

Impact of the COVID-19 Pandemic on the Therapeutic Continuity among Outpatients with Chronic Cardiovascular Therapies

Manuela Casula ^{1,2}, Federica Galimberti ², Marica Iommi ³, Elena Olmastroni ^{1,*}, Simona Rosa ⁴, Mattia Altini ⁵, Alberico L. Catapano ^{1,2}, Elena Tragni ¹ and Elisabetta Poluzzi ³

¹ Epidemiology and Preventive Pharmacology Service (SEFAP), Department of Pharmacological and Biomolecular Sciences, University of Milan, Via Balzaretti 9, 20133 Milan, Italy

² IRCCS MultiMedica, Via Milanese 300, Sesto S. Giovanni, 20099 Milan, Italy

³ Department of Medical and Surgical Sciences-Pharmacology Unit, University of Bologna, Via Irnerio 48, 40126 Bologna, Italy

⁴ Department of Biomedical and Neuromotor Sciences-Hygiene and Biostatistics Unit, University of Bologna, Via San Giacomo, 40126 Bologna, Italy

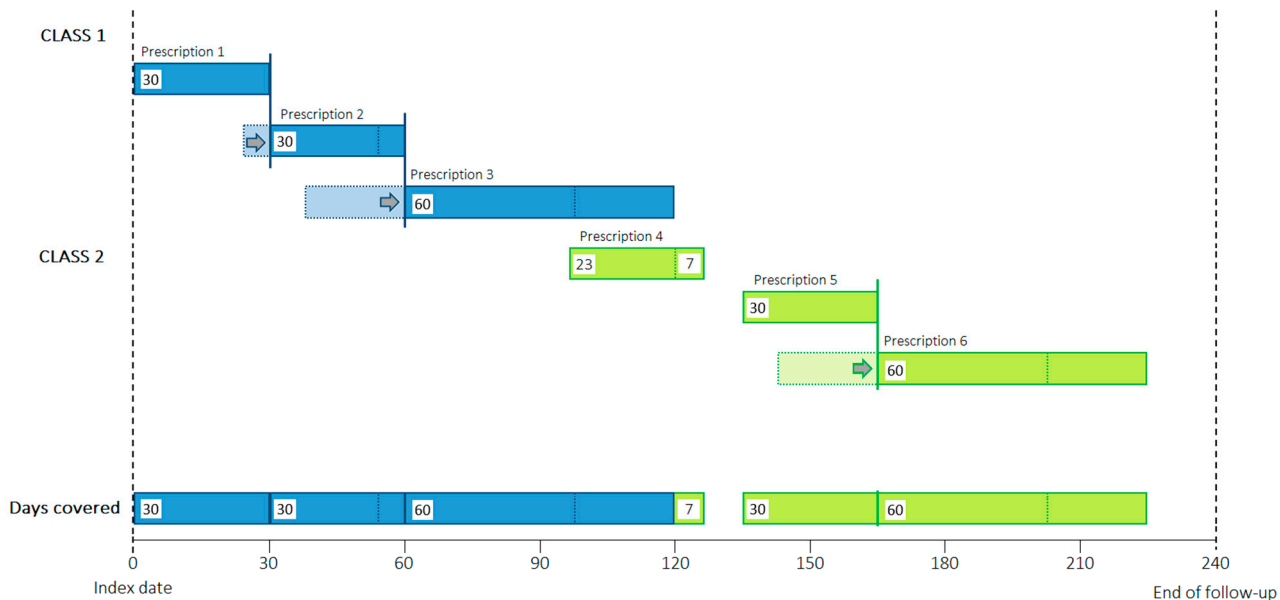
⁵ Romagna Local Health Authority, Emilia-Romagna Region, Via A. De Gasperi 8, 48121 Ravenna, Italy

* Correspondence: elena.olmastroni@unimi.it

Table S1. List of ATC codes for each cohort.

