Online Resource 2. Age-specific suicide mortality rates by period and sex

Article: Age–period–cohort effects on suicide mortality in Andalusia, Spain (2000–2024): demographic masking and sustained pandemic excess

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This Online Resource presents the complete age-specific mortality rates by quinquennium and sex, together with the estimated annual percentage change (EAPC) from Prais–Winsten regression for each age group over the full 2000–2024 period. These data complement the age–period–cohort decomposition and the differential pandemic impact analysis in the main text.

1. Age profile of suicide mortality

The age profile of suicide mortality displayed a monotonically ascending gradient. The lowest mean rates were observed in the ≤14 age group (0.09 per 100,000) and the highest in the 80–84 group (24.13 per 100,000). Above 85 years, rates declined to 15.25, possibly reflecting survivor selection bias, under-reporting in very advanced age, or the heterogeneity of the open-ended upper interval.

In men, the profile was bimodal, with a first peak in the 45–54 age range (mean rates 18.94 and 20.07, respectively) and a second, more pronounced peak above 75 years (75–79: 36.93; 80–84: 49.90). In women, the gradient was smoother, with a plateau between 50 and 84 years (rates between 6.32 and 8.02). These sex-stratified profiles are illustrated in Figure S6, which displays age-specific rate curves by quinquennium.

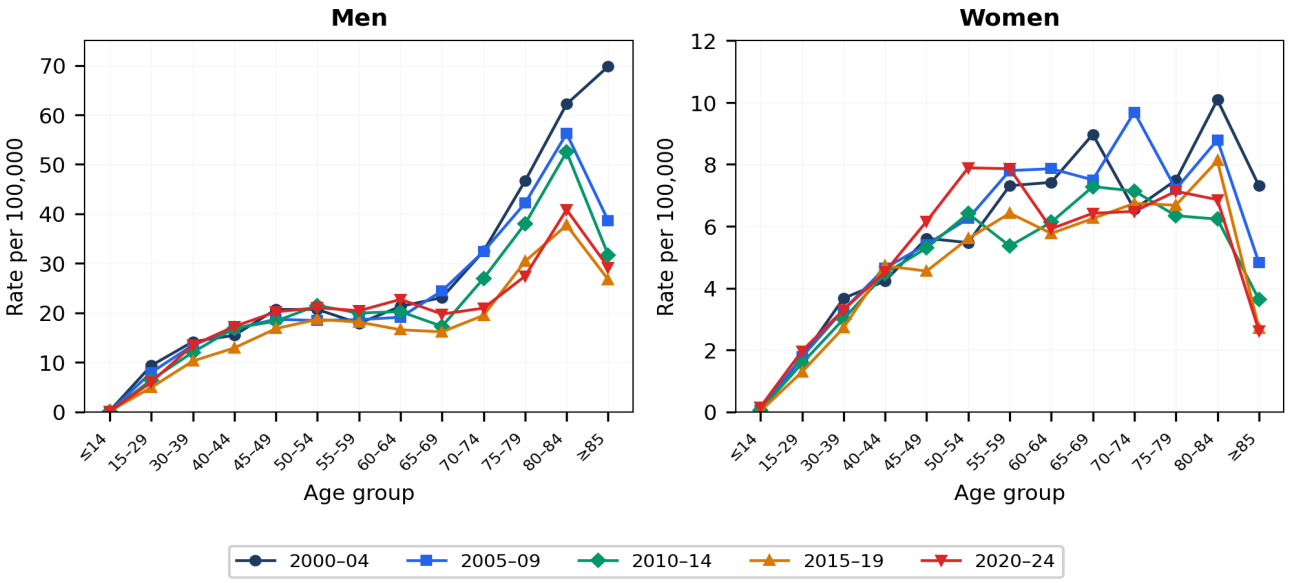

Figure S6. Age-specific suicide mortality rate profiles by quinquennium and sex, Andalusia, 2000–2024. Rates per 100,000 for each quinquennium, shown separately for men (left) and women (right). Note the difference in vertical axis scales (0–75 in men versus 0–12 in women). In men, the monotonically increasing pattern shows marked acceleration from 65–69 years with progressive downward shift over time. The 2020–2024 quinquennium shows a partial rebound relative to 2015–2019. In women, rates rise to a plateau between 45 and 84 years with less inter-quinquennial variation. Source: INE; authors' calculations.

