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Ten-Year Trends in Socio-Economic Inequalities in the Prevalence and Incidence of Pharmacologically-Treated Type 2 Diabetes in France – 2010-2020

CONTEXT

In recent years, the **incidence of diabetes** has tended to **stabilise** or even **decrease** in middle- and high-income countries [1][2] → **What happens by socio-economic groups?**

- > **Some European studies** have investigated the evolution of the association between socio-economic inequalities and diabetes epidemiology [3][4][5][6].
- > **None** of these studies was conducted in **France**.

OBJECTIVE

To study the **association** between **socio-economic inequalities** and the **prevalence/incidence** of pharmacologically-treated **type 2 diabetes (T2D)** among adults aged **45 years and more** in **metropolitan France** over the **2010-2020 period**.

MATERIAL

SNDS French national health data system

- French hospital discharge database (PMSI)
- Causes of death
- Inter-regime consumption data (DCIR)

Medico-administrative database, collects individual and anonymised healthcare data for the beneficiaries of the various health insurance schemes in France.

→ Contains all persons who had at least **one health care reimbursement** during the year. Almost the **entire French population**.
Used as denominator 24,228,526 in 2010 to 29,772,928 in 2020

METHODS

Identification of pharmacologically-treated diabetes cases: **validated algorithm** based on **3 reimbursements** (or 2 in case of large) for anti-diabetic treatment in a calendar year [7]

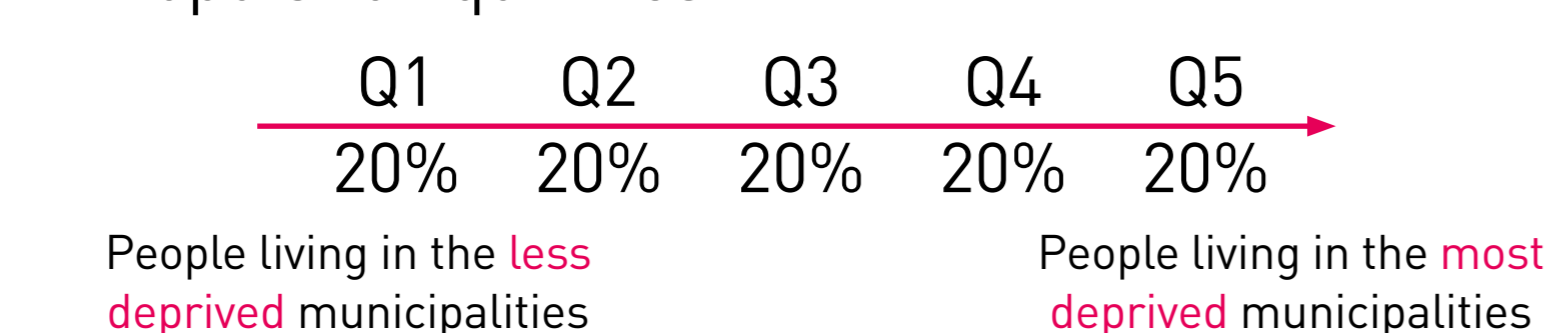
Measuring socio-economic inequalities with French deprivation index: **FDep 2015** version [8]

> Measured at the **municipalities** of residence in **metropolitan France**

> Variables:

- Rate of **unemployment**
- Rate of **workers**
- Rate of **graduates**
- Median tax **income** per CU

> Population quintiles:



Prevalent case of diabetes: person alive during the study year, identified as having diabetes by the algorithm



Incident case of diabetes: person identified as having diabetes by the algorithm in a specific year but not identified as having diabetes in the previous two years.



Crude and **age-standardized** (2013 European standard population)[9] rates by sex, age and FDep quintiles



Quasi-poisson regression models were applied to study the **evolution** over time of the **association between socioeconomic inequalities** and the prevalence and incidence of T2D, via an **interaction between year and FDep quintiles** and also adjusting for age and department of residence (Q1: reference)

RESULTS

Figure 1 | Crude prevalence for men (A) and women (B) and crude incidence (third-order moving average) for men (C) and women (D) of type 2 diabetes by age and French deprivation index (FDep) quintiles in consumers aged 45 years and over in metropolitan France in 2020

