian setting where higher doctor fees translate into higher OOP costs for patients, and therefore directly influence access to care.

The results also show that the observable patient characteristics helps explain some of the fee gap between high and low income patients but that fee gaps persist even after disaggregating by each of these characteristics. Interestingly, these characteristics matter more for the low-income patients than for high-income patients, and suggests that specialists find it easier to identify high-income patients without the need for additional information.

Our findings are consistent with profit maximisation behaviour among specialists, given that low-income patients are more price sensitive than their wealthier counterparts (see for example Kiil and Houlberg, 2014; Keeler, 1992; Remler & Greene, 2009). That said, the results are also consistent with notions of fairness where specialists charge lower fees to those on low incomes. However, despite the presence of discounted specialists' fees to low income patients, OOP costs remain substantial when compared to other health care providers such as GPs. There might be a case for devising incentives for specialists to charge low-income patients lower fees, similar to those in the GP market, to help remove some of these barriers. High income earners are greater users of specialist care than low income

earners (Van Doorslaer et al. 2008), and this is reflected in our study through the higher concentration of specialists in more socio-economically advantaged areas.

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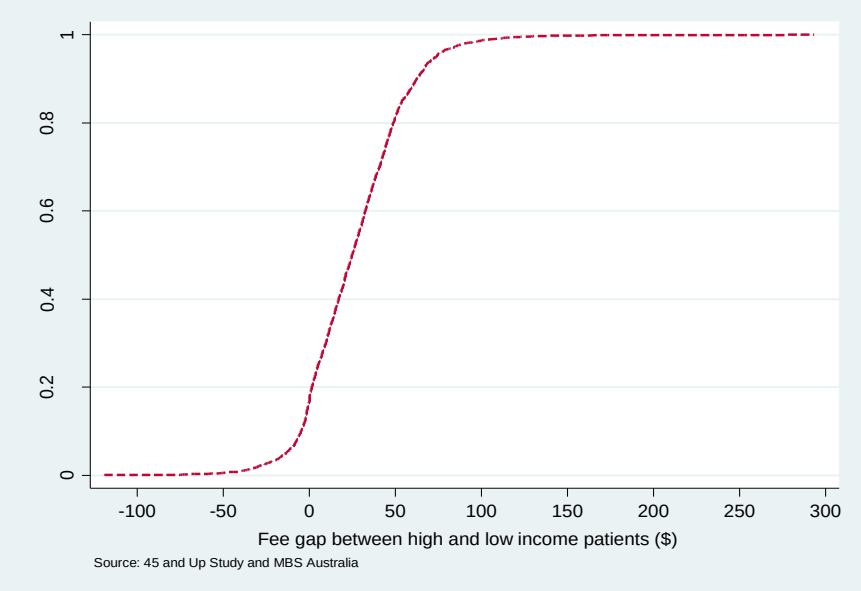


**Figure 1: The cumulative distribution of average fee gap between high- and low-income patients**

**Table 1: Average fee for high- and low-income patients by location of practice**

| | High income | Low income | Fee gap | Number of specialists |
|---|---|---|---|---|
| All | $142.50 | $116.13 | $26.38 | 2,124 |
| **A.** | | | | |
| Outside major city (inner regional, outer regional, and remote areas) | $129.52 | $111.40 | $18.13 | 406 |
| Major city | $145.57 | $117.25 | $28.33 | 1,718 |
| **B.** | | | | |
| Most disadvantaged local areas (SEIFA-IRSD deciles 1-2) | $130.77 | $102.96 | $27.81 | 205 |
| Mid disadvantaged local areas (SEIFA-IRSD deciles 3-8) | $140.82 | $115.83 | $24.98 | 1,333 |
| Least disadvantaged local areas (SEIFA-IRSD deciles 9-10) | $150.44 | $121.40 | $29.04 | 586 |

