

# A POPULATION-BASED EPIDEMIOLOGICAL ANALYSIS WITH PROJECTIONS OF FETAL AND NEONATAL TRANSIENT METABOLIC DISORDERS IN HUNGARY

Csákvári T<sup>1</sup>, Elmer D<sup>2</sup>, Palkovics K<sup>1</sup>, Kajos LF<sup>2</sup>, Kovács K<sup>3</sup>, Bódis J<sup>3</sup>, Boncz I<sup>2</sup>

1. Institute for Health Insurance, University of Pécs, Faculty of Health Sciences, Zalaegerszeg, Hungary

2. Institute for Health Insurance, University of Pécs, Faculty of Health Sciences, Pécs, Hungary

3. Department of Obstetrics and Gynaecology, University of Pécs, Clinical Centre, Pécs, Hungary

## OBJECTIVES

Diabetes in pregnancy represents a significant public health concern with established impacts on fetal health outcomes. Our aim was to evaluate the epidemiology of specific fetal and neonatal transient metabolic disorders (FNTMD) in Hungary, as well as to project future trends between 2010 and 2035.

## METHODS

A retrospective study was conducted using nationwide real-world data from the Hungarian 'Pulvita' Health Data Warehouse. ICD-10 codes P70.0-P70.9 were used to identify patients in outpatient and inpatient care. Annual patient numbers, the number of hospital days, the number of FNTMD patients per thousand live births were analyzed with different forecasting models to project future prevalence up to 2035, using SPSS 27.0.

## RESULTS

In 2010, the number of FNTMD inpatients per thousand live births was 102.68, increasing to 141.30 by 2024. Within this patient population, cases diagnosed as syndromes of infants of mothers with GDM more than doubled, rising from 24.91 to 63.34 per 1000 live births. Overall, the time series reached its maximum in 2022, at 147.42 per thousand live births. The reduction in mean length of hospital stay ( $M_{2010}=6.94$  days;  $M_{2024}=5.24$  days) indicates improvements in care delivery. In outpatient care, annual patient numbers per thousand live births ranged from a minimum of 8.93 in 2015 to a peak of 13.09 in 2012. Projections to 2035 indicate overall stability in absolute case numbers, with a modest increase anticipated in inpatient care.

## CONCLUSIONS

The number of FNTMD cases is not expected to decrease significantly; inpatient data indicate an upward trend, while outpatient care is anticipated to remain stable. The results may inform national-level health care planning by improving the anticipation of future service demands in neonatal care.

	2010 <sup>a</sup>	2024	Change (%)
Number of live births (n)	90 335	77,500	-14.21%
Mean age of women at first childbirth (years)	28.23	29.43	4.25%
Number of 15–49-year-old women (n)	2 385 782	2 112 676	-11.45%
Number of live births per thousand 15–49-year-old women (n)	37.86	36.68	-3.10%
<b>Number of FNTMD patients (inpatient care) (n)</b>	<b>9 276</b>	<b>10 951</b>	<b>18.06%</b>
<i>syndrome due to GDM mother</i>	2 250 (24.26%)	4 909 (44.83%)	118.18%
<i>syndrome due to diabetic mother</i>	289 (3.12%)	300 (2.74%)	3.81%
<i>neonatal diabetes</i>	4 (0.04%)	4 (0.04%)	0.00%
<i>neonatal hypoglycaemia</i>	3 214 (34.65%)	1 537 (14.04%)	-52.18%
<i>other, unspecified</i>	3 519 (37.94%)	4 201 (38.36%)	19.38%
<b>Number of FNTMD patients per thousand livebirths (inpatient care) (n)</b>	<b>102.68</b>	<b>141.30</b>	<b>37.61%</b>
<i>syndrome due to GDM mother</i>	24.91	63.34	154.28%
<i>syndrome due to diabetic mother</i>	3.20	3.87	20.94%
<i>neonatal diabetes</i>	0.04	0.05	25.00%
<i>neonatal hypoglycaemia</i>	35.58	19.83	-44.27%
<i>other, unspecified</i>	38.96	54.21	39.14%
<b>FNTMD mean length of hospital stay (days)</b>	<b>6.94</b>	<b>5.24</b>	<b>-24.47%</b>
<i>syndrome due to GDM mother</i>	4.62	3.60	-22.08%
<i>syndrome due to diabetic mother</i>	5.18	4.05	-21.81%
<i>neonatal diabetes</i>	11.67	-	-
<i>neonatal hypoglycaemia</i>	5.75	6.31	9.74%
<i>other, unspecified</i>	7.29	6.92	-5.08%
<b>Number of FNTMD patients (outpatient care) (n)</b>	<b>1 182</b>	<b>1 003</b>	<b>-15.14%</b>
<i>syndrome due to GDM mother</i>	518 (43.82%)	177 (17.65%)	-12.66%
<i>syndrome due to diabetic mother</i>	103 (8.71%)	43 (4.29%)	-58.25%
<i>neonatal diabetes</i>	4 (0.34%)	3 (0.30%)	-25.00%
<i>neonatal hypoglycaemia</i>	398 (33.67%)	176 (17.55%)	-55.78%
<i>other, unspecified</i>	159 (13.45%)	604 (60.22%)	-279.87%
<b>Number of FNTMD patients per thousand livebirths (outpatient care) (n)</b>	<b>13.09</b>	<b>12.94</b>	<b>-1.16%</b>
<i>syndrome due to GDM mother</i>	5.74	2.28	-60.28%
<i>syndrome due to diabetic mother</i>	1.14	0.55	-51.75%
<i>neonatal diabetes</i>	0.04	0.04	0.00%
<i>neonatal hypoglycaemia</i>	4.41	2.27	-48.53%
<i>other, unspecified</i>	1.76	7.79	342.61%

