Appendix – Survey methodology

The SOFRES Health Survey (1995)

In 1995, SOFRES (a French national market and opinion research institute) conducted a national survey as part of the International Quality of Life Assessment (IQOLA) project; this survey was originally designed to be the norming survey for the SF-36 questionnaire in France [1,2]. Four thousand postal mails were sent, of which 3,308 (82.7%) were returned. Only subjects aged between 18 and 84 years old who had completed at least one subscale of the eight SF-36 subscale scores were considered resulting in a sample of 3,243 subjects (81%) included in our analyses for the year 1995. To increase precision for the elderly, the institute also included an oversample of 348 subjects aged over 65, of whom 339 were aged below 85, giving a total of 3,582 subjects for the year 1995 [3].

The INSEE Health Survey (2003)

In 2003, INSEE (the French National Institute for Statistics and Economic Studies) conducted the last Decennial Health Survey, a national survey of households To collect information, they combined face-to-face interviews conducted by specifically trained interviewers and self-administered questionnaires collected after three-monthly visits. The initial sample included 40,796 subjects of all ages. There were 30,544 subjects aged between 18 and 84 years old – including 8,896 oversampled for Paris, North, Eastern Parisian Basin, and Mediterranean Basin regions – of who 29,663 subjects (97%) received the questionnaire, and 25,539 (86%) completed and returned the questionnaire on the last visit. We included only subjects who had completed at least one subscale of the eight SF-36 subscale scores, such that we obtained a sample of 22,743 subjects (77%) for our analyses for the year 2003 [3].

The IPSOS Health Survey (2016)

In 2016, the French global market research and consulting firm IPSOS conducted a survey in three European countries (France, Germany and United Kingdom) designed to test the psychometric properties of the PROMIS-29. In France, the sample included 1,501 subjects aged 18 and over, and all subjects completed the eight SF-36 subscale scores. Including only subjects aged between 18 and 84 years old gave us with a sample of 1,494 subjects (99%) for our analyses for the year 2016.

Appendix – Explanatory variables

Seven age groups were used for these populations between 18 and 84 years old. Education level was classified using two categories (primary school/secondary level, vs. tertiary/university level). Occupational status was classified into four groups (managers/professionals, technicians/clerks/service workers, workers/elementary occupations/armed forces, inactive/unemployed), but was also used as a binary variable (active, vs. unemployed/retired) in multivariate analysis. To assess the effect of unemployment more specifically, we conducted additional analyses restricted to subjects between 25 and 64 years old to separate unemployed from retired people (considering the average retirement age in France [5]) and students (considering the average duration of graduate studies in France [6]). Matrimonial status was classified into four categories (married/in couple, single, divorced/separated, and widowed). Chronic conditions included cancer, diabetes, hypertension and heart disease. The size of urban unit of residence was categorized into three groups (rural, less than 20,000 inhabitants, more than 20,000

inhabitants/Paris metropolitan area). Five geographical areas were defined (Ile-de-France, North-West, North-East, South-West, and South-East).

Appendix – Modeling analysis

Second degree polynomial regression models were used to evaluate the (nonlinear) relationships between SF-36 subscale scores and time [7,8]. Using a significance level of 5% ($\alpha = 0.05$), interaction terms were first tested using global tests of interaction (*F* tests). If these were significant, we studied individual terms of interaction (*t* tests). At each step, the predictor showing the smallest contribution to the model (using *F* tests) was removed from the model until all predictors remaining in the model were statistically significant at the 5% threshold. The values predicted by the model were then used to plot changes in scores according to demographic or socioeconomic factors. RP and RE were studied only in active people aged between 25 and 64 years old. We conducted additional analyses restricted to subjects between 25 and 64 years old to assess more specifically the effect of unemployment (assuming that the proportion of people under 65 who are retired is very low). Sensitivity analyses were conducted using mixed models to account for the hierarchical (multilevel) structure of data by entering a random effect for the geographical area, and using calibration weights available for the 2003 survey to adjust for non-response and sampling bias; results were found to be essentially similar, so only results from standard unweighted fixed effects regressions are reported.

The residuals were checked for normality and transformations were found to be unnecessary. (Note that contrary to analyses conducted on raw scores [9], using standardized scores allowed the avoidance of severe asymmetry in distributions and ceiling/floor effects.) All

statistical analyses were performed using SAS, version 9.4 (SAS Institute Inc., Cary, NC, USA), and all figures were made using R, version 3.4.0 (R Foundation, Vienna, Austria).

Appendix – Supplementary references

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