

# Moving towards better outcomes in Multiple Sclerosis by addressing policy change

Panos Kanavos<sup>1</sup>, Michela Tinelli<sup>1</sup>, Olina Efthymiadou<sup>1</sup>, Jean Mossman<sup>1</sup>

1. Medical Technology Research Group, LSE Health, London School of Economics

## Background & Objectives

Multiple Sclerosis (MS) is the second most common cause of neurological disability and highest per capita costs among all other neurological disorders [1]. Early Disease Modifying Therapy (DMT) (i.e. within 12 months of a single neurological attack with MRI enhancing lesions) is proposed as a preventative strategy against disability accumulation in MS patients [2,3].

❖ We aimed to estimate the socioeconomic burden and Quality of Life (QoL) of MS patients and evaluate the role of early DMT towards better disease outcomes.

## Methods

- Two web-surveys (Qualtrics ®) of individuals with MS and their caregivers.
- 14 patient associations (whether at national or supra-national level) were invited to cascade the surveys to their network of patients and caregivers.
- Patient survey collected data on; i) Demographics, ii) Time between diagnosis and treatment, iii) Healthcare resource utilisation (incl. consumption of DMTs), iv) Productivity losses, v) QoL (EuroQoL 5-domain; EQ-5D-5L), EQ-5D-5L VAS and vi) Physical disability (Barthel Index).
- Caregiver survey collected data on; i) Demographics, ii) Productivity losses, iii) QoL (EuroQoL 5-domain; EQ-5D-5L), EQ-5D-5L VAS and iv) Emotional burden (Zarit Burden Interview).
- Microsoft® Excel 2010 was used to generate descriptive statistics and SPSS (v.21) to test for country and treatment group differences (using one way ANOVA and independent samples t-test respectively).

## Results

- **246 patients** (France (39%), USA (29%), Romania (18%), UK (10%), Germany (4%)) and **12 caregivers** (Romania (42%), France (33%), USA (17%), Germany (8%)).
- Average annual cost per patient was **€38,820** of which 47% accounted for DMTs, 41.3% for indirect costs due to productivity losses, 5.5% for non-medical costs (formal/informal care), 3.9% for inpatient care and 2.9% for ambulatory care (Figure 1).
- Mean annual productivity loss per caregiver amounted up to **€31,155**.
- Country differences existed on total costs ( $p < 0.001$ ), direct medical costs ( $p < 0.001$ ), indirect costs ( $p < 0.05$ ) and EQ-5D-5L utilities ( $p < 0.001$ ) which ranged from 0.77 in Germany to 0.49 in France (Figure 2).
- Mean patient and caregiver EQ-5D-5L index and VAS scores were 0.60 ( $\pm 0.12$ ) and 63, and 0.70 ( $\pm 0.19$ ) and 72 respectively.
- Individuals treated earlier had a trend towards lower total (€38,185 vs. €42,058,  $p > 0.05$ ), DMT (€18,942 vs. €20,044,  $p > 0.05$ ) and indirect (€15,390 vs. €18,521,  $p > 0.05$ ) costs and a higher EQ-5D VAS score (65 vs. 62,  $p > 0.05$ ) than those receiving no or late DMT.

Figure 1. Average annual cost (€ 2014-15) per patient between countries and between early and late treated individuals.