Table 1. Descriptive statistics  
<sup>a</sup>2012 for outpatient variables

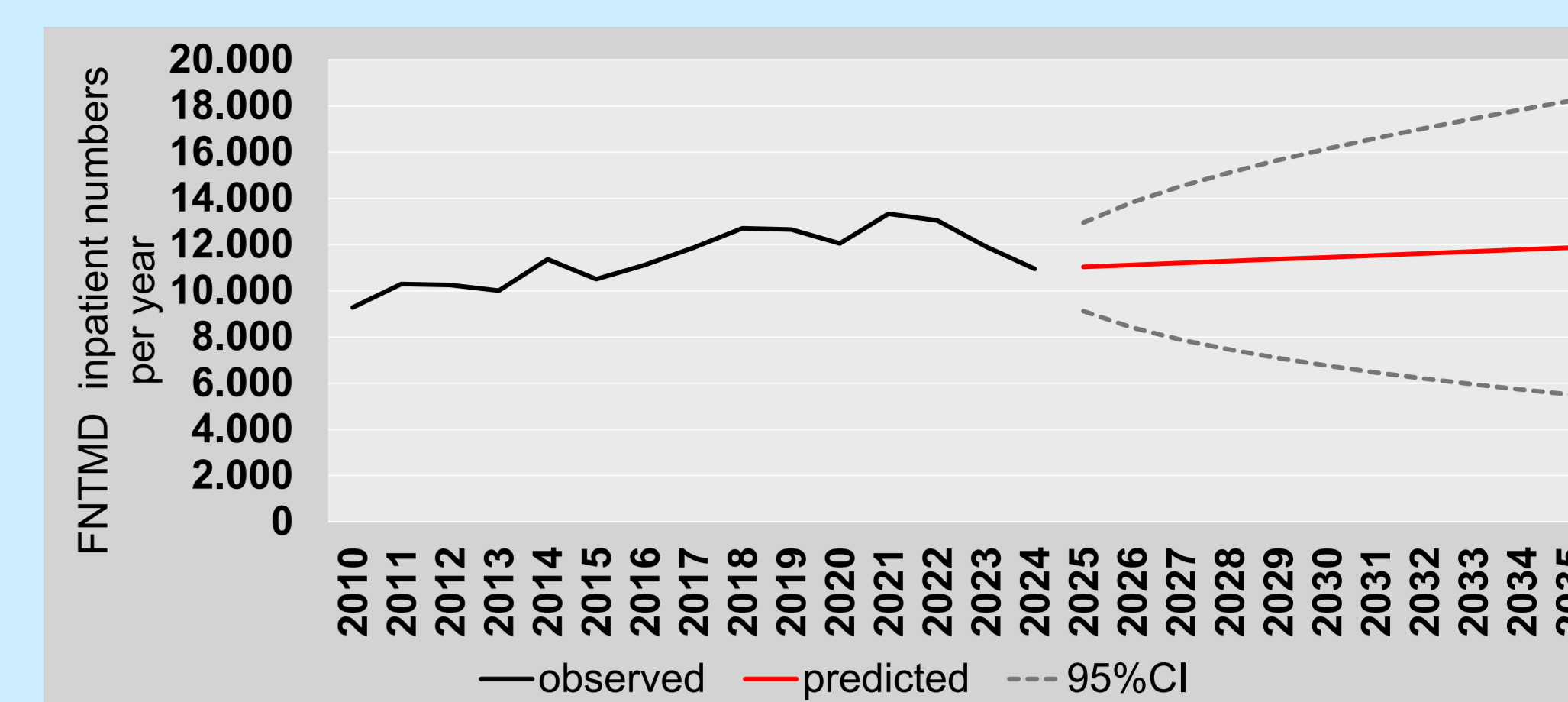


Figure 1.a. Results of the forecasting