2. Temporal trends by age group

Prais–Winsten trend analysis by age group revealed that significant declines were concentrated in older groups: ≥85 years (EAPC = –3.79%, $p < 0.001$), 75–79 (–2.20%, $p < 0.001$), 70–74 (–2.17%, $p < 0.001$), 80–84 (–2.00%, $p < 0.001$), and 15–29 years (–2.10%, $p < 0.001$). The 65–69 group also declined significantly (–1.37%, $p = 0.014$). Groups aged 30–64 showed non-significant EAPCs near zero. No age group exhibited a significant increase over the full period. Figure S4 summarises these results as a forest plot.

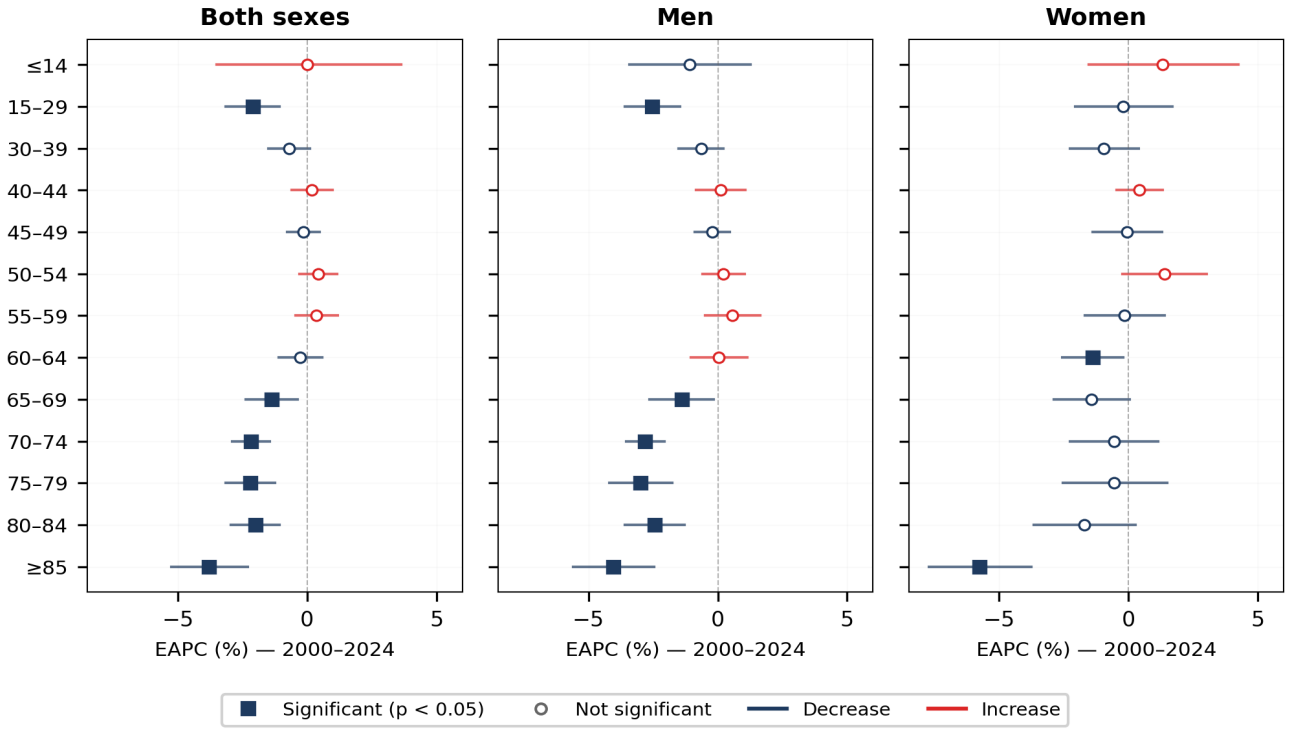

Figure S4. Estimated annual percentage change (EAPC) in suicide mortality rates by age group and sex, Andalusia, 2000–2024. Forest plot with 95% confidence intervals. Filled squares: statistically significant ($p < 0.05$); open circles: non-significant. Blue: decreasing trends; red: increasing trends. Vertical dashed line: zero change. Significant declines are concentrated in the 15–29 and 65+ age groups in both sexes and men. In women, only 60–64 ($p = 0.029$) and ≥85 ($p < 0.001$) reached significance. Source: authors' calculations.

This pattern of steeper decline in older ages is consistent with the cohort effect identified in the APC model and contributes to the divergence between crude and age-standardised trends: older groups, which carry both the highest rates and the steepest declines, gain increasing weight in the crude rate as the population ages, thereby dampening the visible decline in the aggregate crude series.

