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# Excessive Utilisation and Supplier Induced Demand

Comments on the analysis in relation to facilities and recommendations

- 1. Introductory remarks**
- 2. The HMI's evidence of supplier induced demand**
- 3. Supplier induced demand through incentives to practitioners and local competition**
- 4. Supplier induced demand through inefficient capacity expansion**

## Theories surrounding increasing utilisation

- Demand-side factors
  - Adverse selection and a deteriorating risk pool
  - Benefit design
- Supply-side factors
  - Practitioners (including defensive medicine)
  - Incentives provided to practitioners and local competition between healthcare facilities to attract practitioners
  - Inefficient capacity expansion
- Increasing fraud, waste and abuse

## Theory places practitioners, not facilities, at the centre of theories of supplier induced demand (SID) in healthcare services

- Healthcare facilities do not act as agents in the provision of healthcare services
  - We are not aware of any existing literature that establishes a direct role for healthcare facilities in driving SID
  - The HMI itself notes that “*facilities rarely have direct contact with patients, or the nature discourse, that enables them to advocate for extra medical services*” and that as a result SID “*on the part of hospitals is notably more remote [than on the part of doctors]*”
- A sound basis for intervention into the facilities market in order to address SID therefore requires robust evidence of an effective mechanism through which facilities are able to indirectly induce demand for healthcare services
- If the supposed role of healthcare facilities in driving SID is not properly understood then how can remedies focussing on addressing SID be effective?

## Arrangements between practitioners and facilities and shareholding schemes

- The HMI itself appears to acknowledge that it has not provided clear evidence of how (if) hospitals are able to induce practitioners to drive demand
  - The PFs note that they are “not able to show a direct link between SID and the incentives offered to practitioners”
- The PFs also find that “some alignment of interests between practitioners and facilities would be beneficial, and may make commercial sense ... [and] may even promote consumer welfare”
- This is consistent with the HMI's finding that contractual relationships between facilities and practitioners encourage practitioners to channel a certain “minimum proportion” of patients to a given hospital
  - In exchange, hospitals provide practitioners with benefits, including loans to purchase necessary equipment, discounted rates for the rental of consulting rooms, or relocation allowances
- These arrangements evidently would not provide incentives for practitioners to increase absolute levels of admissions or to over-treat (i.e. SID)

## Regression analysis

- The PFs present a regression analysis that attempts to model the likelihood of admission for “discretionary” procedures based on the supply of doctors and supply of beds in the municipal area in which a beneficiary lives
- The PFs’ hypotheses
  - If practitioners engage in SID, a given beneficiary with a discretionary condition will be more likely to be admitted when there is a greater supply of doctors
  - If hospitals indirectly engage in SID, a given beneficiary with a discretionary condition will be more likely to be admitted when there is a greater supply of beds

Any relationship between the supply of hospital beds and admissions found by this analysis could be due to incentives to practitioners and local competition or inefficient capacity expansion