| Chronic Treatment | ATC Codes |
|-----------------------------|--|
| Lipid-lowering drugs | <p>Class 1 (statins): C10AA, C10BA02, C10BA05, C10BA06</p> <p>Class 2 (PCSK9 inhibitors): C10AX13, C10AX14</p> <p>Class 3 (ezetimibe): C10AX09, C10BA02, C10BA05, C10BA06</p> |
| Antidiabetics | <p>Class 1 (biguanides): A10BA, A10BD02, A10BD05, A10BD07, A10BD08, A10BD10, A10BD11, A10BD13, A10BD15, A10BD16, A10BD20, A10BD23</p> <p>Class 2 (sulfonylureas): A10BB, A10BD02, A10BD06</p> <p>Class 3 (sulfonamides): A10BC</p> <p>Class 4 (alpha glucosidase inhibitors): A10BF</p> <p>Class 5 (thiazolidinediones): A10BG, A10BD05, A10BD06, A10BD09</p> <p>Class 6 (dipeptidyl peptidase 4 (DPP-4) inhibitors): A10BH, A10BD07, A10BD08, A10BD09, A10BD10, A10BD11, A10BD13, A10BD19, A10BD21</p> <p>Class 7 (glucagon-like peptide-1 (GLP-1) analogues): A10BJ</p> <p>Class 8 (sodium-glucose co-transporter 2 (SGLT2) inhibitors): A10BK, A10BD15, A10BD16, A10BD19, A10BD20, A10BD21, A10BD23</p> <p>Class 9 (other blood glucose lowering drugs, excl. insulins): A10BX</p> |
| Antihypertensives | <p>Class 1 (antiadrenergic agents): C02</p> <p>Class 2 (diuretics): C03, C07BB, C07CB, C09BA, C09BX01, C09DA, C09XA52</p> <p>Class 3 (beta blocking agents): C07, C07BB, C07CB, C09BX02</p> <p>Class 4 (calcium channel blockers): C08, C09BB, C09BX01, C09DB</p> <p>Class 5 (agents acting on the renin-angiotensin system): C09, C09BA, C09BB, C09BX01, C09BX02, C09DA, C09DB, C09XA52</p> |

Figure S1. Example of PDC calculation for an individual with two concurrent therapeutic classes within the same chronic therapy.



Days of follow-up: 240

Days covered: 30 + 30 + 60 + 7 + 30 + 60 = 217

Proportion of days covered (PDC): $\frac{217}{240} = 0.90$

Figure S2. Timeline of the study.

