Empirical Economics (2024) 67:1303–1318
https://doi.org/10.1007/s00181-024-02582-3

Asynchronous fieldwork in cross-country surveys: an application to physical activity

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Received: 4 March 2022 / Accepted: 26 February 2024 / Published online: 5 April 2024

Abstract
Multi-country surveys often aim at cross-country comparisons. A common quality standard is conducting these surveys within a common fieldwork period, across all participating countries. However, the rate the target sample is achieved within that fieldwork period in each country varies substantially. Thus, the distribution of the interview month often varies substantially in the final sample. This may lead to biased estimates of cross-country differences if the variable of interest exhibit a non-constant trend over time. We demonstrate the implications of such an asynchronous fieldwork, using physical activity measured in the European Social Survey Round 7 collected between September 2014 and January 2015. Accounting for fieldwork month, we present a set of different post-estimation predictions. Physical activity varies across interview month, with countries with more observations during autumn were upward-biased, compared to countries with more observations during winter. Our results demonstrate how comparisons between countries are affected when interview month is omitted, and how accounting for interview month in the analysis is an easy way to mitigate this problem.

Keywords Multi-country surveys · Cross-country comparison · Survey methodology

JEL Classification I10 · C81 · C83

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1 Introduction

Cross-country surveys have proven an invaluable source of data to compare individuals across countries. Unbiased estimation of between-country differences has long been a topic of discussion in the literature (Brislin et al. 1973; Teune 1977; Hakim 2000). Although there exists no general framework for successful cross-national survey research, attempts to file quality standards to follow have been proposed in the survey methodology literature (Harkness 1999; Lynn 2003). One important recommendation to maintain quality urges survey agencies to conduct surveys within a common fieldwork period across countries (i.e. common start and end date). Even when this recommendation is implemented, biases may still arise in cases where fieldwork is conducted asynchronously in different countries.

The purpose of this paper is to outline biases that arise when comparing variables of interest across countries using multi-country survey data when the timing of the fieldwork is not synchronized across countries. In fact, although there is a common fieldwork period, with asynchronous data collection, the distribution of the timing of the interviews might be very different across countries. This may happen because of coordination problems (i.e. it is easier to coordinate the fieldwork within a single country than across several countries), organizational capacity (i.e. one organization is likely to lead the fieldwork in a single-country survey, while this is not the case when several countries are surveyed), or productivity differences across countries (i.e. organizations may be more or less productive depending on the country and the month of interviews). Moreover, cross-national data collection is likely to suffer from asynchronicity due to budget limitations, different time constraints, or national-specific guidelines on survey data collection. Biased differences may not only occur in cross-country comparison, but in longitudinal studies in comparisons across time when fieldwork is asynchronous in different waves (Angelini et al. 2008).

The bias is due to making comparisons based on data drawn from different seasons or, even when drawn from the same seasons, the proportion of respondents within that season varies across countries or over time.[1] To account for this bias, in the latter case, a simple seasonality adjustment can solve the problem.[2] Thus, depending on the theoretical assumptions made on the variables' trend, failing to account for seasonality can be considered a case of omitted variable. As such, this study shows how accounting for seasonality in the context of asynchronous fieldwork may lead to different conclusions.

This potential source of bias *within country* has been noticed, and accounted for, in a number of within-country studies on consumption (Blundell et al. 1993; Longhi 2014), health (Clemes et al. 2011; Kimura et al. 2015; McCormack et al. 2010; Visscher

[1] Suppose you wish to compare responses in Spain and the UK, with both countries following a common fieldwork period regulation (say, June to November of a given year). The comparison might still be biased if most respondents in the UK are surveyed during summer, while most Spanish respondents are surveyed during autumn.

[2] In the former case, accounting for seasonality requires further assumptions due to lack of data.

and Seidell 2004), and happiness (Connolly 2013).[3] Despite a recent focus on cross-country modelling (Skinner and Mason 2012; Bryan and Jenkins 2016; Kaminska and Lynn 2017), there is still no guidance on dealing with *between country* comparison biases arising from seasonality.

