



# **NUDGE AND MACHINE LEARNING**

## **AEAT EXPERIENCE**

## Nudge and Machine learning (1)

➔ **Reducing mistakes** in pre-populated personal income tax returns ➔



Year after year, thousands of taxpayers eventually modify the information related to income from work **provided by the pre-populated** PIT return.



However, a significant percentage of these modifications are erroneous (more than 400.000 PIT returns are audited by the STA each year)

## Nudge and Machine learning (2)

Using machine-learning techniques



AEAT was able to **categorize taxpayers** who have a higher probability of making a mistake when modifying their data in the pre-populated return (related to **wages**)



The prediction model is **trained using past tax PIT audit procedures**, analyzing which characteristics of the taxpayer, make it more likely that they will either make a mistake or get it right in an eventual modification

**FOR ALL TAXPAYERS** a probability is calculated

## Nudge and Machine learning (3)

Taxpayer with **HIGH probability** tries to modify pre-populated data



A **nudge message** is shown (and the **color** of the amount modified turns **red**)

*"Por favor, verifique la exactitud de la modificación que acaba de realizar. En ocasiones, los cambios introducidos en esta casilla por los contribuyentes son erróneos. Posteriormente, la Agencia Tributaria podrá solicitar que justifique esa modificación."*

*"Please check the accuracy of the modification you just made. Sometimes the changes made in this box by the taxpayers are wrong. Subsequently, the Tax Agency may request that the modification be justified".*

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## Nudge and Machine learning (4)

→ For those high-risk taxpayers who tried to modify the total amount of earned income and received the Nudge message, around 70% of them, decided eventually, not to do it.

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These are provisional results, as PIT return auditing is still in progress, and deeper statistical analysis is needed.

→ We can **guess that the success** of the Nudge message was due to the

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***tailor made target population to be nudged***



Agencia Tributaria

[www.agenciatributaria.es](http://www.agenciatributaria.es)