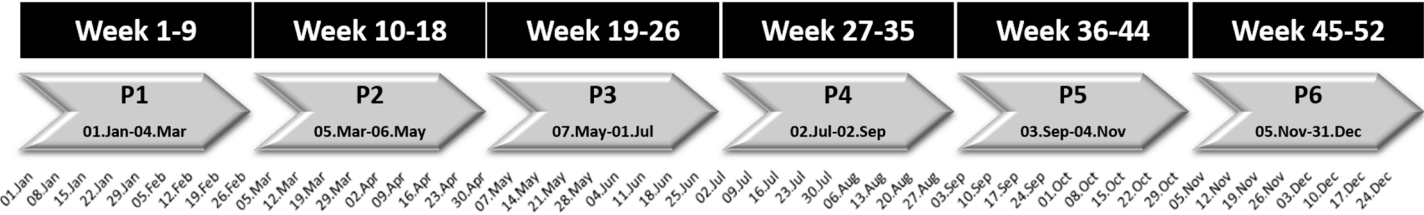
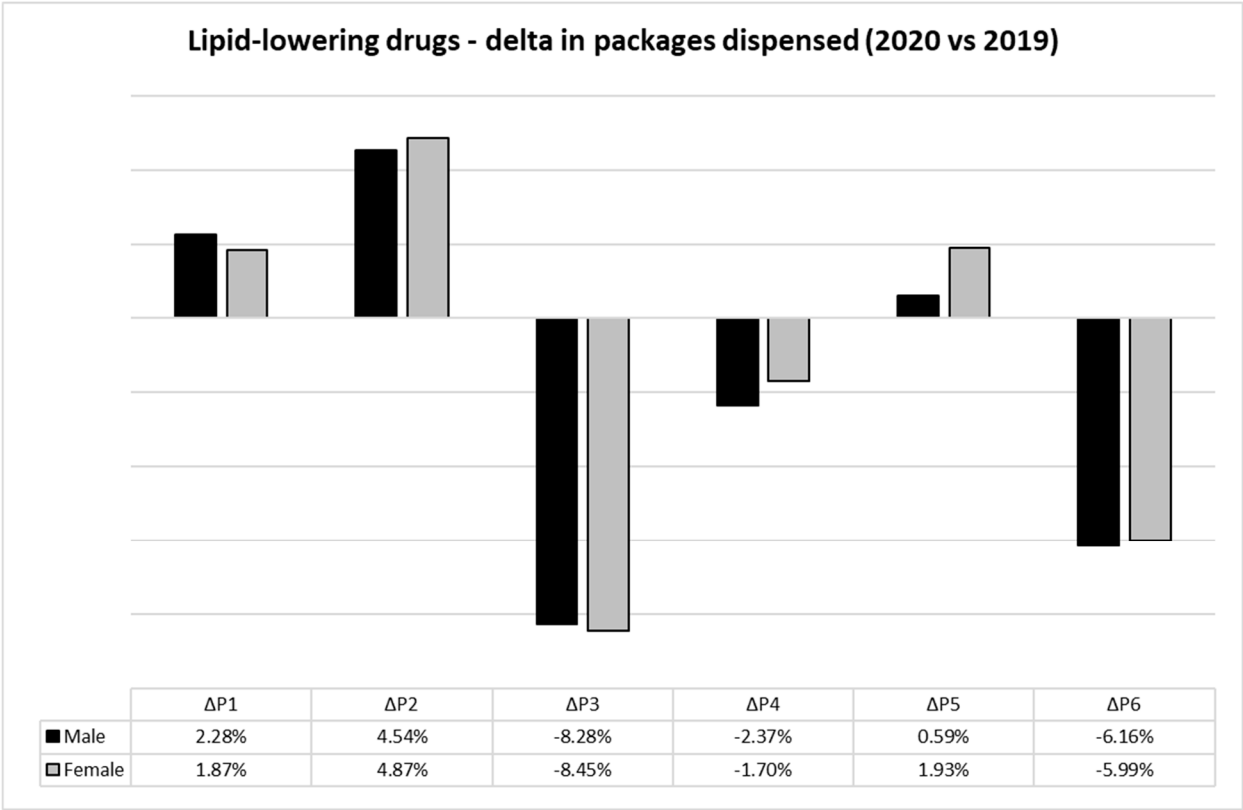