In this article, we demonstrate the implications of asynchronous fieldwork with a worked example in a regression analysis context, using data from a multi-country study, the European Social Survey (ESS). We focus our analysis on physical activity, an outcome that is expected to exhibit seasonal variation (Matthews et al. 2001; Pivarnik et al. 2003; Ma et al. 2006; O'Connell et al. 2014). As in many surveys, physical activity in ESS refers to any activity such as sports or other physical activity that was done continuously for 30 min or longer within the last week. Therefore, we expect a large seasonality effect on this measure depending on when the respondent was interviewed. More specifically, higher levels of physical activity are usually observed during summer, while sedentary behaviours display the opposite trend (Garriga et al. 2021). Moreover, while countries participating in the ESS collect data during a common fieldwork period, the data collection within that period is asynchronous, resulting in different distributions of interview months across the participating countries.

2 Methods

2.1 Data and variables

We use data from ESS Round 7 European Social Survey Round 7 Data (2014). ESS is a cross-national survey exploring various socio-economic circumstances and attitudes of Europeans in over 20 countries. The ESS sample is a probability sample drawn for each participating country, covering different sampling methods, ranging from stratified random samples to multi-stage random samples, aiming to collect national samples representative of their population aged 15 and over. Interviews are normally conducted using face-to-face computer assisted personal interviewing, in addition to a self-administered questionnaire and showcards.

Despite challenges arising in conducting cross-national surveys, ESS manages to implement a harmonized cross-national survey which maintains a high-quality survey design, fieldwork monitoring, and survey management since the first round (administered in 2002) and all subsequent rounds every two years. Compliance profiles with metadata and paradata are regularly published to inform researchers about the fieldwork periods, interviewers composition, contact, and response rates.

As often the case in cross-national surveys, different professional survey agencies are responsible to undertake the fieldwork in each country, under a general set of common requirements across countries in order to ensure the quality standards of the fieldwork procedure and survey design for specific fieldwork periods within each round. ESS Round 7 responses were between 2014 and 2015.

[3] Surprisingly, seasonal variation can exist even in outcomes that one would not normally expect, such as body mass index (BMI) or waist circumference. These measures are considered objective, and hence often used in comparative analysis among countries, but, as existing research has shown, these indices are not free from seasonality (Visscher and Seidell 2004).

We choose ESS Round 7 as it is the most recent round which contains a measure for physical activity. Physical activity was measured in terms of how many days did the participant played sports, walked quickly or did any other physical activity for 30 min or longer, in the last 7 days. The date (day, month, and year) of the interview was recorded by the interviewer. We use the date in our process of selecting which countries will be included in our analytical sample. In our analysis, we use months only. Information was also collected on respondents' sex, age, their education measured by the International Standard Classification of Education (ISCED) level, the income decile they belong to, and whether they live with a partner or children. To demonstrate that asynchronous fieldwork may lead to biased differences of physical activity across countries, we select six countries such that their national samples were all collected within the exact same period, and no country had a month with zero observations. Other countries extended the collection period beyond January 2015, while other countries had zero collection for some months within the September 2014–January 2015 period (i.e. starting later or finishing earlier). This resulted in selecting Belgium, Switzerland, Germany, Finland, Ireland, and the Netherlands.

2.2 Analysis

We use linear regression analysis to demonstrate the implications of not accounting for asynchronous fieldwork between countries. We use interview month dummies to capture the seasonality. We fit unadjusted models using country dummies only, and using country dummies with month dummies. Adjusted estimates were used controlling for age, sex, income decile, ISCED level, living with a partner, and living with children. We employ unweighted regression and weighted regression using design weights provided by ESS to account for differences in sampling design.

In post-estimation, we make country-specific predictions using the models with month dummies. We provide three different types of predictions. The first one is a baseline and uses the sample means of month dummies in each country (which can be obtained in Stata using `margins, over(country) atmeans`). These predictions are similar to the ones from the model without month dummies. The second uses the pooled means of month dummies for all countries, i.e. assuming the same distribution of months for all countries (which can be obtained using `margins, over(country) atmeans at(1.month=.25 2.month =.29 3.month=.21 4.month=.13 5.month=.12)`, with the values taken from the pooled means of the month dummies in our analytical sample). The third uses a balanced allocation, i.e. assuming an equal number of observations in each month (which can be obtained using `margins, over(country) atmeans at((asbalanced) month)` or equivalently in our example: `margins, over(country) atmeans at(1.month=.20 2.month =.20 3.month=.20 4.month=.20 5.month=.20)`). The choice between the last two types depends on the practitioner's preference. In either case, the difference between any two countries remains the same, since the model is linear.

