

Chief Economist Office

# *The Hip Index 2016*

## Is health care in the Netherlands expensive?

Chief Economist Office

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# About the Hip Index

The Hip Index 2016 is the second edition of the bi-yearly publication by that title. The Hip Index compares macroeconomic and microeconomic costs of health care for a sample of eight countries. The analysis is based on the IFHP Comparative Price Report, data from Nederlandse Zorg Autoriteit (NZA), Zorgkaart.nl and OECD. For the Hip Index 2016 we used data of the year 2014, as this is the most recent year for which all data are available.

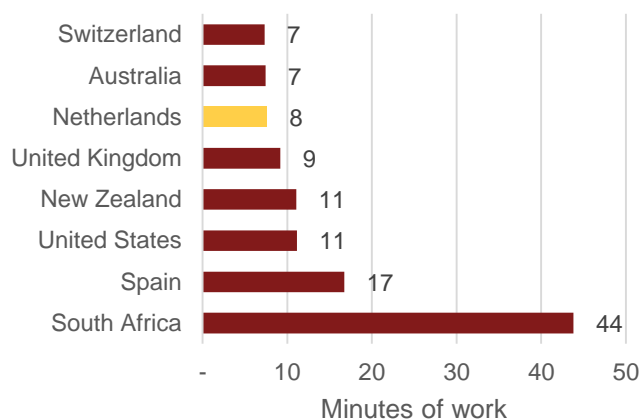
We harmonised the data about prices and spending across the reviewed countries. In order to obtain international comparability, we expressed the costs of healthcare as the number of hours an average employee in a specific country would have to work to be able to afford the price of a hip replacement. We adjusted the data using the average number of hours worked in each country in our sample.

The choice for the hip replacement as the benchmark treatment was motivated by the fact that, like its more famous equivalent in cross-country cost-of-living comparators the Big Mac Index, a hip replacement is a quite universal, standardised and very common treatment. To reduce a possible bias resulting from choosing this particular treatment out of hundreds of treatments, we also looked at cataract surgery and caesarean sections.

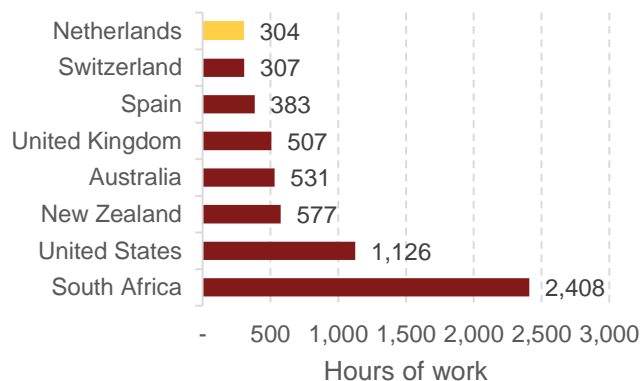


# Health care in the Netherlands is relatively cheap – NL scores well on the Hip Index 2016

### Big Mac in working minutes 2014



### Cost of hip replacement in working hours 2014

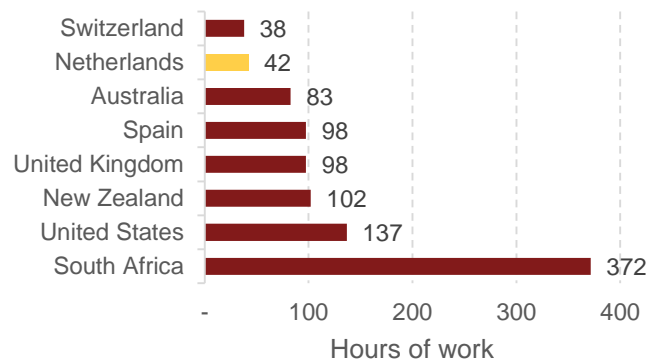


### Dutch treatments are affordable

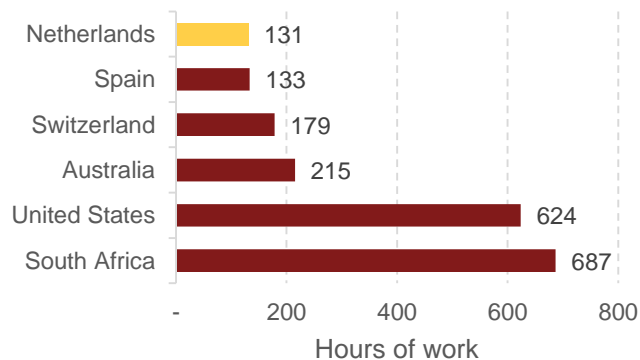
In **The Netherlands**, the relative health care costs (the number of hours an average worker needs to work to be able to afford specific treatments) are generally lowest, compared to the other sample countries. The Netherlands performs even better than two years ago.

Health care in **South Africa** is by far the least affordable in relative terms. This could be explained by a low average wage level and the costs of private treatments that are relatively high (some treatments may even only be exclusively available as private medical treatments, reserved for the rich).

### Cost of cataract surgery in working hours 2014



### Cost of C-section in working hours 2014



The **USA** is also expensive in relative terms. High prices can be explained by the extensive usage of expensive technology, and high human resource costs, a high variety in procedure costs based upon private or public healthcare plans (Medicaid & Medicare), and high annual spending on physicians per capita.

Overall, the relative costs of Dutch healthcare procedures as shown are lower than in 2012.