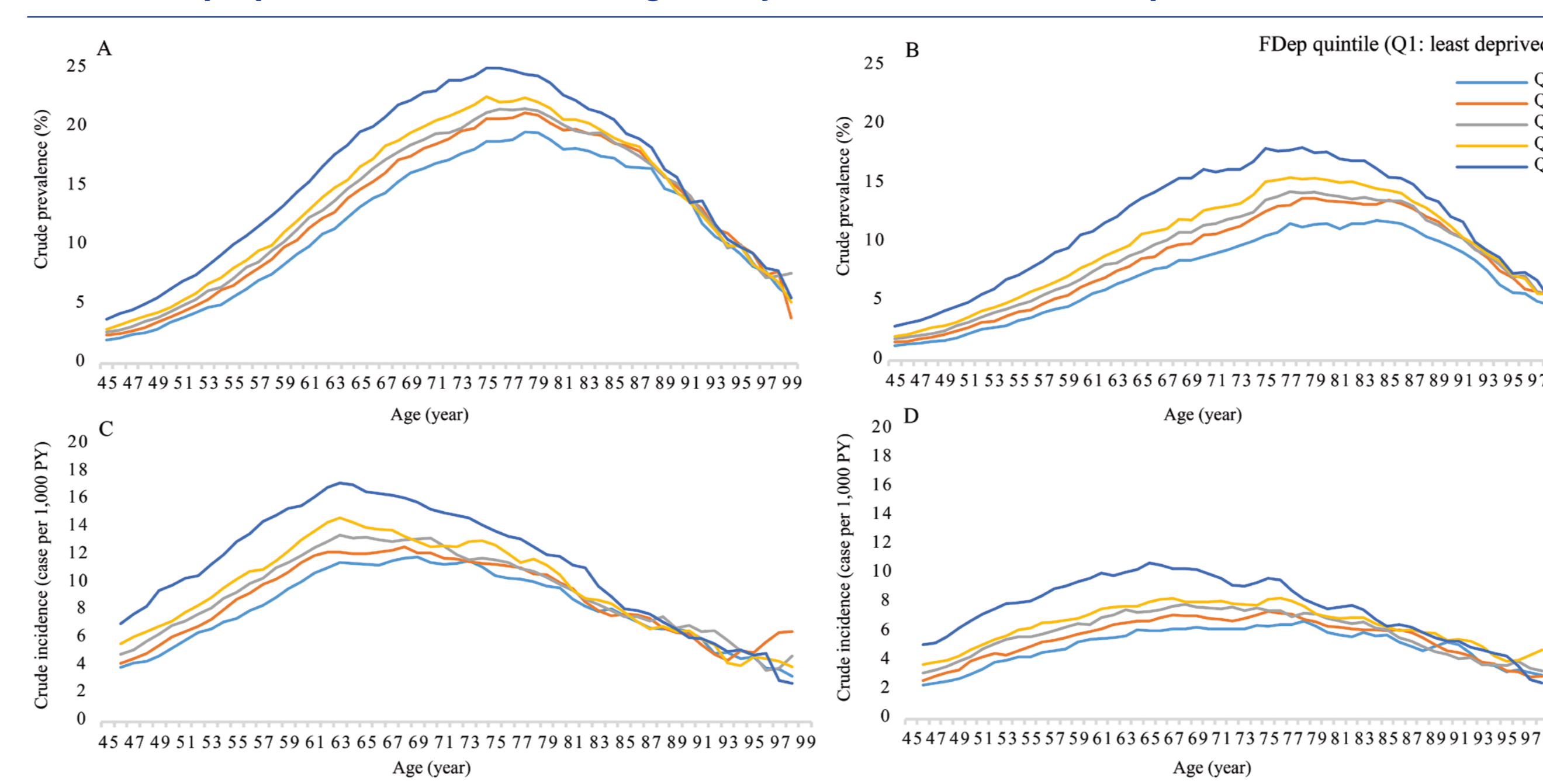
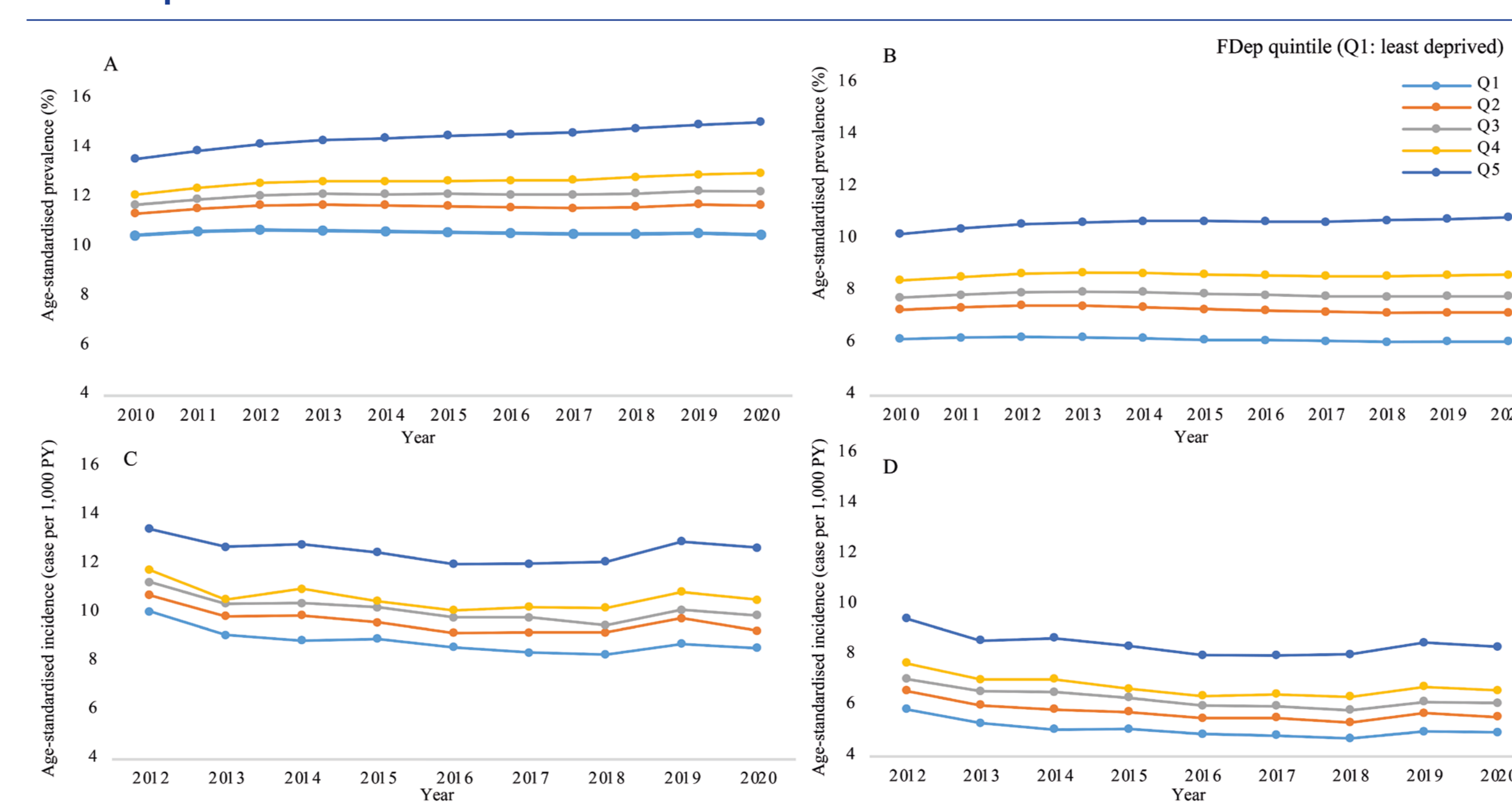