3 Results

3.1 Descriptives

Table 1 reports the characteristics of our analytical sample. Our sample is consisted of 12,663 respondents across the six countries, with Germany having the largest sample, and Switzerland the smallest. Most participants were interviewed during the Autumn months (September, October, and November), while about a quarter were interviewed during the Winter months (December and January).[4] Overall, respondents reported a mean of 3.5 days of physical activity in the last 7 days before the interview, with a standard deviation of 2.5 days. Table 1 also reports descriptives of the variables used in the adjusted regression models, namely age, sex, income decile, ISCED level, living with a partner, and living with children.

We illustrate the asynchronous fieldwork across countries and interview dates graphically in Fig. 1. The left-hand side graph shows the cumulative frequency of interview date for each country, which represents the rate of the data collection during the fieldwork period. A line that is steep at the beginning and then flat suggests that the country conducted many interviews at the start of the fieldwork period, whereas an initially flat and progressively steep line suggests that the country delayed the collection of most interviews at the start of the fieldwork period. Thus, we observe that Switzerland advanced much faster the data collection, followed by Belgium, Finland, and the Netherlands, while Germany and Ireland lagged behind. Figure 1 also shows on the right-hand side the distribution of interview months across countries in percentages. It is evident that, although within a common fieldwork period, countries performed the fieldwork in very different patterns. For example, Switzerland started the data-collection process fast and within two months covered almost 80% of its target sample, whereas Germany and Ireland had only about 40% in that same period.

3.2 Main results

Table 2 shows the results of the unweighted regressions and demonstrates how the country coefficients change after the inclusion of month dummies. Columns (1) and (2) report the estimations without controls, while columns (3) and (4) present results from estimations using the controls described in the previous section.

The coefficients of the month dummies reveal that September is the month with the highest number of days doing physical activity. The gradually increasing magnitude as month goes towards January indicate that physical activity is being less and less prevalent in the winter months. Moreover, the coefficients of the country dummies change, especially for Switzerland. A joint test on the coefficients of the month dummies also provides a statistical test of the importance of asynchronous fieldwork in the outcome of interest. In this model, an F test gives a value of $F = 4.07$ with p value

[4] Note though that we classify 49 interviews in late August as September, and 78 interviews in early February as January. The reason for this was that the observations for these two months were very few to be included separate in the analysis, so we combined them with the adjacent months in order to keep them in the sample. Our results are not affected by the inclusion of these observations.

Table 1 Descriptive statistics of ESS analytical sample

Variable		Mean	SD
Physical activity last 7 days		3.5	2.5
Age		49.4	18.6
		N	%
Country	Belgium	1766	13.9
	Switzerland	1516	12.0
	Germany	3012	23.8
	Finland	2082	16.4
	Ireland	2371	18.7
	Netherlands	1916	15.1
Month	September	3100	24.5
	October	3698	29.2
	November	2655	21.0
	December	1659	13.1
	January	1551	12.2
Sex	Male	6161	48.7
	Female	6502	51.3
Income	1st decile	975	7.7
	2nd decile	1095	8.6
	3rd decile	1169	9.2
	4th decile	1151	9.1
	5th decile	1206	9.5
	6th decile	1215	9.6
	7th decile	1292	10.2
	8th decile	1204	9.5
	9th decile	951	7.5
	10th decile	908	7.2
	Refusal/unkown	1497	11.8
Education	ISCED I	1107	8.7
	ISCED II	2268	17.9
	ISCED IIIb	2438	19.3
	ISCED IIIa	1702	13.4
	ISCED IV	2118	16.7
	ISCED V1	1283	10.1
	ISCED V2	1668	13.2
	Refusal/unknown	79	0.6
Partner	Lives without	4944	39.0
	Lives with	7719	61.0
Children	Lives without	8445	66.7
	Lives with	4218	33.3
Total		12,663	100