**Table 2: Average fee for high- and low-income patients by specialty**

| Specialty | High-income patients | Low-income patients | Average fee gap | Frequency | Percentage |
|---|---|---|---|---|---|
| Neurosurgery | $206.14 | $153.12 | $53.01 | 24 | 1.13% |
| Dermatology | $145.18 | $107.84 | $37.34 | 181 | 8.52% |
| Otorhinolaryngology | $144.13 | $112.81 | $31.33 | 148 | 6.96% |
| General-surgery | $136.29 | $105.57 | $30.72 | 383 | 18.03% |
| Urology | $153.40 | $125.01 | $28.39 | 114 | 5.36% |
| Ophthalmology | $134.24 | $107.12 | $27.12 | 371 | 17.46% |
| Vascular-surgery | $140.02 | $113.94 | $26.08 | 27 | 1.27% |
| Obstetrics & Gynaecology | $149.25 | $125.41 | $23.84 | 267 | 12.56% |
| In vitro fertilisation (IVF) | $136.57 | $113.85 | $22.72 | 15 | 0.71% |
| Radiology oncology | $128.08 | $105.66 | $22.41 | 91 | 4.28% |
| Cardio-thoracic surgery | $139.50 | $117.77 | $21.73 | 33 | 1.55% |
| Orthopaedic surgery | $149.72 | $132.25 | $17.47 | 334 | 15.72% |
| Plastic surgery | $143.11 | $126.16 | $16.95 | 104 | 4.89% |
| Oral surgery | $121.08 | $106.39 | $14.69 | 16 | 0.75% |
| Other specialties[a] | $116.52 | $98.26 | $18.26 | 16 | 0.75% |
| Total | | | | 2,124 | 100% |

Note: [a] Specialties with less than 3 observations and unclassified specialties comprise the 'other specialties' group.

**Table 3: Results for mechanism checks - comparison of mean fee gaps**

| Patients' income status | Mechanisms | Mean fee | Fee gap | Number of specialists |
|---|---|---|---|---|
| High income | Non-concession card holders | $142.67 | | |
| | Concession card holders | $134.42 | $8.25 | |
| Low income | Non-concession card holders | $117.96 | $6.03 | 652 |
| | Concession card holders | $111.93 | | |
| High income | Aged less than 65 | $144.09 | | |
| | Aged 65 or over | $135.06 | $9.03 | |
| Low income | Aged less than 65 | $126.05 | $14.34 | 1,303 |
| | Aged 65 or over | $111.71 | | |
| High income | Have private health insurance | $140.86 | $0.20 | |
| | No private health insurance | $140.66 | | |
| Low income | Have private health insurance | $117.40 | $6.38 | 1,134 |
| | No private health insurance | $111.02 | | |
| High income | Employed | $142.41 | $2.71 | |
| | Unemployed | $139.70 | | |
| Low income | Employed | $128.67 | $15.27 | 1,224 |
| | Unemployed | $113.40 | | |
| High income | Top quantile of SEIFA for residential areas | $146.10 | $0.91 | |
| | Bottom quantile of SEIFA for residential areas | $145.20 | | |
| Low income | Top quantile of SEIFA for residential areas | $116.81 | $3.19 | 648 |
| | Bottom quantile of SEIFA for residential areas | $113.62 | | |

Note: We perform two-sample mean difference tests to test whether the high- and low-income gaps are significantly different from each other. The test results suggest that patients' work status, private health insurance status, and age are statistically significant, but concession-card status and SEIFA of patients' residential areas are not.

**Appendix A**

**Table A1: Coefficient of variation in fees by three types of specialists**

| SP types | Coefficient of variation in fees |
|---|---|
| SP1 | 0.3158 |
| SP2 | 0.3774 |
| SP3 | 0.3321 |

Notes:
SP1: SPs who see both high and low income patients. SP2: SPs who see low-income patients only. SP3: SPs who see high-income patients only. The number of referrals is measured by the number of Item 104 in MBS.

**Table A2: GP referral patterns by patient types**

| | Percentage of GP referrals | |
|---|---|---|
| Referred to | Low-income patients | High-income patients |
| SP1 | 96.13% | 95.97% |
| SP2 | 3.87% | 0% |
| SP3 | 0% | 4.03% |

Notes:
SP1: SPs who see both high and low income patients. SP2: SPs who see low-income patients only. SP3: SPs who see high-income patients only. The number of referrals is measured by the number of Item 104 in MBS.

**Table A3: Percentage of referrals by GP and SP types**

| | Percentage of referrals | | |
|---|---|---|---|
| | SP1 | SP2 | SP3 |
| GP1 | 85.66% | 62.71% | 59.96% |
| GP2 | 6.82% | 37.29% | 0% |
| GP3 | 7.52% | 0% | 40.04% |

Notes:
SP1/GP1: SPs/GPs who see both high and low income patients. SP2/GP2: SPs/GPs who see low-income patients only. SP3/GP3: SPs/GPs who see high-income patients only. The number of referrals is measured by the number of Item 104 in MBS.