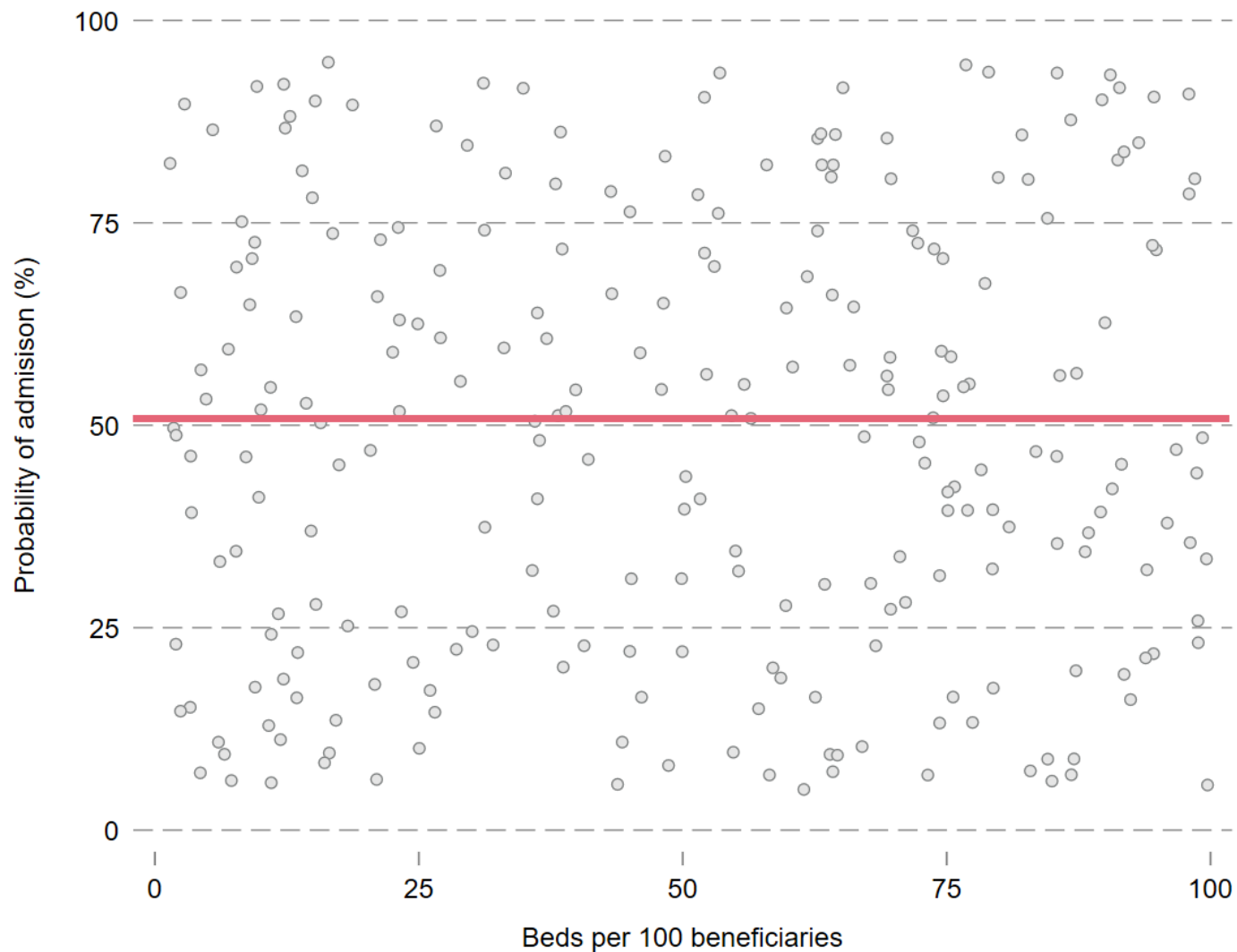
## Comments on the regression analysis (1)