3. Complete age-specific rates by quinquennium

Table S3 presents the complete quinquennial age-specific rates and full-period EAPC for both sexes, men, and women. These data serve as the descriptive foundation for the APC decomposition in the main text.

Table S3. Age-specific suicide mortality rates (per 100,000) by quinquennium and sex, with Prais–Winsten EAPC, Andalusia, 2000–2024

Panel A. Both sexes							
Age group	**2000–04**	**2005–09**	**2010–14**	**2015–19**	**2020–24**	**EAPC (95% CI)**	***p***
≤14	0.12	0.07	0.06	0.09	0.13	+0.01% (-3.48 to +3.64)	0.994
15–29	5.64	4.96	4.06	3.15	4.05	**-2.10% (-3.13 to -1.07)**	**< 0.001**
30–39	8.95	8.48	7.62	6.53	8.39	-0.70% (-1.50 to +0.12)	0.107
40–44	9.85	10.76	10.76	8.87	10.93	+0.19% (-0.58 to +0.98)	0.630
45–49	13.14	12.07	11.83	10.72	13.20	-0.15% (-0.77 to +0.49)	0.656
50–54	13.00	12.32	13.93	12.10	14.44	+0.44% (-0.28 to +1.17)	0.241
55–59	12.47	13.14	12.57	12.21	14.03	+0.37% (-0.45 to +1.19)	0.391
60–64	14.00	13.30	13.00	11.04	14.09	-0.26% (-1.10 to +0.59)	0.554
65–69	15.55	15.42	12.05	11.00	12.81	**-1.37% (-2.36 to -0.37)**	**0.013**
70–74	18.12	19.92	16.15	12.65	13.22	**-2.17% (-2.90 to -1.44)**	**< 0.001**
75–79	23.71	21.96	19.91	16.95	16.12	**-2.20% (-3.14 to -1.25)**	**< 0.001**
80–84	29.07	26.77	24.32	19.91	20.57	**-2.00% (-2.93 to -1.07)**	**< 0.001**
≥85	25.88	15.24	12.70	10.74	11.69	**-3.79% (-5.25 to -2.30)**	**< 0.001**