#### Calculation:

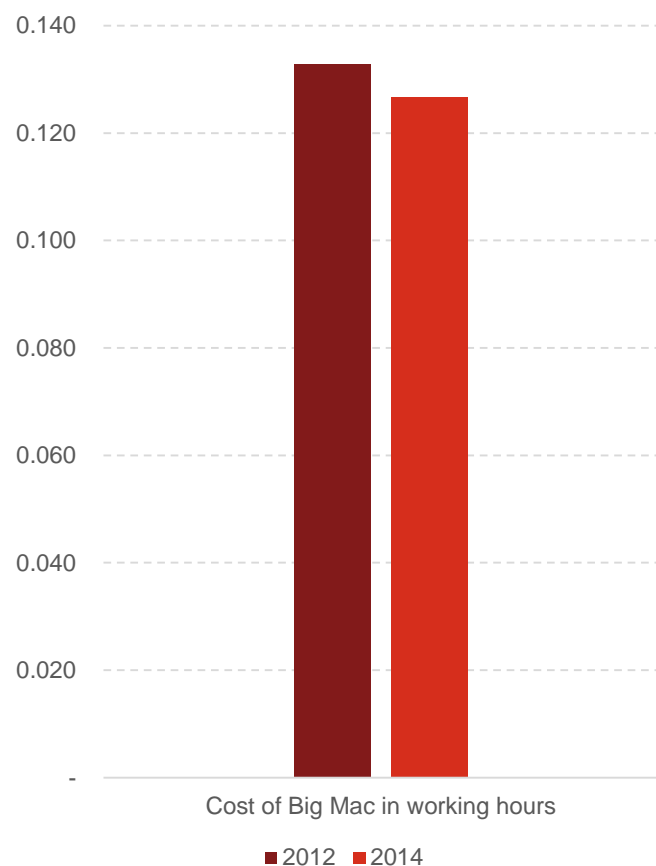
Price of procedure in PPP / (GDP per capita in PPP / Average number of working hours).

The country selection is based on data availability.

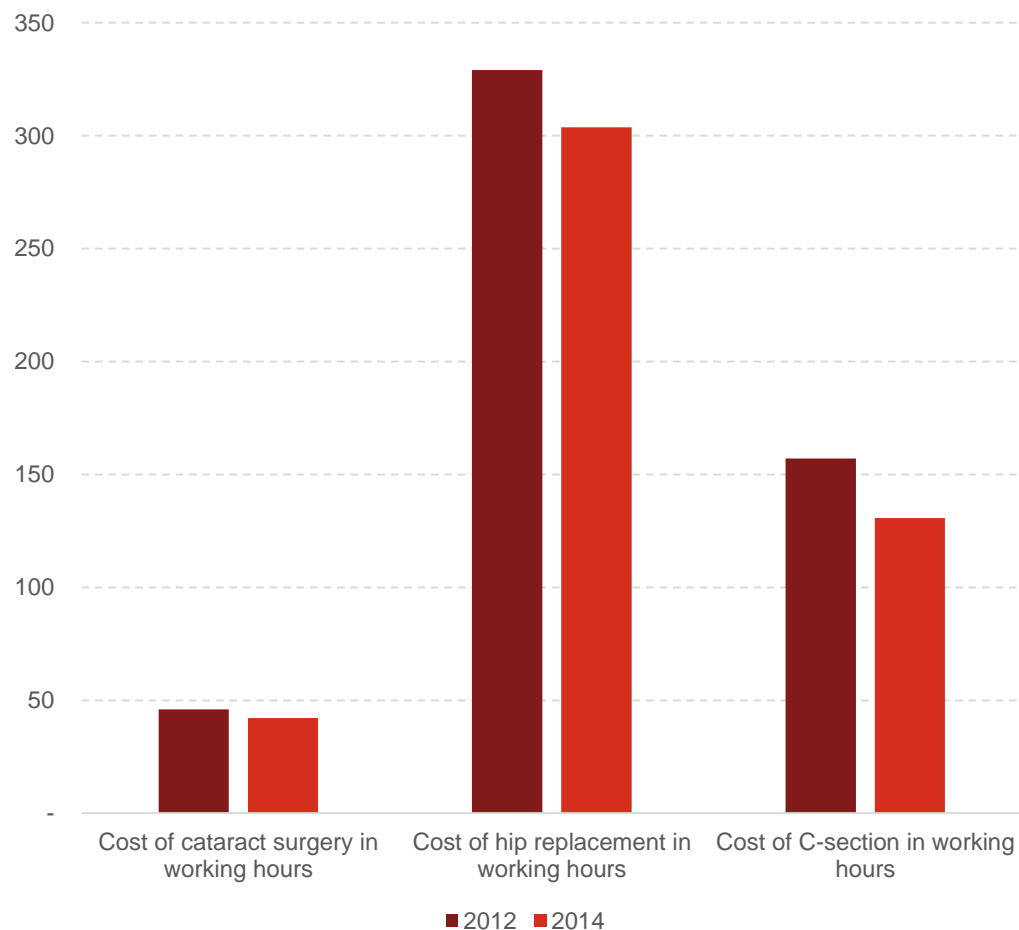
Sources: IFHP, The Economist, NZA, OECD, Zorgkaart.nl, PwC analysis