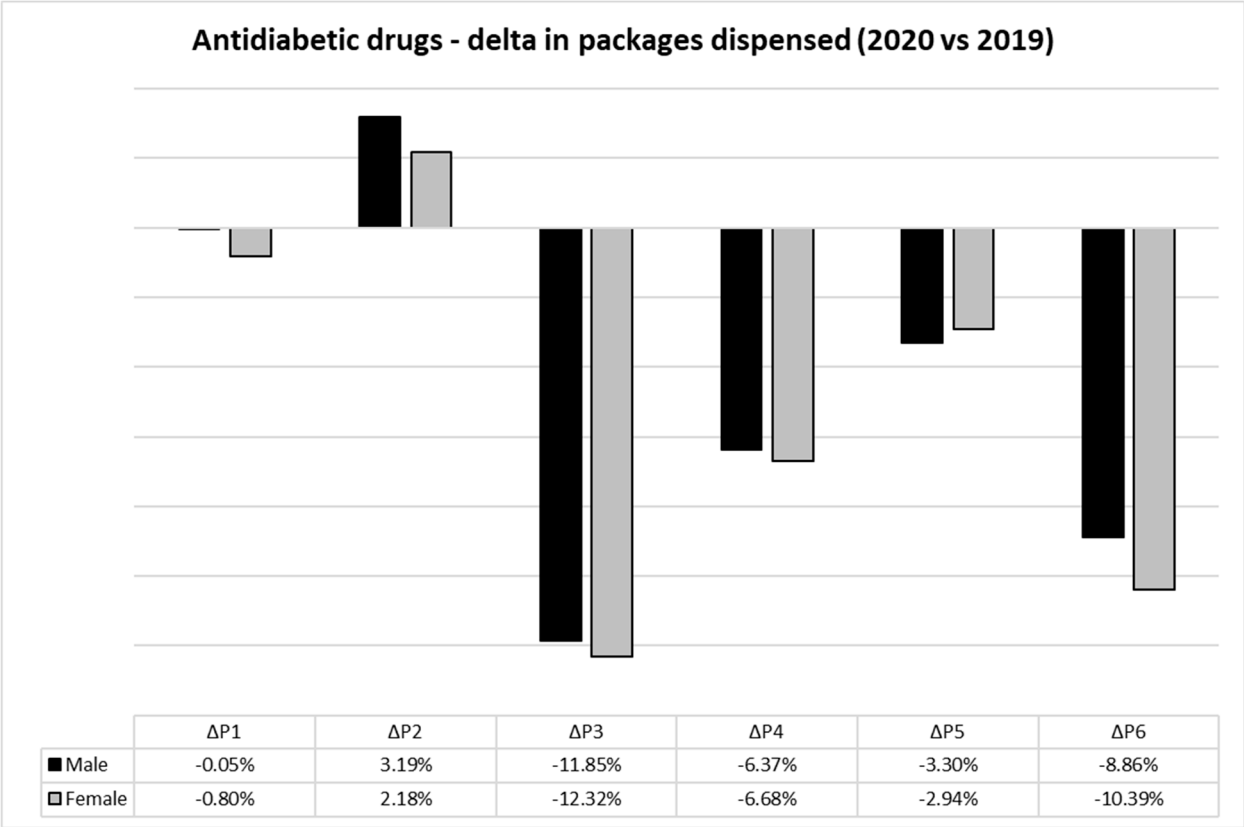