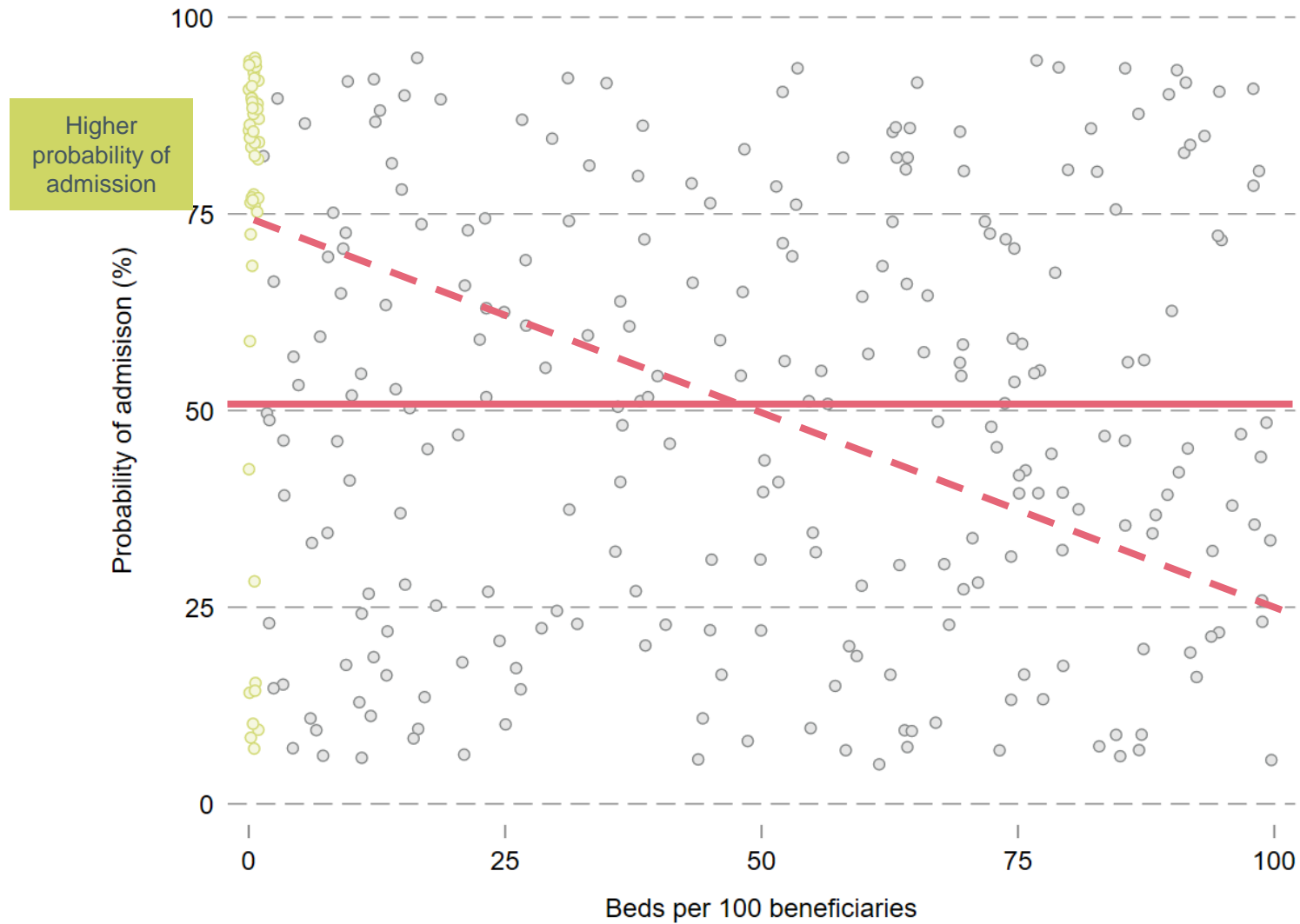
- The results from the PFs' regression analysis do not provide strong or robust support the SID hypothesis in relation to facilities
  - The probability of admission increases by 0.8% given an increase of 1 bed per 100 beneficiaries, and by 26% given an increase of 1 doctor per 100 beneficiaries
  - Hence, the analysis does not show a material relationship between hospital bed supply and the likelihood of a beneficiary being admitted to hospital
- The HMI also (correctly) acknowledges a number of deficiencies with its analysis resulting from limitations on the available data
  - The HMI's response to many of the deficiencies of its analysis identified by stakeholders is that it has "*used all of the information at its disposal*" and therefore cannot correct these shortcomings
  - We empathise with this issue – but it is not a valid reason to accept potentially misleading results and use them to inform remedies