# Dutch healthcare treatments have become more affordable between 2012 and 2014

### Cost of a Big Mac expressed in working hours



### Cost of procedures expressed in working hours

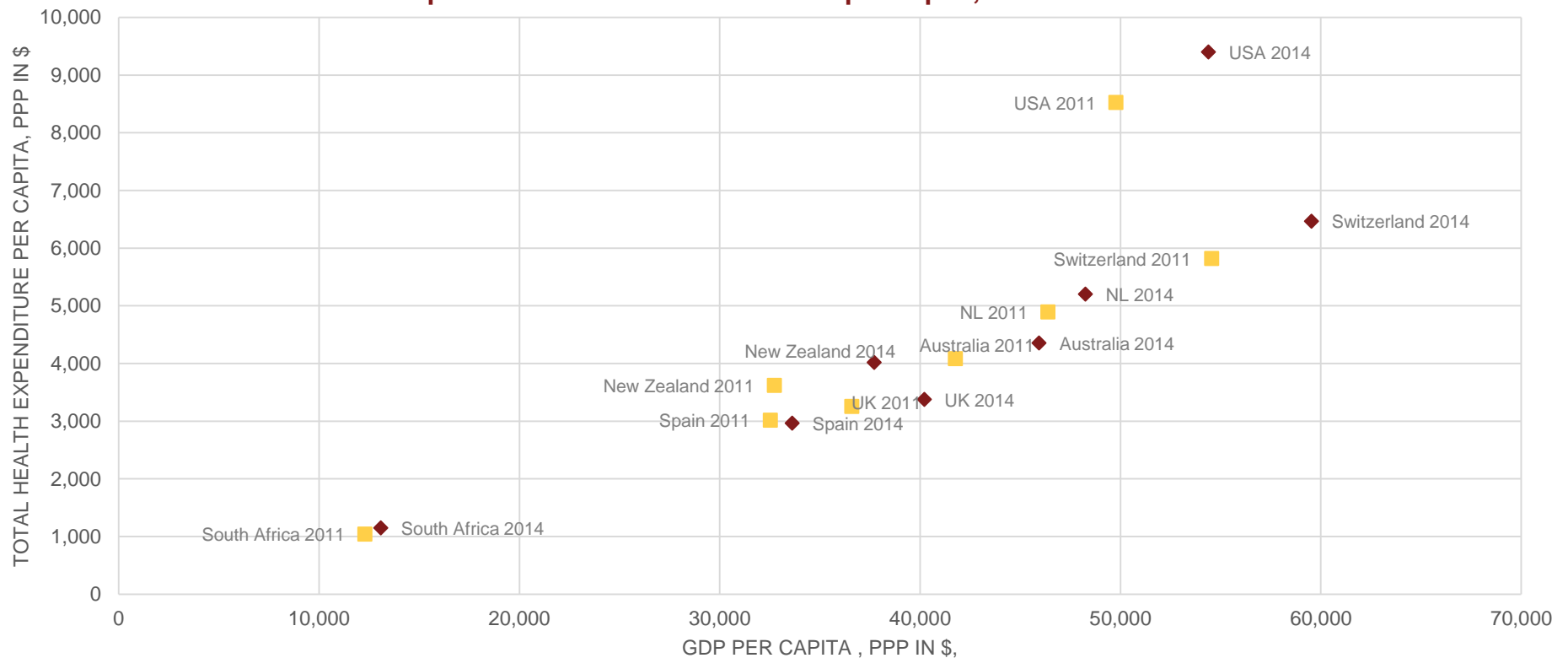


Sources: IFHP, The Economist, NZA, OECD, Zorgkaart.nl, PwC analysis

# As countries get richer, an increasing ratio of income is spent on healthcare

In the past four years, all sample countries experienced an increase in GDP per capita in PPP. At the same time, national health care expenditure per capita in PPP also increased. In the same period populations of all countries are ageing. As countries with a greying population get richer, they will spend an increasing ratio of their income on healthcare.

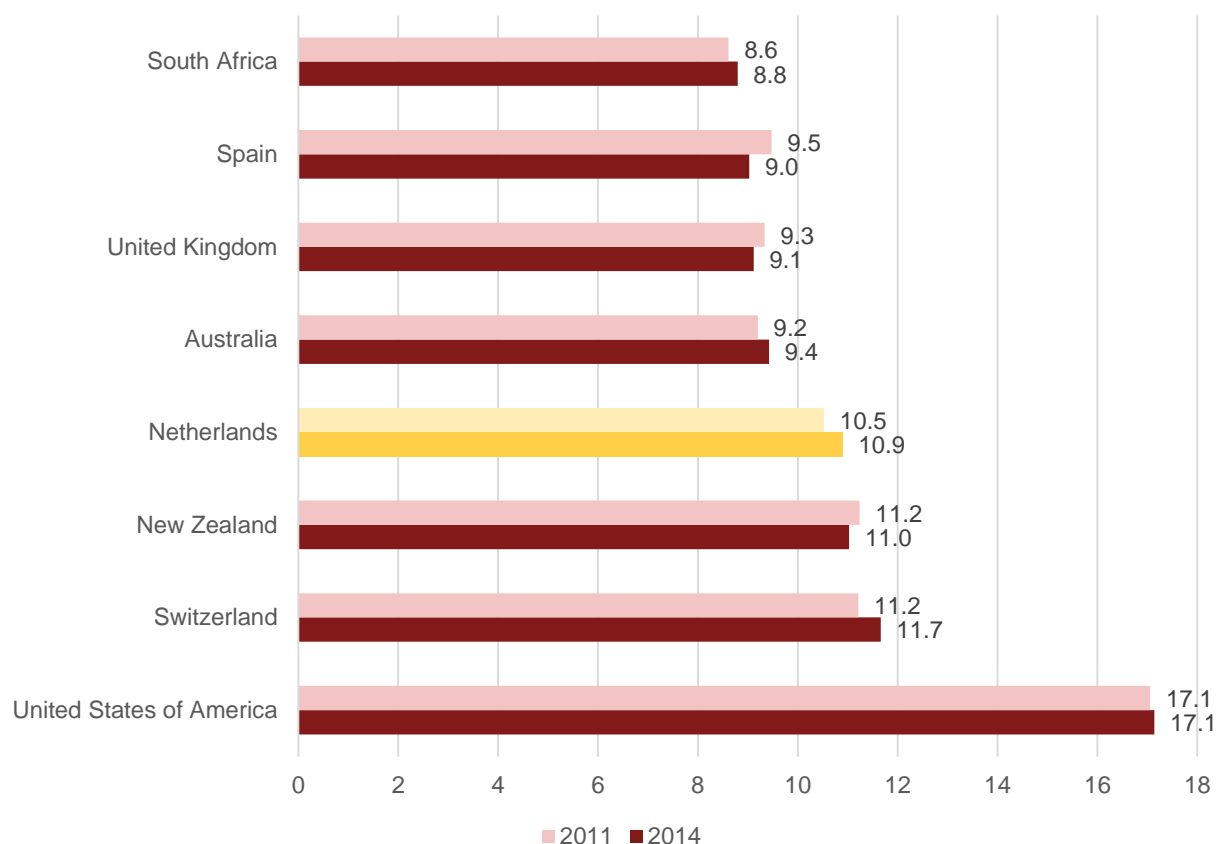
**Expenditure on health versus GDP per capita, 2011-2014**