Figure S3. Difference in dispensed packages per 1000 patients between study and control periods by sex.

(A) Lipid-lowering drugs



(B) Antidiabetic drugs



(C) Antihypertensive drugs

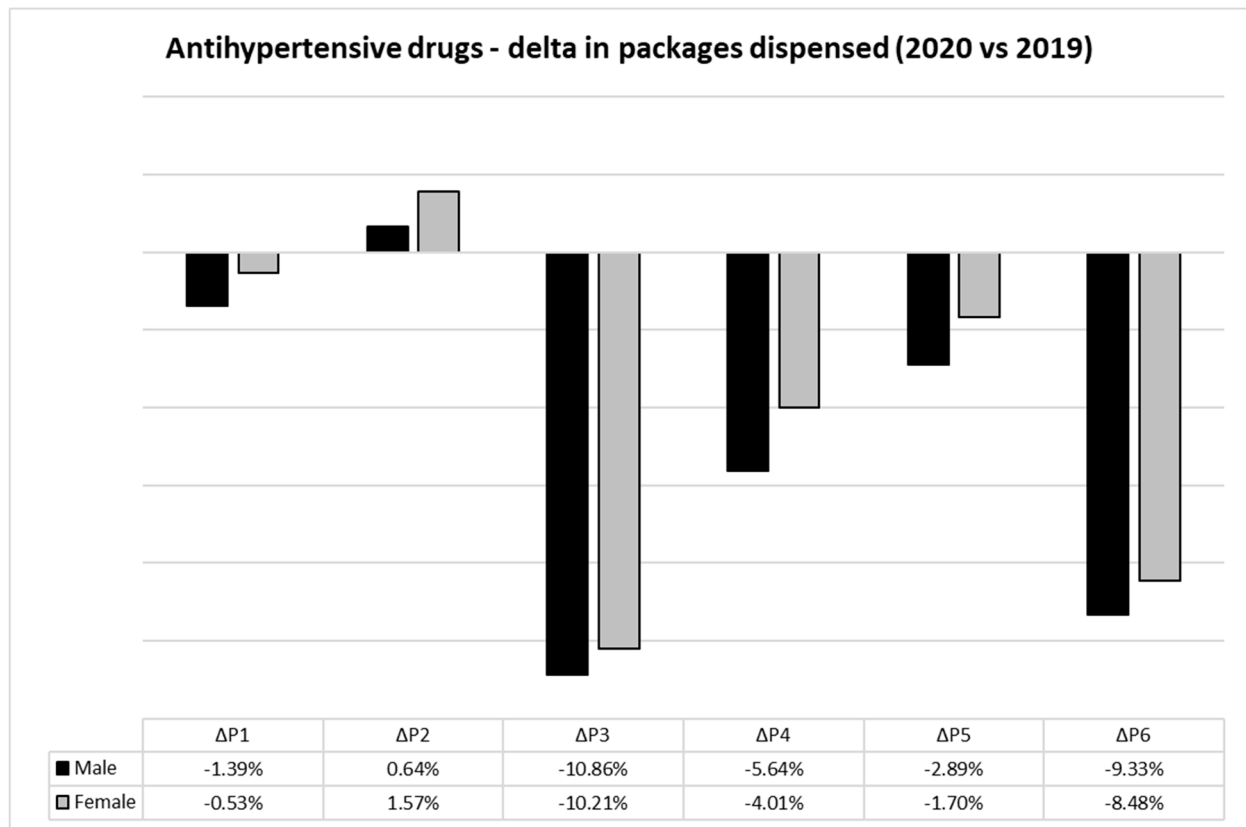
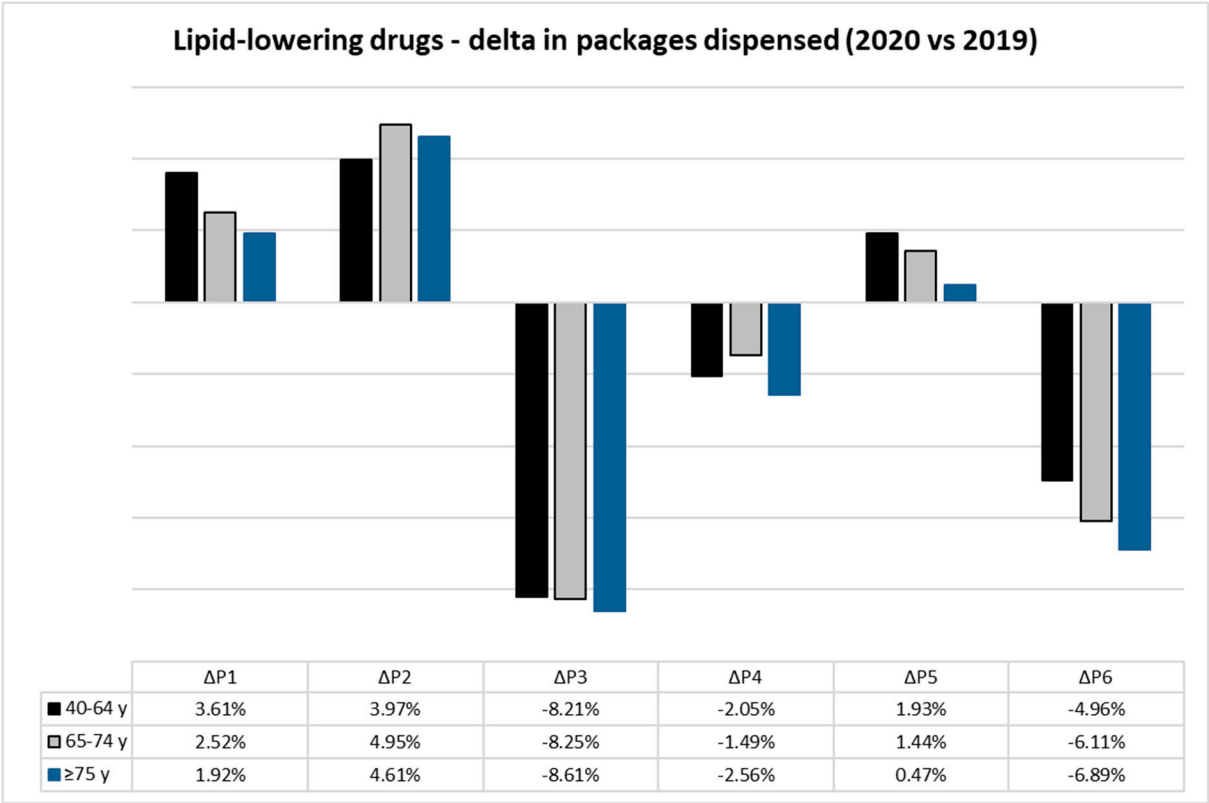
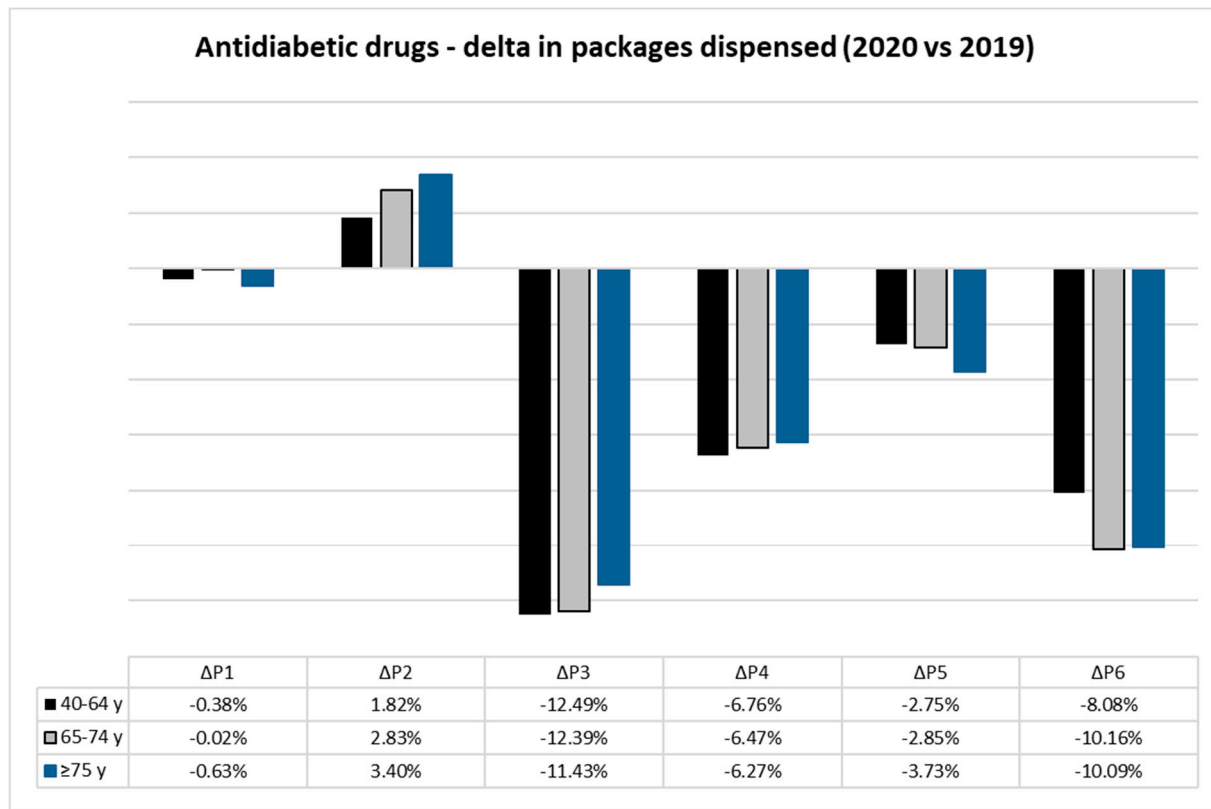