models: FNTMD numbers in inpatient care

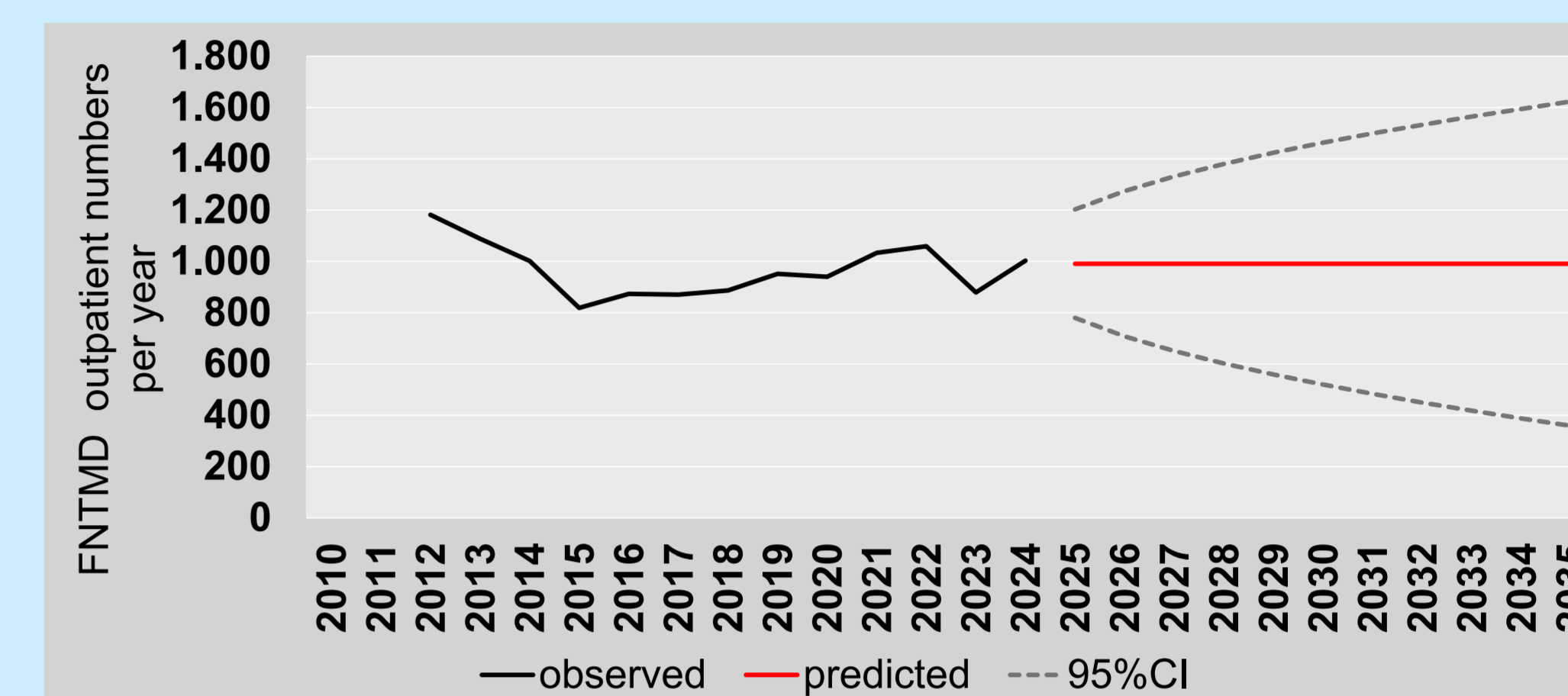


Figure 1.b. Results of the forecasting models: FNTMD numbers in outpatient care