Sources: OECD, PwC analysis

# Dutch health expenditure as a percentage of GDP has increased

Total expenditure on health as percentage of GDP, 2014



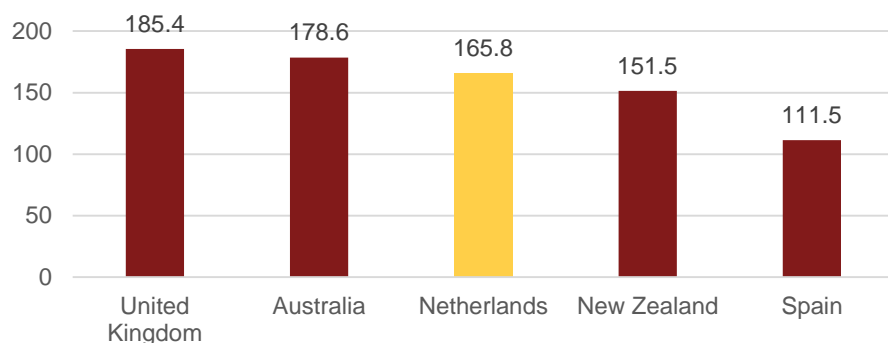
In our sample, The Netherlands and Switzerland saw the largest increase in expenditure on health as percentage of GDP between 2011 and 2014. In absolute numbers both countries also spent more on health care in this same period.

In the UK and New Zealand, the GDP rose faster than the health care expenditure, thus decreasing health expenditure as a percentage of GDP.

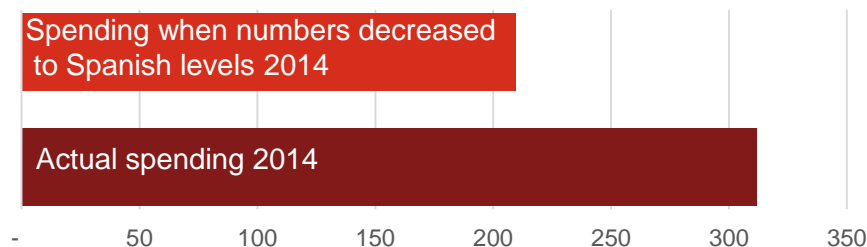
Spain was the only country in the sample group where national health expenditure actually decreased in absolute terms between 2011 and 2013, probably reflecting the severe drop in GDP the country suffered. In 2014, Spain's health expenditure increased again.

# Increasing GDP and ageing are drivers for demand for orthopaedic procedures

Hip replacement surgery, per 100,000 inhabitants, 2014 (or nearest year)



If we would manage to decrease the current 165.8 hip replacements per 100,000 inhabitants to the Spanish level of 111.5, we would be able to save over **€100 million** on hip replacements annually.



Source: OECD (2013) Health at a Glance, ASOS, PwC analysis

## Hip replacement is a very effective surgical intervention

Joint replacement surgery (e.g. hip and knee replacements) is carried out among people older than sixty. It is considered to be the most effective intervention for severe osteoarthritis, reducing pain and disability. Osteoarthritis is one of the ten most disabling diseases in developed countries. Worldwide estimates are that 10% of men and 18% of women aged over sixty years have moderate to severe osteoarthritis.

## Rich and ageing populations will demand more hip replacements over time ...

Age is the strongest predictor of the development and progression of osteoarthritis. It is more common among women, and occurs more frequently among people older than fifty. Other risk factors include obesity, physical inactivity, smoking, excess alcohol consumption and injuries.