Figure S4. Difference in dispensed packages per 1000 patients between study and control periods by age groups.

(A) Lipid-lowering drugs



(B) Antidiabetic drugs



(C) Antihypertensive drugs

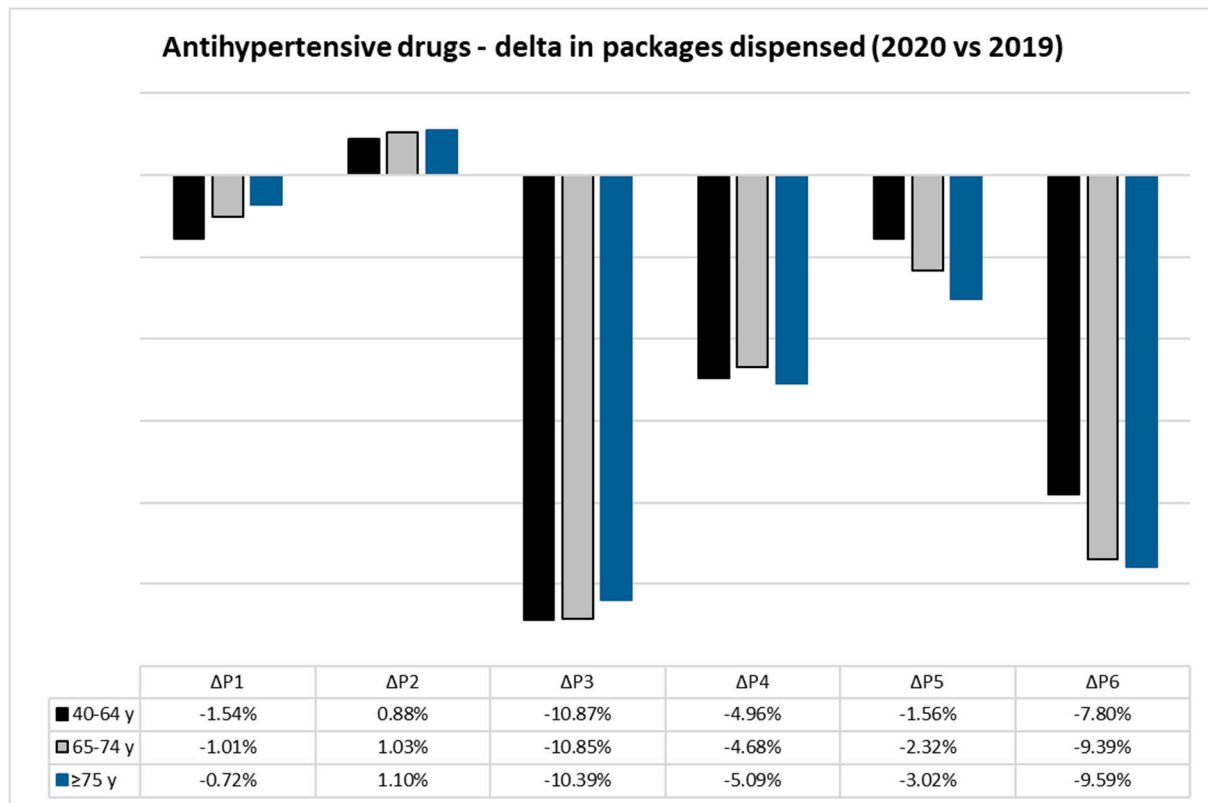
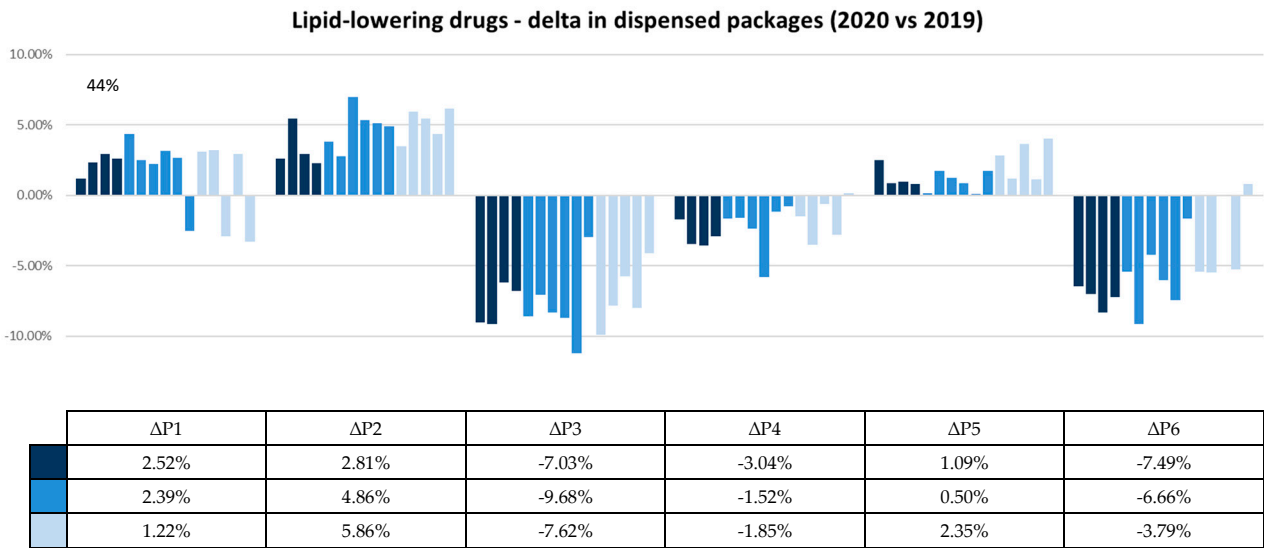
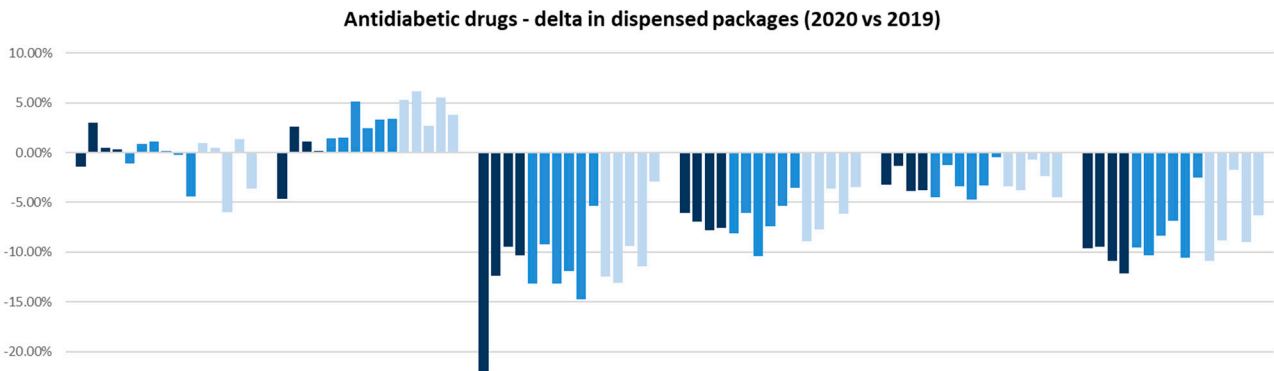