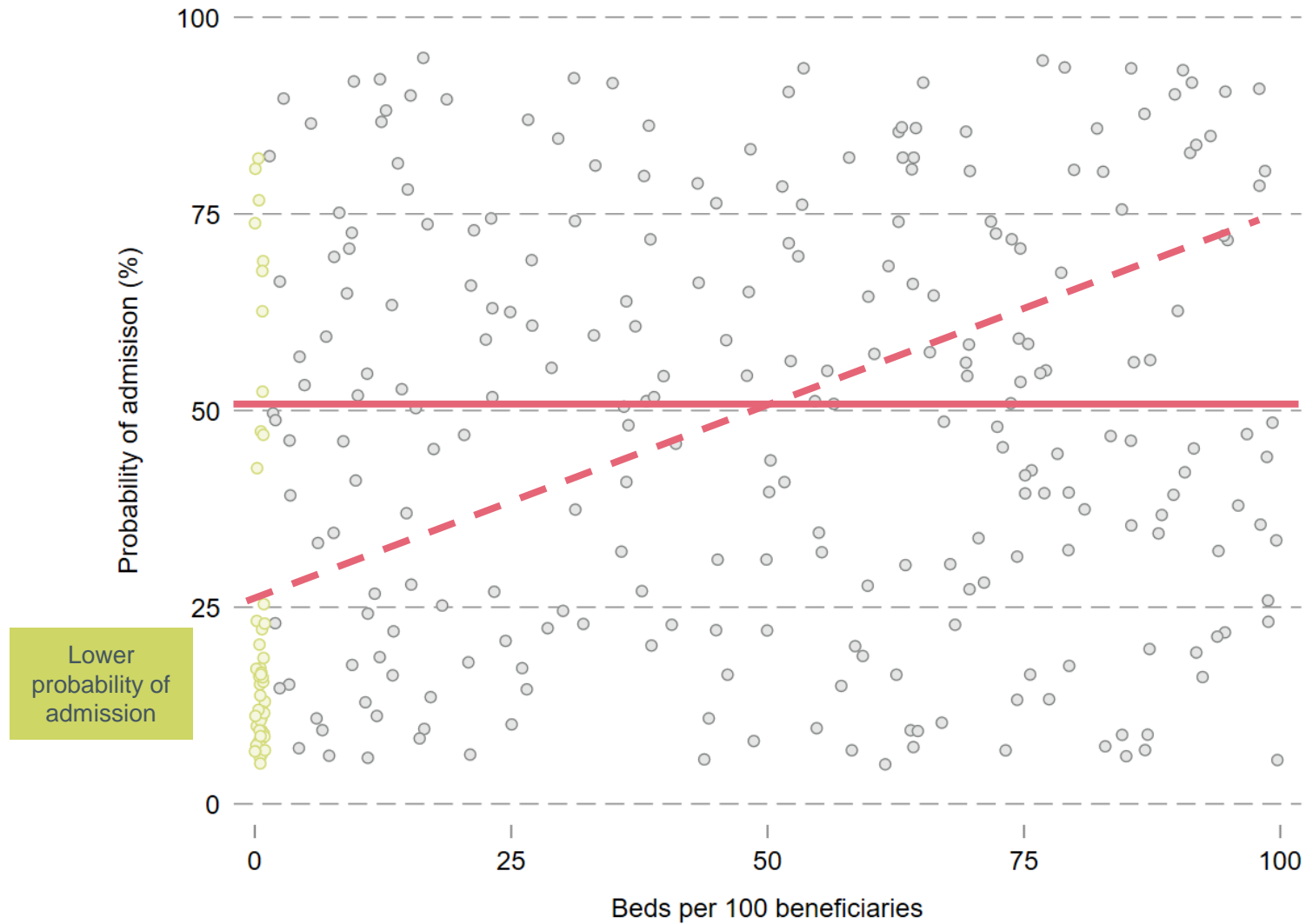
## Comments on the regression analysis (2)