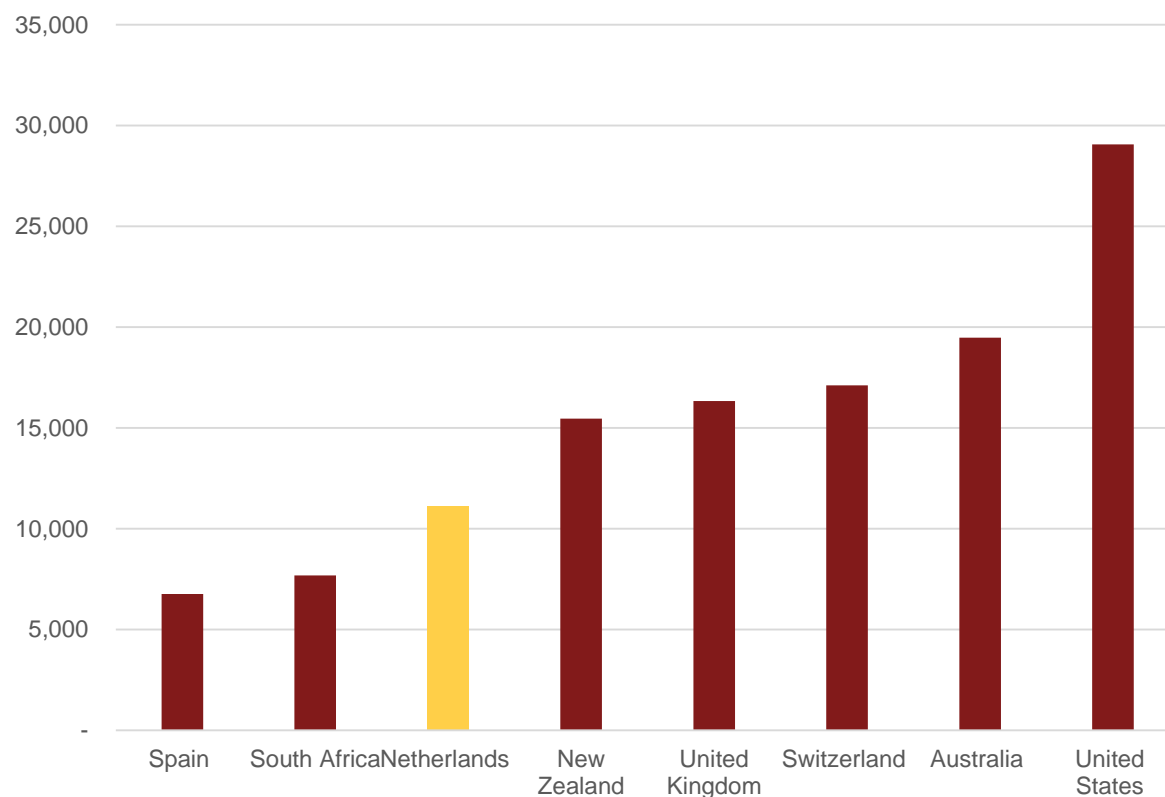
## ... but habits and incidence vary hugely per country

Analysis of the numbers of hip and knee replacements on elderly people in the sample countries, show a wide variety in volume per 100,000 persons. In our sample group, the UK performs by far the most hip and knee replacements. In the Netherlands relatively fewer hip replacements are performed than in the UK. This large practice variation is one of the great puzzles of health care. It is a testimony to the fact that indicating the right treatment is not an exact science, but rather the result of a judgment based on the doctor's preferences and medical background, and patient preferences.



## *The cost of a hip replacement in NL is relatively low, while each one adds almost four years of good health to one's life*

Costs of a Hip Replacement (in USD) in 2014



In the Netherlands, the actual costs of hip replacements are relatively low, compared to other countries in our sample group.

The costs of hip replacements heavily depend on the percentage of the surgeries performed as day cases, technological advancements (such as less invasive surgeries, better anaesthetics), and reimbursement policies for hospitals. It is for such reasons that hip replacement surgery tends to be relatively more expensive in less developed countries.

Due to ageing, larger cohorts of people need hip replacements. Since these are expensive treatments compared to other treatments, the trend pushes up total healthcare costs. At the same time, research finds that both hip and knee replacements are cost-effective interventions to improve people's quality of life.

**In the Netherlands, a hip replacement will add almost **four years** in good health to a person's life - or four quality-adjusted life year (QALY).**



# *On a macrolevel the Dutch health care system is expensive, but treatments are affordable – how come?*

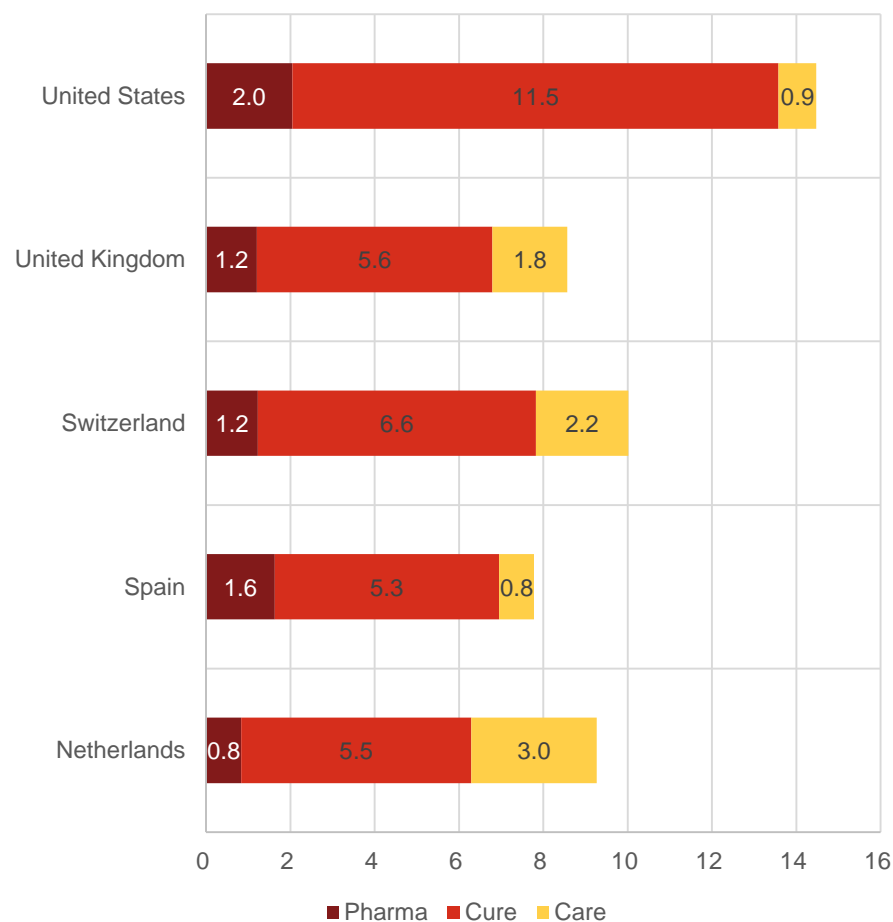
Despite relatively high (and increasing) expenditure on health as percentage of GDP and an increase in health care spending in absolute numbers, separate medical treatments in Netherlands are relatively cheap.

