patients, into their calculations, and would have done even better to use the more sensitive ASTRO-PUs.[3]

In our own work on modelling prescribing costs we have considered the power of unemployment in accounting for prescribing variation and found it less than that of other variables (Table 1). Pringle and Morton-Jones' unemployment data were for 1989, and will therefore differ from ours, but even if their values are accepted it is clear that permanent sickness is a much better predictor of prescribing costs than unemployment. While it is true that permanent sickness data are collected only every 10 years, we have found (unpublished study) that there was little change, relatively, between family health services authorities, from 1981 to 1991. The 10 year gap is therefore unlikely to cause problems.

Finally, it must be emphasized that Pringle and Morton-Jones' study was conducted at family health services authority level. If, therefore, unemployment rates were to be used in the allocation of prescribing money, they would affect only the share of the national prescribing pot obtained by each family health services authority. They could not be used for distribution by family health services authority to its practices: at practice level a marker must relate to factors that can be collected at practice level. Variables that tend to average out at family health services authority level may be very important in characterizing individual practices.

Unemployment rates are available, after considerable delay, at family health services authority level, but they are neither the best, nor even very good, markers for prescribing costs.

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Sir,

In their study of prescribing trends, Pringle and Morton-Jones noted an inverse relationship between the number of items prescribed per patient and the net ingredient cost per item across the family health services authorities (February *Journal,* p.53). The product of these two prescribing rates (cost per item, items per patient) gives an overall prescribing cost per patient. As a measure of prescribing, cost per patient is unaffected by changes in repeat prescribing frequency and compensatory changes in prescription duration, whereas both items per patient and cost per item will reflect these changes. Misleading conclusions may arise through examining correlations between ratios which have common elements.[1,2] In this case, the number of prescription items appears in the numerator of one ratio and the denominator of the other, leading to the inverse relationship observed. A constant value for cost per patient but variation, however small, in items per patient would give a perfect negative correlation ($r = -1$) between items per patient and cost per item. The negative correlation observed is therefore unsurprising, and results from inappropriate analytical methods rather than an underlying prescribing model in need of explanation.

Figure 1 shows family health services authority prescribing rates for the calendar year 1990, calculated using 1989 mid-year Office of Population Censuses and Surveys population estimates (the general picture is similar to that of Pringle which was based on prescribing data for a slightly earlier period). The superimposed curves indicate constant values for net ingredient cost per patient and show that Pringle's split between family health services authorities with high item cost, low item number (group 1) and those with low item cost, high item number (group 2), is by no means a split according to low/high net ingredient cost per patient as is claimed. However, the cost per patient is, on average, lower among group 1 family health services authorities.

The unemployment variables considered may be reasonable predictors for these two groups of family health services authorities but what interpretation can be given to the groups? They do not accord with low and high overall per capita prescribing costs, which might have supported a link between ill health and unemployment. Perhaps in areas of higher employment, doctors write more repeat prescriptions of long duration because more of their patients are not exempt from prescription charges? Overall, this would give higher item cost and lower numbers of items, as in the group 1 family health services authorities. The virtue of predicting a family health services authority's group is not clear; it tells us something about how medicines are prescribed rather than how much is prescribed.

The prescribing picture is not simple, and many things, including patient demographics, product mix and practitioners' approach, contribute substantially to variation in prescribing costs. Explanatory regression models are difficult to interpret when only some of the many possible influences are included, especially as these influences are so often correlated. Those variables that are included may be acting as surrogates for others that have not been considered. Examination of patient-linked prescribing and diagnostic data my shed some light on the variation in prescribing rates, whether at family health services authority or practice level. The widespread use of computerized general practitioner record systems now make this a feasible research approach.

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Table 1. Pearson product moment correlation coefficients of prescribing variables.

Variable	Correlation coefficient		
	Cost[a] per patient	Cost[a] per PU	Cost[a] per ASTRO-PU
No access to a car[b]	0.35	0.41	0.48
Unemployment[b]	0.38	0.45	0.52
Premature SMR[c]	0.53	0.60	0.67
Permanent sickness[b]	0.73	0.77	0.79

[a]Net ingredient cost for 1990–91. [b]1991 census. [c]Standardized mortality ratio for ages 15–64 years from the public health common dataset 1992.

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Sir,

Having worked both in Brighton (the 'affluent' south) and now in Bellshill,