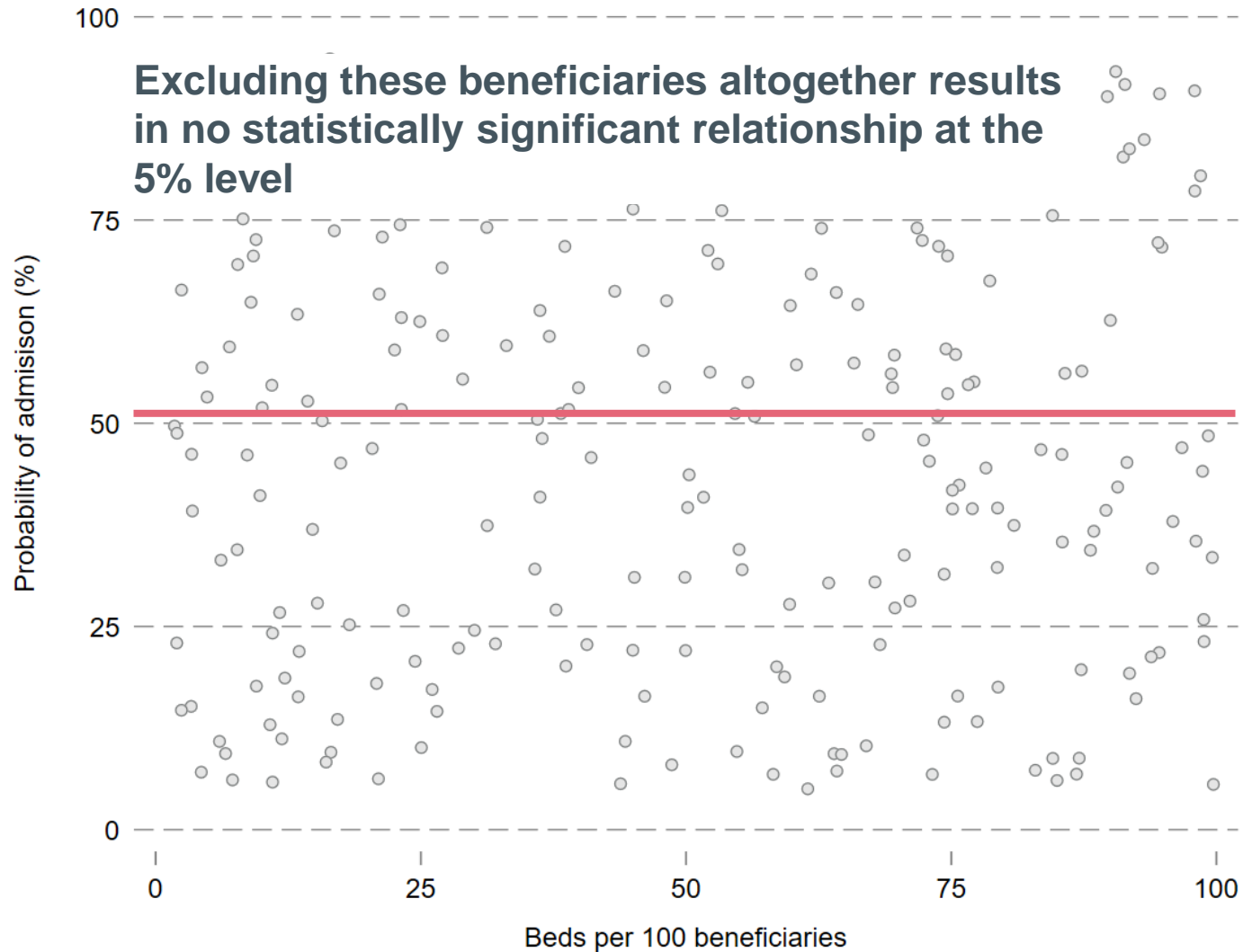
- The HMI appears to misinterpret the critique that the analysis is not based on well defined and meaningful local markets (i.e. uses municipal areas as proxies for local markets)
  - Our principle concern is not with the (potentially) random impact arising from the fact that some beneficiaries are admitted outside of their municipality of residence
  - It is rather with the non-random impact of including admissions of beneficiaries who reside in municipalities with no hospitals (which biases the results)
  - Approximately 33% of beneficiaries reside in a municipal area with no hospital bed capacity to this impact is likely to be substantial
- Correcting for this (or excluding these beneficiaries from the analysis altogether) more than halves the estimated effect of bed capacity on the likelihood of admission





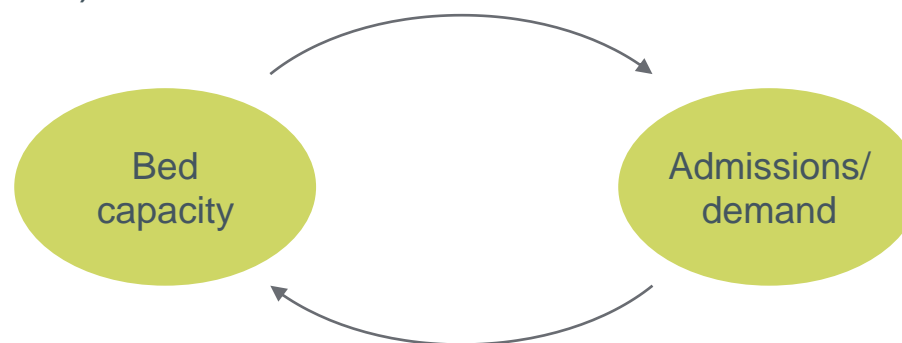






## Comments on the regression analysis (3)

- The HMI also appears to misinterpret the critique that the model suffers from an endogeneity problem
  - If an area in which there is a comparatively greater supply of beds is found to have a comparatively higher admission rate then this could be indicative of SID
  - However an area in which there is a comparatively higher admission rate could have a comparatively greater supply of beds precisely because facilities have expanded bed capacity in order to meet high demand for healthcare services (which is exhibited through higher admissions rates)