When we look at the composition of health care spending in more detail, the Netherlands spends about the same on cure as percentage of GDP as Spain and the UK.

Dutch spending on long-term care, however, is much larger than in other countries in our sample. In the Netherlands relative spending on elderly care, care for disabled persons and mental health care is almost four times higher than in Spain, and almost 70% higher than in the UK. Both countries have a higher percentage of people aged 65 or older than the Netherlands, so other factors than an ageing population contribute to the relatively high spending on long-term care.

Our research suggests that changing our relative expenditure on health would require influencing numbers rather than focusing on efficiency, as on a micro-level Dutch treatments seem to be among the most efficient already.

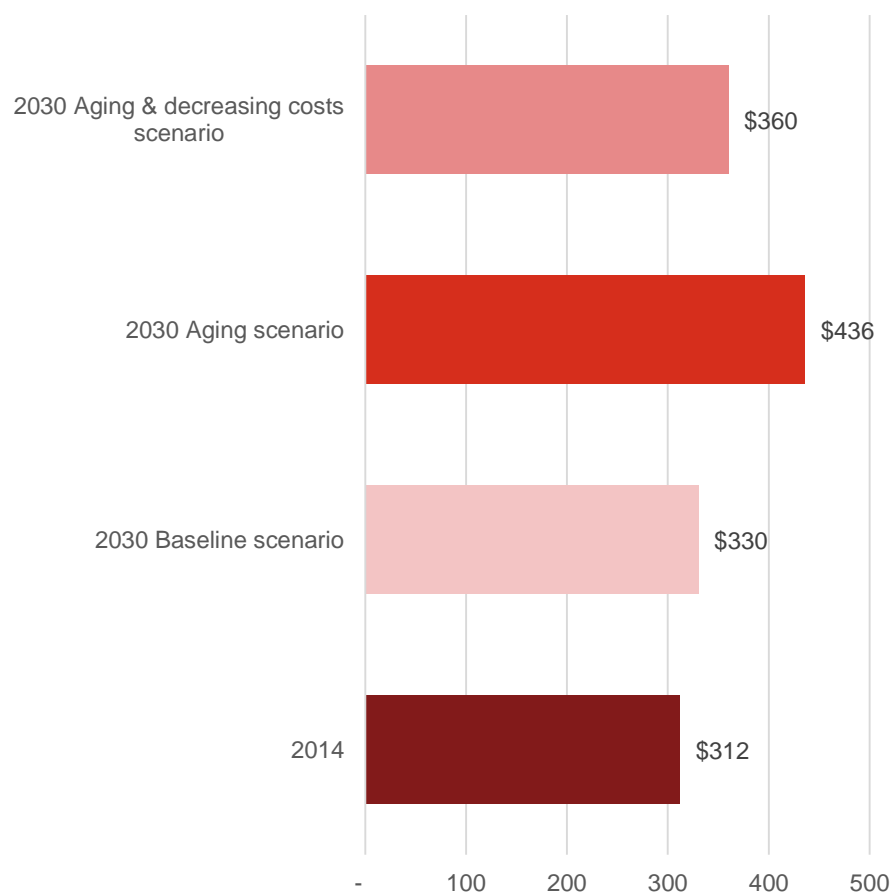
**Health care expenditure as percentage of GDP**



Source: OECD, PwC analysis

## Macro spending on hip replacements might increase by 6 up to 40 percent in 2030 due to ageing and further cost reduction

Forecast: costs of hip replacements in The Netherlands (in \$ mln)



In 2014 165 hip replacements per 100,000 inhabitants were performed in the Netherlands. This ratio has been steadily rising in the past years. A total of \$312 million on hip replacements were spent in the Netherlands in 2014.

Looking into the future, how much is expected to be spent on hip replacements in the Netherlands in 2030? An extrapolation of the 165.8 hip replacements per 100,000 inhabitants on the cost level of 2014 results in a total spending of \$330 million, increasing the spending on hip replacements by 6%.

However, this doesn't take into account the increased number of elderly people in the Netherlands in 2030. The ageing effect will contribute more than \$100 million in additional spending on hip replacements in 2030. The total amount of spending on hip replacements will be \$436 million, or an increase of almost 40%, based on the cost levels of 2014.

However, we are also seeing a decrease of the cost levels by 1,1% per year between 2012 and 2014. If the costs per treatment would steadily decline with this percentage, the total costs would add up to \$360 million in 2030. This would be equivalent to an increase of 16% compared to 2014.