Based on analytical sample

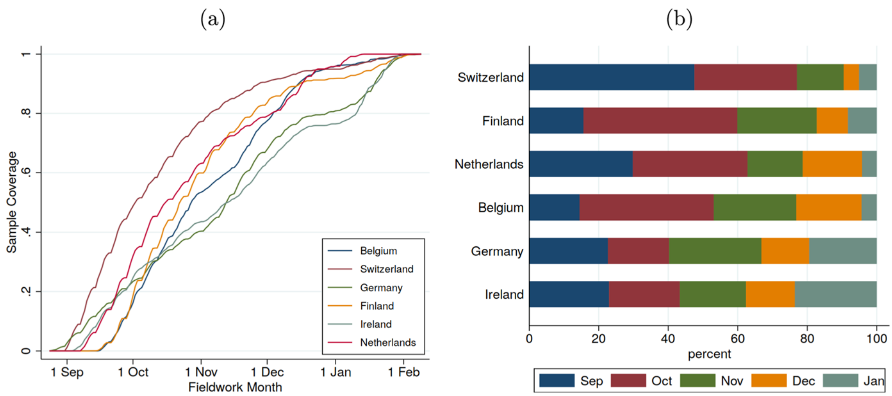

Fig. 1 Sample coverage by month

Table 2 Estimates of country and time effects for physical activity

	(1)	(2)	(3)	(4)
Belgium	Ref	Ref	Ref	Ref
Switzerland	0.913***	0.850***	0.880***	0.808***
	(0.089)	(0.091)	(0.090)	(0.092)
Germany	0.903***	0.909***	0.871***	0.879***
	(0.076)	(0.077)	(0.078)	(0.079)
Finland	1.022***	1.013***	1.022***	1.014***
	(0.079)	(0.080)	(0.081)	(0.081)
Ireland	0.752***	0.761***	0.831***	0.847***
	(0.080)	(0.082)	(0.081)	(0.083)
Netherlands	0.590***	0.566***	0.623***	0.598***
	(0.084)	(0.085)	(0.085)	(0.085)
September		Ref		Ref
October		−0.127**		−0.149**
		(0.063)		(0.063)
November		−0.158**		−0.180***
		(0.069)		(0.069)
December		−0.259***		−0.295***
		(0.080)		(0.080)
January		−0.272***		−0.323***
		(0.081)		(0.081)
Controls	No	No	Yes	Yes
N	12,663	12,663	12,663	12,663

Robust standard errors in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Columns 1 and 2 are based on a model without controls. Columns 3 and 4 are based on models which include, in addition to country dummies and month dummies: age, sex, income decile dummies, ISCED level dummies, a dummy for living with a partner, and a dummy living with children

Table 3 Post-estimation: Predictions of physical activity by country

	(1) Base	(2) Pooled	(3) Balanced	(4) Base	(5) Pooled	(6) Balanced
Belgium	2.813	2.823	2.797	2.813	2.825	2.794
	(0.060)	(0.061)	(0.061)	(0.060)	(0.060)	(0.061)
Switzerland	3.726	3.673	3.647	3.726	3.666	3.635
	(0.066)	(0.067)	(0.069)	(0.066)	(0.067)	(0.069)
Germany	3.716	3.732	3.706	3.716	3.736	3.704
	(0.046)	(0.047)	(0.047)	(0.046)	(0.047)	(0.047)
Finland	3.835	3.836	3.81	3.835	3.837	3.806
	(0.052)	(0.053)	(0.054)	(0.052)	(0.053)	(0.054)
Ireland	3.565	3.584	3.558	3.565	3.589	3.557
	(0.053)	(0.054)	(0.053)	(0.052)	(0.053)	(0.053)
The Netherlands	3.403	3.389	3.363	3.403	3.387	3.356
	(0.059)	(0.059)	(0.060)	(0.059)	(0.059)	(0.060)
Controls	No	No	No	Yes	Yes	Yes
N	12,663	12,663	12,663	12,663	12,663	12,663

Robust standard errors in parentheses. Base predictions use sample means of month dummies in each country. Pooled predictions use the pooled means of month dummies for all countries (assuming the same distribution of months for all countries). Balanced predictions use an equal number of observations in each month for every country. Columns 1–3 are based on estimations without controls (only country dummies and month dummies), while columns 4–6 are based on estimation with controls. Controls include, in addition to country dummies and month dummies: age, sex, income decile dummies, ISCED level dummies, a dummy for living with a partner, and a dummy living with children

0.003, rejecting being jointly zero. The magnitudes of the month dummies are also indicative of the scale of difference one can expect in the predictions when accounting for interview month.