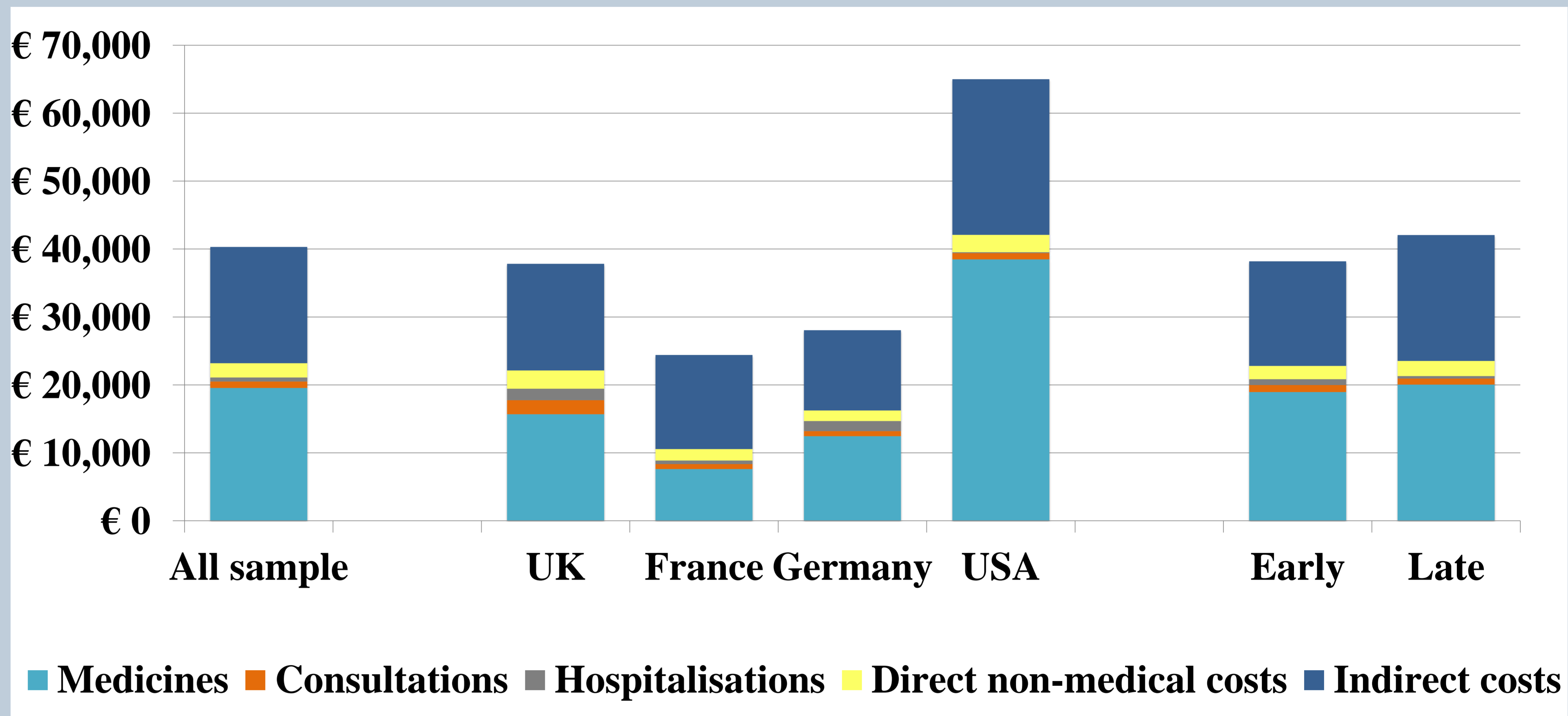
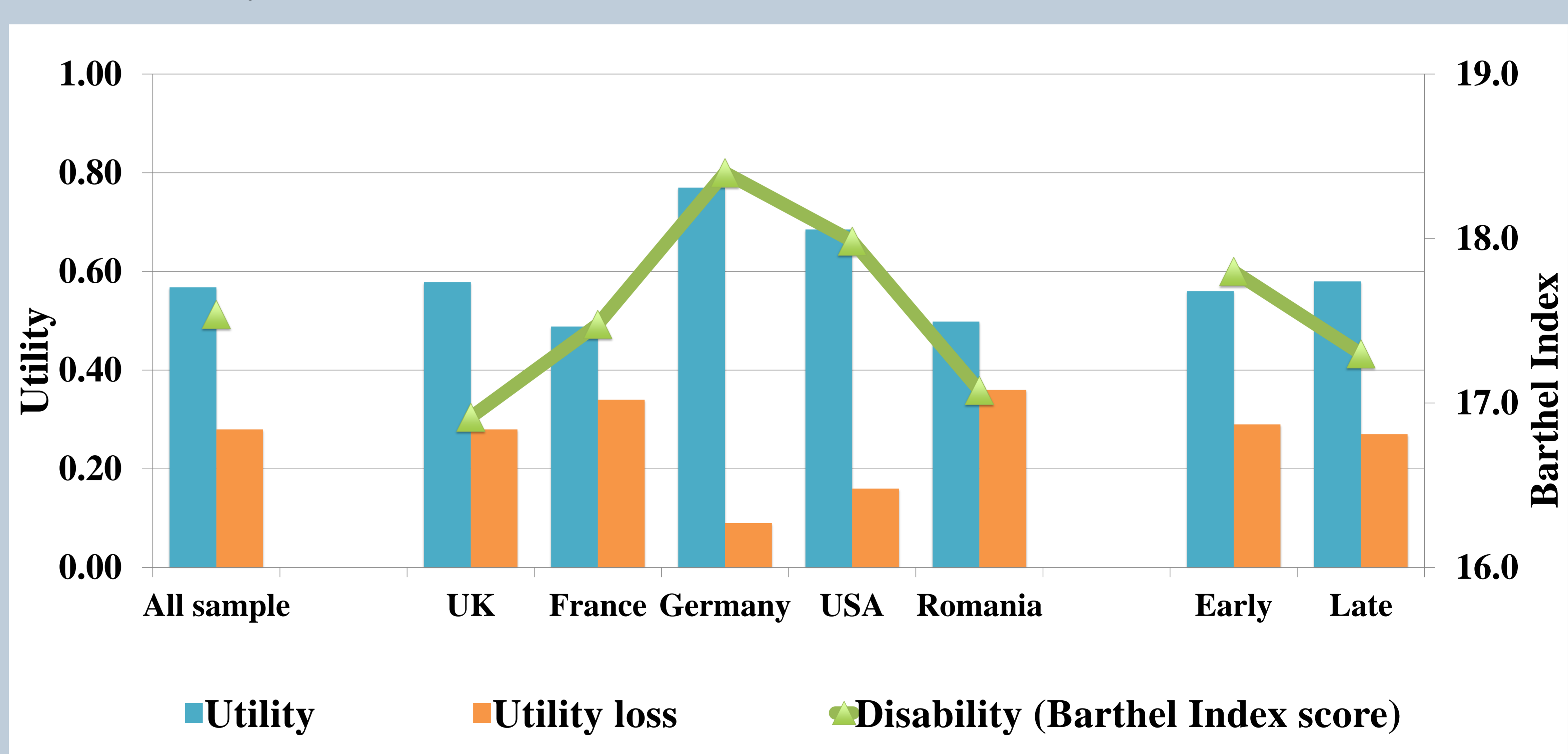