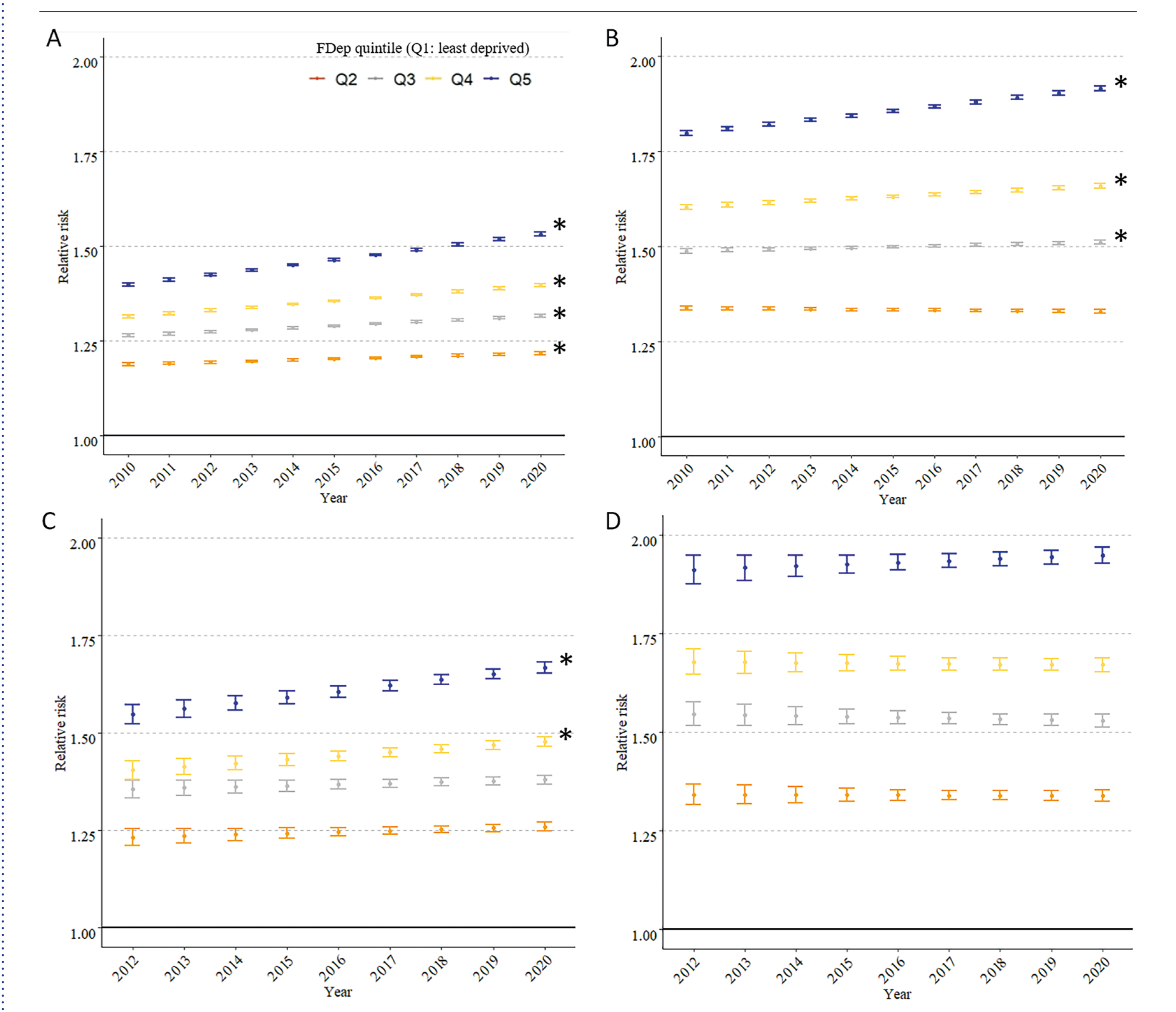
Figure 2 | Trends in the age-standardised prevalence of type 2 diabetes in men (A) and women (B) from 2010 to 2020 and age-standardised incidence in men (C) and women (D) from 2012 to 2020 by French Deprivation Index (FDep) quintiles in consumers aged 45 years and over in metropolitan France