Table 3 presents the three types of post-estimation predictions: the baseline prediction, the pooled prediction assuming the same distribution across months, and the balanced prediction assuming balanced distribution across months. Using the model without controls (Columns (1)–(3)), we can compare, for example, Switzerland and Germany. The baseline prediction results in similar levels of physical activity for these two countries (3.726 for Switzerland and 3.716 for Germany); however, if we account for interview months we see a statistically significant difference of 0.07 ($p < 0.05$) in the model with controls, with Germany now surpassing Switzerland (column (5) in Table 3).[5] This is due to the prediction for Switzerland going down, as it had a larger share of early months (September/October), and the prediction for Germany going up, as it had a larger share of later months (December/January). These changes are also observed in the weighted regressions, which show similar trends in the month dummies and similar directions in the change of predictions (Tables 4 and 5 in the Appendix, using the provided calibrated weights and design weights, respectively).

[5] Note that while the predictions are different between Pooled and Balanced distributions of months, the differences between countries are always the same between the two ways, as a common among-countries distribution of months is applied in both ways.

4 Discussion

This paper emphasizes the importance of controlling for asynchronicity and the likely biases arising when this data-collection feature is omitted from analyses. The main application of this paper focuses on physical activity as an outcome of interest for cross-country comparisons (Marques et al. 2016; Huijts et al. 2017), which has been recognized to suffer from seasonality (Matthews et al. 2001; Pivarnik et al. 2003; Ma et al. 2006; O'Connell et al. 2014). In particular, physical activity has been found to decrease during winter and increase during spring, compared to the rest of the year (Ma et al. 2006; O'Connell et al. 2014). Therefore, country coefficients are likely to be downward biased for countries with higher share of data collected during winter, and upwards for spring.

Our application focused on physical activity using six countries from the 7th round of the European Social Survey. In the Appendix, we present similar results obtained using another cross-country survey, the International Social Survey Programme (ISSP) from 2011 which focused on health and healthcare and includes a question on physical activity (ISSP 2015). In this survey, the overlap in months is much smaller as the fieldwork period was much longer, thus more caution is needed in the inferred seasonal trends. Therefore, we present the results based on the ISSP in Table 6 in the Appendix. Overall, the conclusions are similar. Physical activity exhibits seasonality with lower levels during winter and higher levels during summer. Comparisons of countries are also affected if one omits accounting for the asynchronous fieldwork months, and the direction of change in predictions in post-estimation is similar to the one observed in our main application.

Further applications may include outcomes such as doctor visits, but also subjective measures such as life-satisfaction and happiness, for which respondents may be affected by the season of the year. Several other studies may suffer from similar asynchronous fieldwork, such as the European Values Survey, the European Quality of Life Survey, the Survey of Health, Ageing and Retirement in Europe, and the Global Value Study, among others. Broadly speaking, cross-country surveys are more susceptible to asynchronicity in data collection.

Overall, this paper emphasizes two areas of recommendation. First, survey designers are encouraged to organize the fieldwork not only within a common period but, crucially, with a similar pattern across months within this period. Ideally, this should be done by collecting monthly samples, as is the case for Understanding Society in the UK (Buck and McFall 2011). However, more flexible alternatives may be considered, such as imposing a various benchmarks by which a certain proportion of the total sample should be interviewed.

A second recommendation concerns researchers who are advised to include seasonal dummies in their estimations in order to avoid erroneous cross-country comparisons. This regression-adjustment solution is not unique and alternative methods accounting for seasonality may be considered, such as weighting or matching. A likely limitation researchers may face is the possible under-sampling of respondents in each given month. This, however, may be corrected for, depending on the application of interest. For example, for labour-market applications researchers may group adjacent months into quarters, while for health or health-utilization outcomes (such as doctor visits or waiting times) one may simply consider two seasons, one including the months expected to be busiest and one including the remaining months.