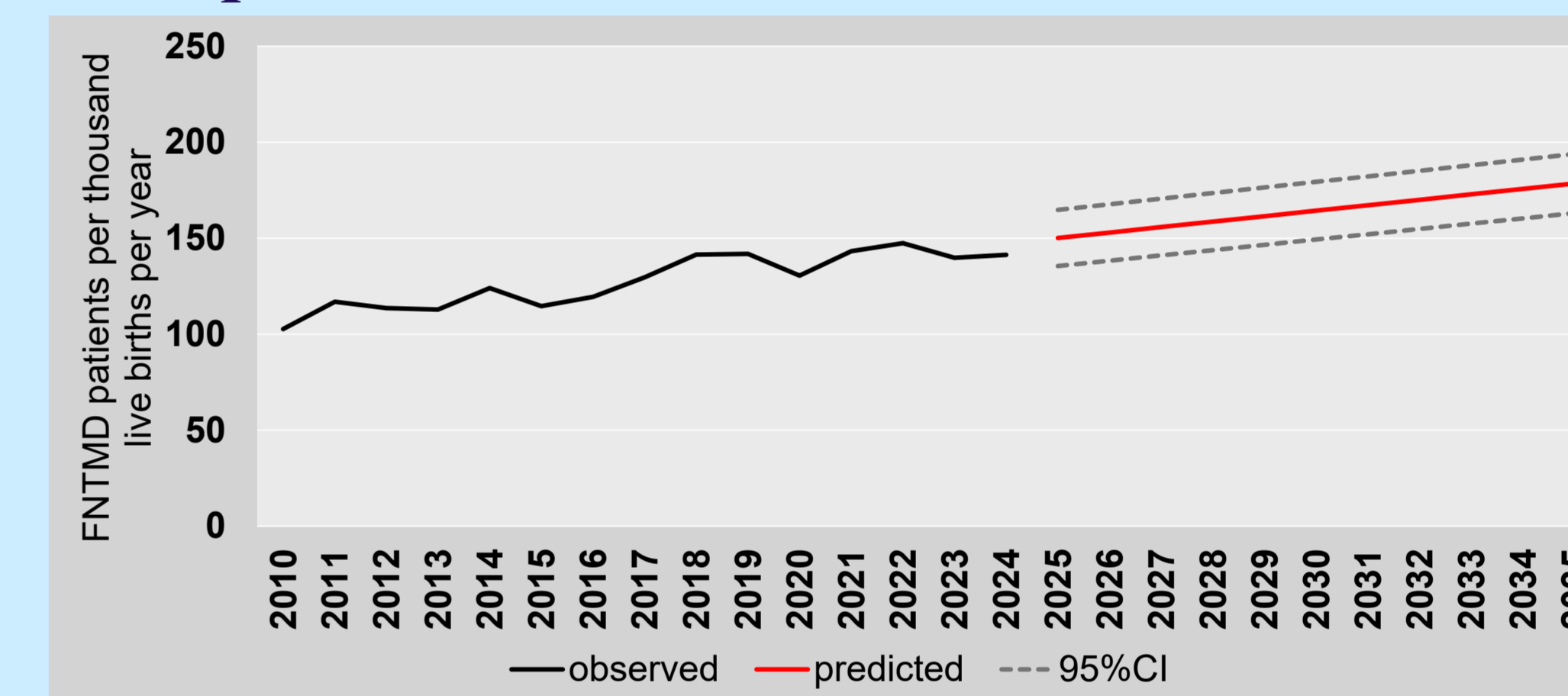


Figure 1.c. Results of the forecasting models: FNTMD numbers per thousand live births in inpatient care