Figure S5. Fifty two-week trends in chronic therapies dispensing in the population by metropolitan areas (those in dark blue represent areas with more COVID-19 cases recorded in 2020, while in light blue those with fewer cases)

(A) Lipid-lowering drugs

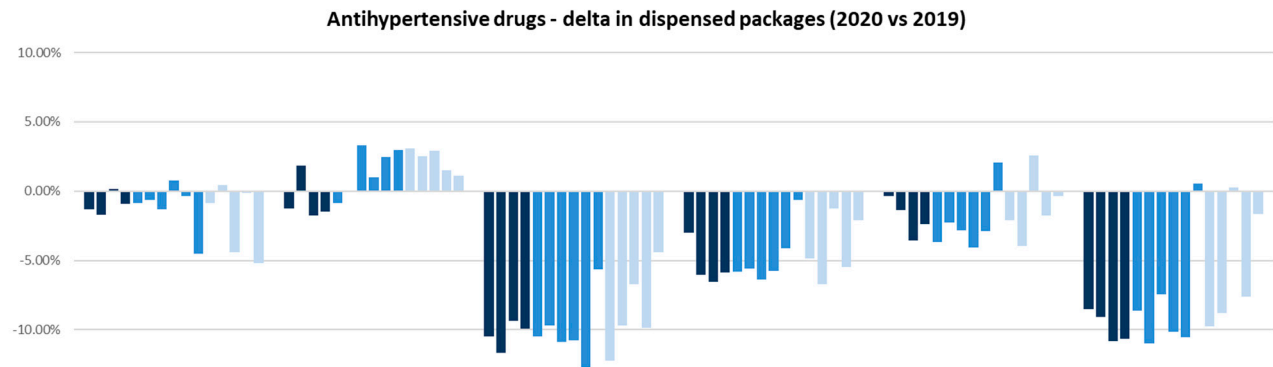


(B) Antidiabetic drugs



| | $\Delta P1$ | $\Delta P2$ | $\Delta P3$ | $\Delta P4$ | $\Delta P5$ | $\Delta P6$ |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| | 0.32% | 0.06% | -11.74% | -7.41% | -3.56% | -11.18% |
| | -0.60% | 3.02% | -12.98% | -5.96% | -3.01% | -10.97% |
| | -0.60% | 4.95% | -10.81% | -6.48% | -2.94% | -8.22% |

(C) Antihypertensive drugs



| | $\Delta P1$ | $\Delta P2$ | $\Delta P3$ | $\Delta P4$ | $\Delta P5$ | $\Delta P6$ |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| | -0.65% | -1.30% | -9.95% | -5.73% | -2.45% | -10.31% |
| | -0.83% | 1.87% | -11.45% | -4.39% | -2.59% | -9.25% |
| | -1.46% | 2.28% | -9.54% | -4.57% | -1.57% | -6.84% |