Panel B. Men							
Age group	**2000–04**	**2005–09**	**2010–14**	**2015–19**	**2020–24**	**EAPC (95% CI)**	***p***
≤14	0.18	0.09	0.06	0.14	0.09	-1.10% (-3.41 to +1.26)	0.367
15–29	9.35	7.96	6.44	4.92	6.01	**-2.54% (-3.60 to -1.47)**	**< 0.001**
30–39	14.17	13.46	12.04	10.26	13.44	-0.65% (-1.51 to +0.21)	0.153
40–44	15.45	16.80	16.88	12.91	17.25	+0.10% (-0.85 to +1.07)	0.836
45–49	20.69	18.70	18.33	16.82	20.19	-0.21% (-0.89 to +0.47)	0.548
50–54	20.68	18.44	21.49	18.67	21.05	+0.22% (-0.58 to +1.03)	0.594
55–59	17.88	18.64	19.94	18.14	20.42	+0.56% (-0.50 to +1.63)	0.310
60–64	21.30	19.10	20.25	16.57	22.72	+0.04% (-1.05 to +1.14)	0.950
65–69	23.10	24.44	17.27	16.16	19.75	**-1.40% (-2.63 to -0.16)**	**0.037**
70–74	32.48	32.41	26.95	19.50	20.95	**-2.81% (-3.53 to -2.07)**	**< 0.001**
75–79	46.66	42.17	38.00	30.41	27.43	**-2.99% (-4.19 to -1.77)**	**< 0.001**
80–84	62.20	56.23	52.50	37.72	40.84	**-2.45% (-3.60 to -1.29)**	**< 0.001**
≥85	69.79	38.64	31.71	26.73	29.22	**-4.04% (-5.60 to -2.46)**	**< 0.001**
Panel C. Women							
Age group	**2000–04**	**2005–09**	**2010–14**	**2015–19**	**2020–24**	**EAPC (95% CI)**	***p***
≤14	0.06	0.06	0.06	0.03	0.16	+1.31% (-1.53 to +4.23)	0.381
15–29	1.76	1.78	1.57	1.29	1.97	-0.21% (-2.06 to +1.68)	0.829
30–39	3.67	3.30	3.00	2.72	3.30	-0.95% (-2.26 to +0.38)	0.174
40–44	4.23	4.65	4.47	4.72	4.53	+0.41% (-0.47 to +1.31)	0.370
45–49	5.61	5.41	5.30	4.55	6.16	-0.05% (-1.39 to +1.30)	0.940
50–54	5.47	6.25	6.41	5.60	7.89	+1.38% (-0.23 to +3.02)	0.106
55–59	7.31	7.80	5.36	6.42	7.86	-0.17% (-1.69 to +1.38)	0.834
60–64	7.42	7.86	6.13	5.77	5.92	**-1.39% (-2.55 to -0.22)**	**0.029**
65–69	8.97	7.50	7.28	6.25	6.42	-1.43% (-2.89 to +0.04)	0.069
70–74	6.55	9.69	7.14	6.74	6.48	-0.57% (-2.25 to +1.15)	0.519
75–79	7.49	7.20	6.34	6.68	7.13	-0.55% (-2.54 to +1.48)	0.599
80–84	10.09	8.79	6.23	8.12	6.86	-1.72% (-3.67 to +0.27)	0.104
≥85	7.31	4.82	3.63	2.70	2.62	**-5.76% (-7.71 to -3.77)**	**< 0.001**

Rates expressed per 100,000 population (quinquennial mean). EAPC: estimated annual percentage change from Prais–Winsten regression with AR(1) autocorrelation correction over the full 2000–2024 period; 95% CI: 95% confidence interval. Bold indicates p < 0.05. Source: INE. Authors' calculations.

4. Lexis surface representation

Figure S5 presents the age–period Lexis surface, displaying rates on a logarithmic colour scale with superimposed birth cohort diagonals. In men, a pronounced vertical gradient is observed, with rates increasing progressively with age and maximum values concentrated in the 75+ groups (rates exceeding 30 per 100,000), together with chromatic attenuation in the 2014–2019 period consistent with the nadir identified in the joinpoint analysis. In women, the age gradient is less marked, with a more homogeneous distribution between 40 and 84 years and greater inter-annual variability. Cohort diagonals allow visual identification that generations born circa 1920–1940 consistently traverse the zones of greatest chromatic intensity in men, a finding consistent with the cohort effect identified in the APC model.