Sources: IFHP, OECD, PwC analysis

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# *Appendices*

## Costs of medical procedures & Big Mac in 2014

	South Africa	Spain	Switzerland	New Zealand	Australia	United Kingdom	United States	Netherlands
<b>Cataract Surgery (in USD)</b>	1,186	1,719	2,114	2,740	3,037	3,145	3,530	1,545
<b>Hip Replacement (in USD)</b>	7,685	6,757	17,112	15,465	19,484	16,335	29,067	11,129
<b>C-Section (in USD)</b>	2,192	2,352	9,965	n/a	7,901	n/a	16,106	4,791
<b>Hospital Cost per Day (in USD)</b>	631	424	4,781	2,142	765	n/a	5,220	n/a
<b>Big Mac (in USD)</b>	2.33	4.91	6.83	4.94	4.56	4.93	4.80	4.64

Sources: The Economist, IFHP, OECD, NZA, Zorgkaart.nl, PwC analysis

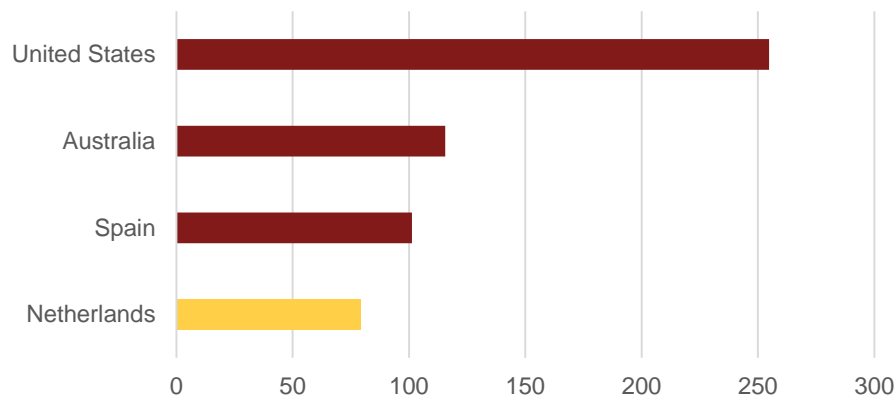
## *We have converted price data of the International Federation of Health Plans 2015 Comparative Price Report to prices expressed in PPP terms and working hours*

Country	South Africa	Spain	Switzerland	New Zealand	Australia	United Kingdom	United States	Netherlands
<b>Cost of cataract surgery in working hours</b>	<b>372</b>	<b>98</b>	<b>38</b>	<b>102</b>	<b>83</b>	<b>98</b>	<b>137</b>	<b>42</b>
Cost of cataract surgery (in international \$)	2,404	1,932	1,438	2,187	2,285	2,340	4,157	1,433
Cost of cataract surgery (in USD)	1,186	1,719	2,114	2,740	3,037	3,145	3,530	1,545
<b>Cost of hip replacement in working hours</b>	<b>2,408</b>	<b>383</b>	<b>307</b>	<b>577</b>	<b>531</b>	<b>507</b>	<b>1,126</b>	<b>304</b>
Cost of hip replacement (in international \$)	15,578	7,593	11,642	12,341	14,661	12,154	34,232	10,323
Cost of hip replacement (in USD)	7,685	6,757	17,112	15,465	19,484	16,335	29,067	11,129
<b>Cost of C-section in working hours</b>	<b>687</b>	<b>133</b>	<b>179</b>	<b>-</b>	<b>215</b>	<b>-</b>	<b>624</b>	<b>131</b>
Cost of C-section (in international \$)	4,443	2,643	6,780	-	5,945	-	18,968	4,444
Cost of C-section (in USD)	2,192	2,352	9,965	-	7,901	-	16,106	4,791
<b>Cost of hospital cost per day in working hours</b>	<b>198</b>	<b>24</b>	<b>86</b>	<b>80</b>	<b>21</b>	<b>-</b>	<b>202</b>	<b>-</b>
Cost of hospital cost per day (in international \$)	1,279	476	3,253	1,709	576	-	6,148	-
Cost of hospital cost per day (in USD)	631	424	4,781	2,142	765	-	5,220	-
<b>GDP per capita per working hour</b>	<b>6</b>	<b>20</b>	<b>38</b>	<b>21</b>	<b>28</b>	<b>24</b>	<b>30</b>	<b>34</b>
GDP per capita (in international \$)	13,083	33,625	59,536	37,712	45,937	40,217	54,398	48,253
Number of working hours	2,023	1,698	1,568	1,762	1,664	1,677	1,789	1,420

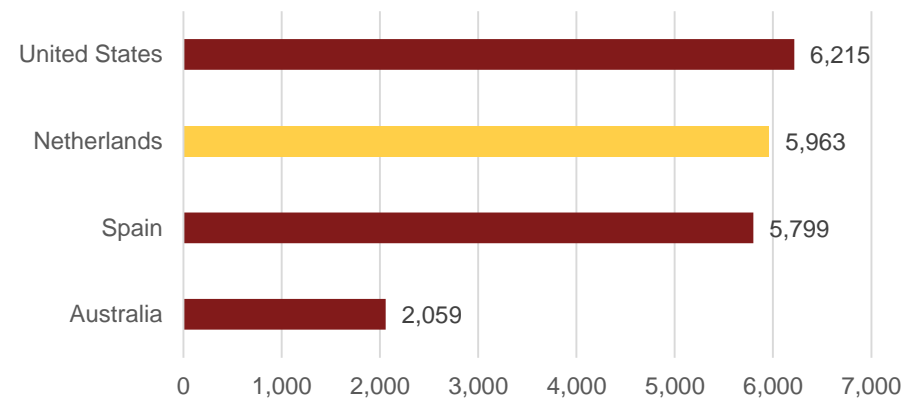
Sources: The Economist, IFHP (2016) Price report 2015