5 Conclusion

This paper makes a contribution to the literature on cross-country modelling and provides a sensible recommendation in dealing with seasonality. While we demonstrate this using physical activity as an outcome, this is likely to affect many other health and healthcare outcomes. Although the proposed solution is trivial, seasonal-induced biases have been largely neglected in the literature. The conclusions drawn in this paper are generalizable to most other regional and global cross-national surveys, and should be useful to future studies exploring such cross-country comparisons of outcomes with potential seasonal variation.

Data availability All data used are publicly available at https://doi.org/10.21338/NSD-ESS7-2014 (European Social Survey Round 7 2014) and https://doi.org/10.4232/1.12252 (International Social Survey Programme 2011).

Appendix

See Tables 4, 5, and 6.

Table 4 Weighted regressions using post-stratification weights

	(1) Without	(2) With	(3) Base	(4) Pooled	(5) Balanced
Belgium	Ref	Ref	2.792	2.781	2.750
			(0.061)	(0.063)	(0.065)
Switzerland	0.877***	0.848***	3.710	3.671	3.640
	(0.095)	(0.099)	(0.066)	(0.069)	(0.073)
Germany	0.852***	0.888***	3.684	3.709	3.679
	(0.090)	(0.092)	(0.053)	(0.054)	(0.053)
Finland	1.055***	1.054***	3.821	3.809	3.778
	(0.085)	(0.086)	(0.053)	(0.055)	(0.058)
Ireland	0.930***	0.971***	3.709	3.742	3.712
	(0.088)	(0.091)	(0.057)	(0.059)	(0.058)
Netherlands	0.632***	0.621***	3.442	3.419	3.389
	(0.093)	(0.094)	(0.068)	(0.069)	(0.071)
September		Ref			
October		−0.011			
		(0.100)			
November		−0.085			
		(0.107)			
December		−0.140			
		(0.123)			
January		−0.295**			
		(0.132)			
Controls	Yes	Yes	Yes	Yes	Yes
Observations	12,663	12,663	12,663	12,663	12,663

Linearized standard errors in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include, in addition to country dummies and month dummies: age, sex, income decile dummies, ISCED level dummies, a dummy for living with a partner, and a dummy living with children. Base predictions use sample means of month dummies in each country. Pooled predictions use the pooled means of month dummies for all countries (assuming the same distribution of months for all countries). Balanced predictions use an equal number of observations in each month for every country

Table 5 Weighted regressions using design weights

	(1) Without	(2) With	(3) Country	(4) Pooled	(5) Balanced
Belgium	Ref	Ref	2.813	2.814	2.790
			(0.060)	(0.061)	(0.063)
Switzerland	0.867***	0.823***	3.726	3.684	3.659
	(0.092)	(0.096)	(0.066)	(0.068)	(0.072)
Germany	0.816***	0.828***	3.677	3.692	3.667
	(0.082)	(0.084)	(0.048)	(0.049)	(0.049)
Finland	1.034***	1.031***	3.835	3.832	3.807
	(0.083)	(0.083)	(0.052)	(0.053)	(0.056)
Ireland	0.903***	0.923***	3.688	3.711	3.686
	(0.086)	(0.089)	(0.056)	(0.057)	(0.056)
Netherlands	0.655***	0.640***	3.457	3.442	3.418
	(0.090)	(0.090)	(0.064)	(0.065)	(0.067)
September		Ref			
October		−0.087			
		(0.091)			
November		−0.094			
		(0.098)			
December		−0.194*			
		(0.114)			
January		−0.260**			
		(0.118)			
Controls	Yes	Yes	Yes	Yes	Yes
Observations	12,663	12,663	12,663	12,663	12,663

Linearized standard errors in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include, in addition to country dummies and month dummies: age, sex, income decile dummies, ISCED level dummies, a dummy for living with a partner, and a dummy living with children. Base predictions use sample means of month dummies in each country. Pooled predictions use the pooled means of month dummies for all countries (assuming the same distribution of months for all countries). Balanced predictions use an equal number of observations in each month for every country