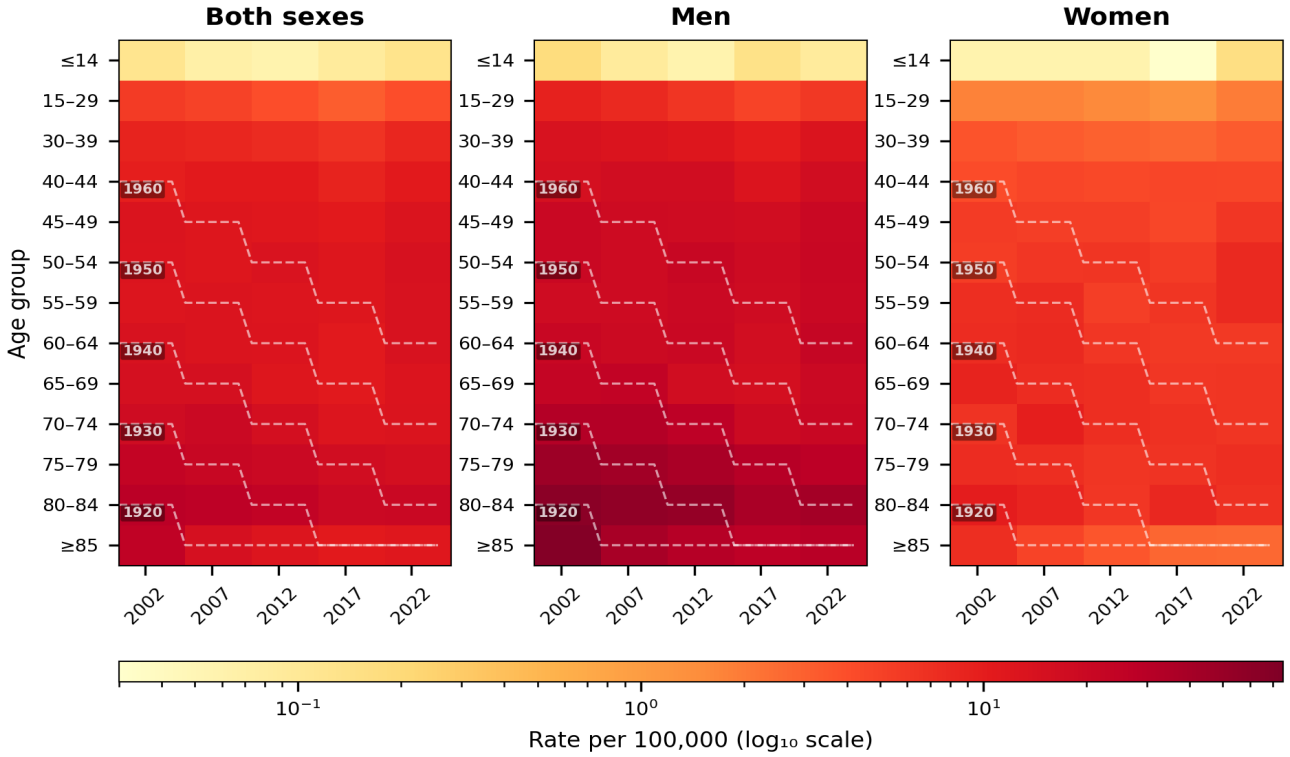

Figure S5. Lexis surface: suicide mortality rates by age group and year, by sex, Andalusia, 2000–2024. Heatmaps displaying age-specific rates (per 100,000) on a logarithmic colour scale (YlOrRd palette). Diagonal dashed lines: approximate birth cohort trajectories (1920–1960). In men, the steep vertical gradient and temporal attenuation in 2014–2019 are consistent with the period nadir from joinpoint analysis. Generations born 1920–1940 traverse the highest-intensity zones. Source: authors' calculations.

Summary

Age-specific analysis reveals that suicide mortality in Andalusia follows a strongly age-dependent pattern, with rates increasing monotonically with age in men (peaking above 60 per 100,000 in the 80–84 group in 2000–2004) and showing a flatter plateau in women (4–8 per 100,000 from ages 45–84). Significant temporal declines were concentrated in the oldest age groups (≥65) and in the 15–29 group, while middle-aged groups (30–64) showed no significant change. This differential age pattern is the mechanistic driver of the demographic masking effect: the steepest declines occur in the oldest groups, whose growing population weight offsets the decline in age-adjusted risk at the aggregate level. The Lexis surface confirms that birth cohorts from 1920–1940 carry the highest lifetime suicide risk, consistent with the cohort effects estimated in the formal APC model presented in the main text.