# CT exams

Number of CT exams per 1000 population, 2014



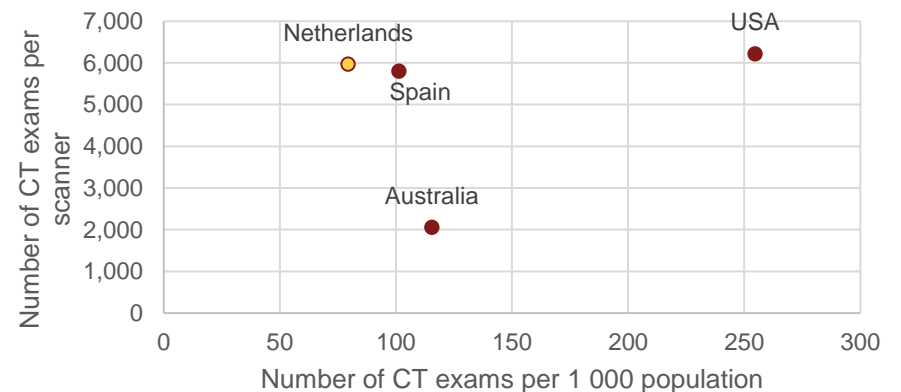
Number of CT exams per scanner, 2014



## Key takeaways

- In the USA, CT scans are very expensive, on average \$844. However, the number of scans is high. Utilisations is high as well.
- In the Netherlands, less people are going through a diagnostics exam. However, the utilisation of the scanners is much higher. This indicates that the scanners are being used very efficiently.
- In our sample group, CT scans in Spain are the cheapest, costing only \$85. Utilisation is high, indicating a very efficient process.

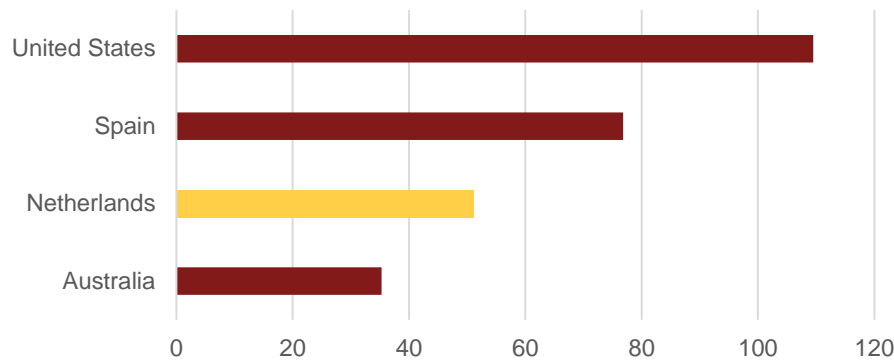
Use of CT scanner, per 1 000 inhabitants



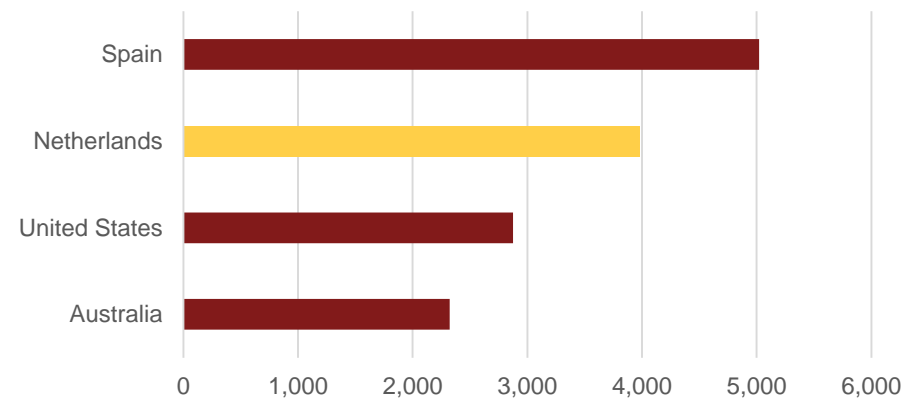
Source: OECD, PwC analysis

# MRI exams

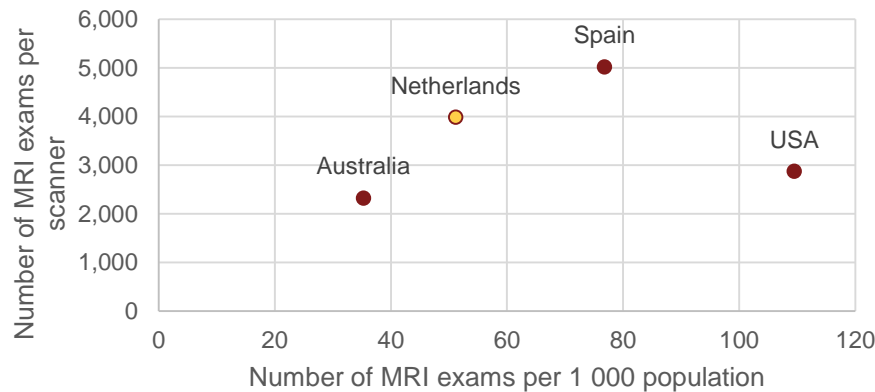
Number of MRI exams per 1 000 population, 2014



Number of MRI exams per scanner, 2014



MRI exams per scanner per 1000 inhabitants



## Key takeaways

- An MRI examination is cheapest in Spain (\$130), and most expensive in the USA (\$1,119).
- The USA has the highest number of examinations per 1,000 inhabitants in the USA. Is this due to overuse?
- The efficiency is highest in Spain, followed by the Netherlands.

Source: OECD, PwC analysis



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