Figure 2. Mean patient utility, utility loss and disability between countries and between early and late treated individuals



## Conclusions & Future directions

MS introduces a significant global economic burden for societies, with DMT costs and work productivity losses representing 88% of the total average annual costs. Early DMT initiation yielded promising results in terms of reducing the overall burden of the disease.

❖ In the absence of long-term, real world data about the cost-effectiveness of receiving DMT earlier in the course of the disease, when to initiate treatment and which DMT to use are still to be determined.

## Acknowledgments

We are grateful to the MS Society UK, MS Trust UK, National MS Society (NMSS), the European MS Platform (EMSP), the Romanian Association of MS, the Rocky Mountain MS Foundation ARSEP – French MS Research Society– who facilitated data collection and also, to all the anonymous respondents who provided the information and insights captured in the study. Finally, we thank F. Hoffmann-La Roche that provided the sponsorship to carry out this research.

## References

1. Gustavsson A et al. Cost of disorders of the brain in Europe 2010. *Eur Neuropsychopharmacol* 2011; 21: 655–679.
2. Association of British Neurologists; ABN MS Guidelines 2015. Available online at; <http://www.theabn.org/news/abn-ms-guidelines-2015.html> (Accessed May 5, 2016)
3. Goodin DS, Bates D. Treatment of early multiple sclerosis: the value of treatment initiation after a first clinical episode. *Mult Scler*. 2009;15(10):1175-1182.
4. Kobelt G et al. Costs and quality of life of patients with multiple sclerosis in Europe. *J Neurol Neurosurg Psychiatry*. 2006;77(8):918-926.
5. Giovannoni G. Any evident MRI T2-lesion activity should guide change of therapy in multiple sclerosis--yes. *Mult Scler*. 2015;21(2):134-136.

This research consists part of “The International Multiple Sclerosis Study (IMPRESS)” which is available online at: <http://www.lse.ac.uk/LSEHealthAndSocialCare/research/LSEHealth/MTRG/IMPRESS-Report-March-2016.pdf>



## CONTACT US

Olina Efthymiadou (MPharm, MSc), Medical Technology Research Group, LSE Health  
London School of Economics, Houghton Street, London, WC2A 2AE, UK  
+44(0)207 849 4991, A.Efthymiadou@lse.ac.uk



THE LONDON SCHOOL  
OF ECONOMICS AND  
POLITICAL SCIENCE