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[1] Magliano DJ, et al. *The Lancet Diabetes & Endocrinology*. 2021;9:203-11; [2] Fuentes S, et al., *Diabetes Metab*. 2020;46:472-79; [3] Read SH, et al. *Diabetologia*. 2016;59:2106-13.; [4] Wang J, et al. *J Epidemiol Community Health*. 2021;76:482-84.; [5] de Mestral C, et al. *BMJ Open Diabetes Res Care*. 2020;8:e001273; [6] Bilal U, et al. *BMJ Open*. 2018;8:e021143; [7] Fuentes, S., et al., *Int J Public Health*, 2019. 64(3): p. 441-450; [8] Rey G, et al., *BMC Public Health*. 2009;9:33; [9] Pace M., et al., Publications Office of the European Union; 2013

Figure 3 | Trends in relative risks and their 95% confidence intervals for the four quintiles of the French deprivation index (Fdep) relative to Q1 for adults ≥ 45 years in metropolitan France for the men (A) and women (B) prevalence model from 2010 to 2020 and for the men (C) and women (D) diabetes incidence model from 2012 to 2020 (*PTrends<0.05)



CU: consumption unit
PY: person-years

CONCLUSION

> **Socioeconomic inequalities** were **positively associated** with the **prevalence and incidence** of pharmacologically-treated **T2D** in metropolitan France.

> The association **increased** over the last decade for **prevalence in men and women**, and **for incidence** only in the **most deprived men**.

> **Prevention** interventions should particularly **target the most deprived areas** to reduce socioeconomic inequalities in T2D prevalence and incidence

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