Table 6 Coefficients and AMEs in ISSP

Variables	(1) Without	(2) With	(3) Country	(4) Pooled	(5) Balanced
Belgium	Ref	Ref	2.894	2.903	2.916
			(0.024)	(0.029)	(0.031)
Bulgaria	0.037	−0.103	2.890	2.760	2.773
	(0.052)	(0.068)	(0.046)	(0.060)	(0.058)
Croatia	−0.165***	−0.179***	2.722	2.717	2.730
	(0.045)	(0.053)	(0.037)	(0.044)	(0.046)
Czech Republic	0.148***	0.202***	3.017	3.082	3.094
	(0.039)	(0.059)	(0.029)	(0.046)	(0.046)
Denmark	0.495***	0.520***	3.473	3.508	3.521
	(0.042)	(0.068)	(0.031)	(0.056)	(0.055)
Finland	0.435***	0.317***	3.347	3.238	3.250
	(0.037)	(0.054)	(0.028)	(0.044)	(0.041)
France	0.252***	0.244***	3.106	3.108	3.120
	(0.034)	(0.042)	(0.023)	(0.030)	(0.033)
Germany	0.423***	0.381***	3.336	3.304	3.316
	(0.042)	(0.048)	(0.032)	(0.037)	(0.038)
Israel	−0.275***	−0.261***	2.621	2.644	2.656
	(0.050)	(0.064)	(0.042)	(0.054)	(0.054)
Italy	−0.317***	−0.307***	2.559	2.578	2.590
	(0.048)	(0.051)	(0.040)	(0.048)	(0.049)
Lithuania	−0.075	−0.068	2.796	2.813	2.825
	(0.049)	(0.056)	(0.042)	(0.051)	(0.052)
Netherlands	0.502***	0.499***	3.354	3.360	3.373
	(0.043)	(0.050)	(0.035)	(0.041)	(0.043)
Poland	−0.145***	−0.150**	2.740	2.744	2.756
	(0.051)	(0.060)	(0.045)	(0.053)	(0.054)
Portugal	−0.128**	−0.100	2.626	2.664	2.677
	(0.055)	(0.063)	(0.048)	(0.054)	(0.054)
Russia	−0.674***	−0.672***	2.188	2.200	2.212
	(0.046)	(0.064)	(0.037)	(0.055)	(0.056)
Slovak Republic	0.269***	0.271***	3.111	3.123	3.135
	(0.047)	(0.050)	(0.039)	(0.046)	(0.047)
Slovenia	0.590***	0.600***	3.455	3.474	3.487
	(0.047)	(0.054)	(0.040)	(0.043)	(0.045)
Spain	0.219***	0.199***	3.034	3.024	3.036
	(0.040)	(0.047)	(0.030)	(0.037)	(0.039)
Sweden	0.469***	0.513***	3.357	3.411	3.423
	(0.042)	(0.058)	(0.033)	(0.046)	(0.048)

Table 6 continued

Variables	(1) Without	(2) With	(3) Country	(4) Pooled	(5) Balanced
Switzerland	0.570***	0.558***	3.473	3.471	3.483
	(0.045)	(0.051)	(0.036)	(0.039)	(0.040)
Turkey	−0.529***	−0.524***	2.247	2.262	2.274
	(0.045)	(0.060)	(0.035)	(0.049)	(0.050)
Great Britain	0.241***	0.141**	3.132	3.042	3.055
	(0.052)	(0.062)	(0.045)	(0.054)	(0.052)
United States	0.650***	0.639***	3.537	3.535	3.548
	(0.042)	(0.048)	(0.033)	(0.037)	(0.039)
January		Ref			
February		−0.056			
		(0.057)			
March		−0.039			
		(0.065)			
April		0.019			
		(0.067)			
May		0.000			
		(0.067)			
June		0.063			
		(0.068)			
July		0.030			
		(0.072)			
August		0.154**			
		(0.074)			
September		0.152**			
		(0.077)			
October		0.090			
		(0.088)			
November		−0.000			
		(0.058)			
December		0.012			
		(0.051)			
Controls	Yes	Yes	Yes	Yes	Yes
Observations	32,672	32,672	32,672	32,672	32,672

Robust standard errors in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Controls include, in addition to country dummies and month dummies: age, sex, education level dummies, a dummy for living with a partner, and number of children in household. Base predictions use sample means of month dummies in each country. Pooled predictions use the pooled means of month dummies for all countries (assuming the same distribution of months for all countries). Balanced predictions use an equal number of observations in each month for every country

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