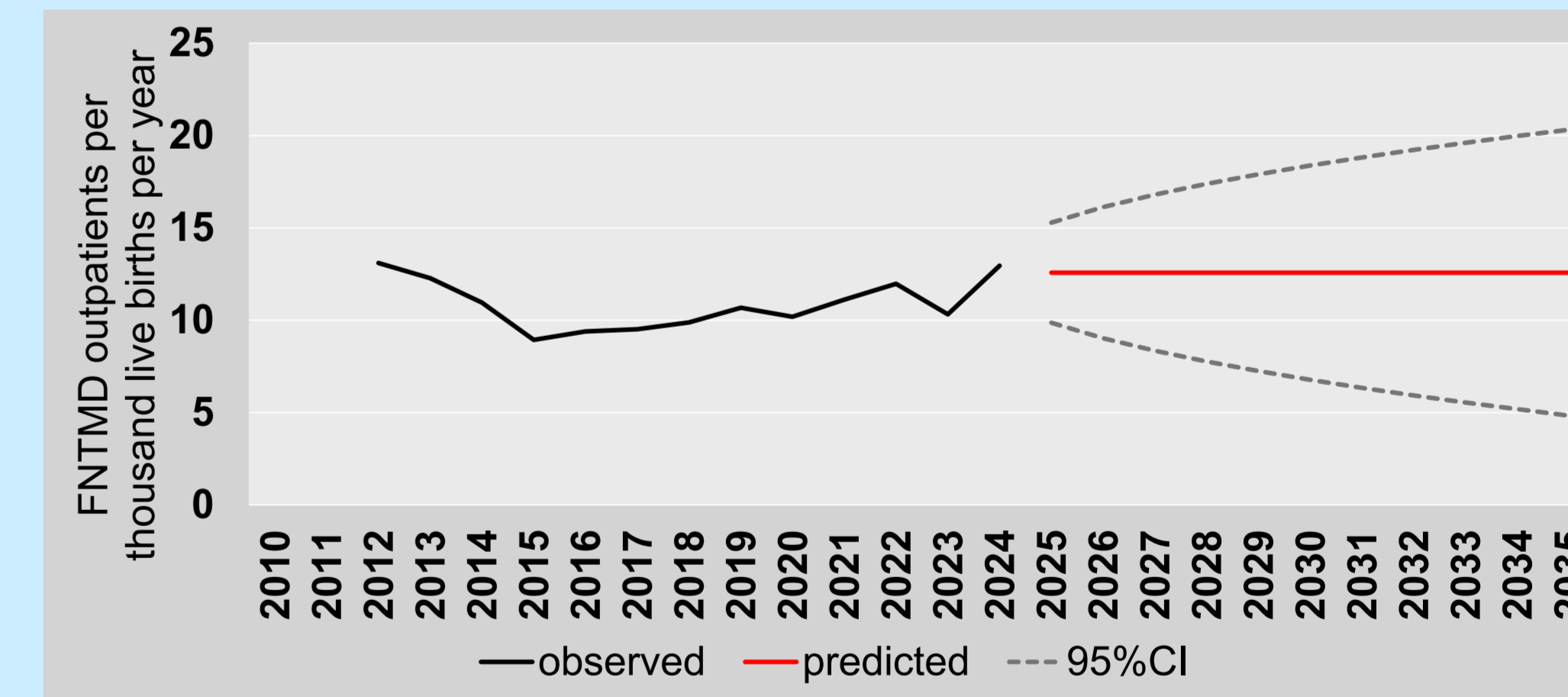


Figure 1.d. Results of the forecasting models: FNTMD numbers per thousand live births in outpatient care

**ISPOR 2026**  
May 17-20, 2026 | Philadelphia, PA | USA

**University of Pécs**  
1367

**Funding:**  
The study was funded by project no. RRF-2.3.1-21-2022-00012, titled National Laboratory on Human Reproduction, which has been implemented with support provided by the Recovery and Resilience Facility of the European Union within the framework of Programme Széchenyi Plan Plus.

**Corresponding author:**  
Dr. Tímea CSÁKVÁRI PhD  
University of Pécs, Faculty of Health Sciences, Hungary  
Institute of Health Insurance  
E-mail: timea.csakvari@etk.pte.hu

**EPH 92**

**SZÉCHENYI 2020**

HUNGARIAN GOVERNMENT

European Union  
European Social Fund

INVESTING IN YOUR FUTURE