**Arguments: Does privatization lead to :**

1. Improvement in performance through additional competition
2. Cost cutting and poorer outcome for patients.

In this study they examined the effect of outsourcing at the NHS

(Note: this differs from complete privatization in that a select number of services are outsourced to for-profit organizations at varying levels of spending)

**Method of this paper:**

Evaluate the impact of outsourced spending to private providers by measuring treatable mortality rates and the quality of health-care services.

Unit of measurement = procurement contracts of >100,000 SAR value

N = 645,674 units

Total value = 205.1 billion ~ 1 Trillion SAR

Across 173 clinical commissioning groups.

**Units were scraped from websites**

And matched with local mortality rates from causes that should be treatable by medical intervention (indicates quality of healthcare services)

Explanatory variable of interest: commissioning expenditure which is received by for-profit companies as a percentage of total expenditure (range from 0% to 100%)

Population: organizations with profit-maximizations incentives.

# Understanding Longitudinal Mixed Effects models

To understand longitudinal mixed effects models (LME) we will give a clinical example and then compare it to the study. For our clinical example we will assume that a new drug has been created and we would like to test the effect that the drug has on the weight of the individual who is taking this drug. This effect can be in either direction; weight gain or wight loss. We develop an experimental study design by taking a cohort of individuals and follow them over a ten-year period. We assess their weight at the beginning of the study and at the end of each year. We also note that the dosage of the drug (e.g. mg per kilogram) taken varies between individuals (some individual take higher dosage compared to others on a continues scale), and the dosage also varies between years for a single individual (at the beginning of each year an individual may take a different dosage of the drug; either increasing or decreasing). We also note other covariates in our study namely the (1) weight of everyone (which may vary the beginning of the study between individual and at the beginning of each year for a single individual), (2) age, (3) amount of physical exercise (which also varies between individuals and between years for a single induvial.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Individual | Baseline | Y-1 | Y-2 | Y-3 | … | Y-10 |
| 1 | * Weight:70kg * Dose:10 * Age:45 * PE:3hr/week | * Weight:75kg * Dose:5 * Age:46 * PE:4hr/week | * Weight:73kg * Dose:7 * Age:47   PE:1hr/week | * Weight:70kg * Dose:10 * Age:48   PE:2hr/week | … | * Weight:68kg * Dose:5 * Age:55   PE:4hr/week |
| 2 | * Weight:73kg * Dose:15 * Age:45   PE:2hr/week | * Weight:72kg * Dose:15 * Age:46   PE:1hr/week | * Weight:75kg * Dose:20 * Age:47   PE:3hr/week | * Weight:70kg * Dose:14 * Age:48   PE:3hr/week | … | * Weight:75kg * Dose:15 * Age:55   PE:4hr/week |
| 3 | * Weight:65kg * Dose:5 * Age:45   PE:4hr/week | * Weight:61kg * Dose:6 * Age:46   PE:6hr/week | * Weight:63kg * Dose:8 * Age:47   PE:5hr/week | * Weight:60kg * Dose:10 * Age:48   PE:4hr/week | … | * Weight:59kg * Dose:12 * Age:55   PE:5hr/week |
| … | … | … | … | … | … | … |
| 100 | * Weight:95kg * Dose:8 * Age:45   PE:1hr/week | * Weight:92kg * Dose:7 * Age:46   PE:0hr/week | * Weight:90kg * Dose:20 * Age:47   PE:1hr/week | * Weight:100kg * Dose:25 * Age:48   PE:2hr/week | … | * Weight:105kg * Dose:15 * Age:55   PE:3hr/week |

Measure of outcome:

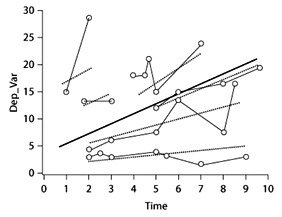
* % Difference in weight (baseline vs each year)
* % Difference in weight (year vs year +1)
* Total difference in weight (baseline vs each year)
* Total difference in weight (year vs year +1)

Main explanatory variable:

* Dosage of medication

Covariates:

* Weight (at beginning of period)
* Age
* Physical exercise level



|  |  |  |
| --- | --- | --- |
|  | Study | Similar example |
| Measure of outcome | % in treatable mortality | % Change in weight |
| # of deaths due treatable mortality | # Total change in weight |
| Main explanatory variable | For-Profit outsourcing (%) | Medication dosage |
| Covariates | Total spending | Weight at beginning |
| Pop size | Age |
| Average household income | PE level |
| Race |  |
| Education level |  |

Over several time intervals (yearly from 2006-2018)

Things to consider:

Outcome:

* % In treatable mortality (examples are provided in supp material).
* Do not compare treatment outcomes (e.g. outcome of surgery in public vs private practice)
* Do not compare mortality rates (only treatable mortality)

Explanatory variable:

* % of for profit outsourcing
* Don’t compare public vs private health care (there are private healthcare in England), they are looking at localities that are outsourcing services to for-profit organization
* Did not measure outsourcing to non-profit or charity organizations
* Not all outsourcing is to healthcare services (e.g. logistics and transportation, business, IT, construction …etc). However, they did look investigate specific type of outsourcing
* Outsourcing is different then completely converting to a private for-profit entity.

Comparing to Saudi Arabia:

* Public sector is converting to a corporate model not a private for-profit model (health clusters)
* The NHS through outsourcing is possibly showing a regression the mean since they have been providing one of the highest quality services globally 🡪 This is a limitation if we want to compare this to our model in Saudi Arabia.
* Localities have flexibility in their outsourcing decision making (the decision to outsource is on a local level for services) 🡪 another limitation in comparison, we have a national level decision making.
* The study does not include whether there were specific services that were responsible for the outcome, however, they were able to get as much granular data as possible compared to previous studies. [they can’t identify the causative mechanism for the outcome]

What this paper isn’t:

1. It does not compare the observed health outcomes of treatment by the NHS vs the profit-provider (for example the outcomes of surgeries). Since the measure of outcome in this study is treatable mortality (mortality that could have been treated) 🡪 methods section “deaths that can be mainly avoided through timely and effective healthcare interventions, including secondary prevention and treatment” also see “According to the Office for National Statistics: “Treatable mortality measures the effectiveness of timely healthcare interventions, including secondary prevention and treatment.” 23 This measure is an age-standardized rate of mortality per 100 000 population for specific causes of death—a full list of causes that are considered treatable is provided in the appendix (p 32).”
2. It does not describe the precise mechanism of worsening care in England since 2013. Meaning how private providers contribute to quality and safety data and systems of accountability.
3. Measure the impact of outsourcing on health inequalities at the neighborhood level and the qualitative impact of access to health care.

Limitations of the paper:

1. This paper should not be interpreted as necessarily showing a causal relationship between outsourcing and mortality rates.
2. Expenditure data does not detail the specific serviced provided, as such, we cannot determine if a specific service was responsible for the increase in mortality rates.