- The HMI's model assumes that any correlation between bed capacity and the likelihood of admission is the result of only SID
  - This is commonly referred to as “endogeneity” and leads to results being biased

## Comments on the regression analysis (4)

- The appropriate way to address this issue would be through the use of an instrumental variable – but this was not possible using the available data. Instead we deployed a technique to partially strip out endogeneity from the regression results (i.e. fixed effects)
- The response that the use of municipal fixed effects “*prevents the model from calculating SID*” also appears to misunderstand the purpose of this exercise
  - The objective was not to present an ideal model for measuring SID - just to illustrate the impact of endogeneity on the results
- The approach renders the estimated relationship between the supply of hospital beds and the likelihood of admission no longer statistically significant
  - The HMI is correct in noting that fixed effects introduces multicollinearity
  - But this is unlikely to fully explain the change in results given that fixed effects do not remove time-series variation in the supply of beds (and thus the model still captures the impact of any expansion in bed supply on the probability of admission)
  - Indeed, the estimated relationship between doctor supply and the likelihood of admission remains statistically significant at the 1% level

## Comments on the analysis of local concentration and unexplained admissions/expenditure (1)

As a further test for SID arising through local competition between healthcare facilities, the PFs compare the level of “unexplained” admissions and increases in expenditure between a selection of highly concentrated, moderately concentrated and non-concentrated local markets

- The PFs’ hypotheses (if local competition between facilities give rise to SID)
  - Local markets with lower levels of concentration should have higher levels of “unexplained” admissions
    - Competition between hospitals for practitioners is more effective in areas with low concentration – so more discretionary admissions in these areas
  - Local markets with lower levels of concentration should have higher levels of “unexplained” increases in expenditure
    - Competition between hospitals is more effective in areas with low concentration – so more discretionary treatment in these areas

## Comments on the analysis of local concentration and unexplained admissions/expenditure (2)

- The PF's analysis does not support its conclusion that less concentrated local markets have higher levels of "unexplained" expenditure increases
  - The difference in "unexplained" expenditure increases between concentrated and non-concentrated regions is not economically significant (at only 0.1 percentage point)
  - Moderately concentrated regions have higher levels of "unexplained" expenditure increases and high levels of "unexplained" admissions rates than both non-concentrated and highly concentrated regions
- The PF's analysis is also based on a small sample size, which reflects only 12% of the total number of hospitals considered in the PFs' concentration analysis
  - Since the accuracy and reliability of the inferences that can be drawn from any statistical analysis depends crucially on the sample size used, this means that the results are likely to be subject to a high degree of statistical error and hence unlikely to be generalisable more broadly



**The conclusions in the PFs in relation to SID at the local level are in significant tension with its findings regarding local concentration**

- The PFs' theory is that SID arises from local competition between hospitals to attract and retain the “best admitting doctors”
  - Less local concentration implies higher levels of SID (and therefore worse outcomes for consumers)
- This stands in stark contrast to the PF's theory on the potential relationship between concentration and consumer welfare
  - More local concentration implies more market power amongst facilities (and therefore worse outcomes for consumers)
- This means that remedies aimed at addressing perceived local market power (by reducing levels of concentration) would be at significant risk of enhancing SID, and vice versa
  - This is a fundamental and irresolvable tension in the PFs' hypotheses and recommendations

## Other potential reasons for inefficient capacity expansion by healthcare facilities

- National market power
  - No clear mechanism exists for how national market power may allow facilities to expand capacity inefficiently
  - Evidence on new licenses issued suggests that capacity expansion is not being primarily driven by the large hospital groups
- Imperfect information
  - Hospital groups may not be able to properly evaluate the level of residual demand in a given local market due to a lack of adequate data
- Expected increase in demand
  - For instance due to the expected implementation of NHI

More robust (but efficient) license regulation could solve all of these potential causes of inefficient capacity expansion (as well as any inefficient capacity expansion that arises through local competition for practitioners)

