



# Sports and cultural habits by gender: An application using count data models <sup>☆</sup>



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## ABSTRACT

This article analyses individual decisions regarding participation in two leisure activities: sports and culture. Using data from the 2002–2003 Spanish Time Use Survey (TUS), information was collected on the number of times an individual participated in sports and attended cultural events in the four weeks immediately preceding the survey. In our empirical analysis, we apply count data models to estimate the frequency of sports practice and cultural attendance, both defined in the aggregate, and we also apply those models to estimate specific activities. Moreover, we run separate estimates by gender. Our results reveal that both activities are seasonal and are more common in urban areas. In addition, family responsibilities and family size are a disincentive to engage in such activities, while non-labour income and wages exert a positive effect. In analysing the demand for specific activities, we find that participation elasticity with respect to non-labour income is usually less than one for the cultural and sports activities considered, whereas wage elasticity is generally greater than one. We also find differences by activity and gender.

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## 1. Introduction

Leisure comprises many activities, such as sports and culture. These activities share important features: they enable social interaction, contribute to individual welfare and may generate positive externalities (e.g., improvements in education or social integration). A vast body of economic literature regarding individual time allocation has been developed using Becker's household production model (Becker, 1965). Becker's approach focuses on the individual allocation of time decisions, paying special attention to non-working time and assuming rationality.

This paper analyses the behaviour of Spaniards with regard to the following leisure activities: practicing recreational sports and attending cultural events. The empirical analysis is based on information provided by the 2002–2003 Spanish Time Use Survey (TUS) (*Encuesta de Empleo del Tiempo*) conducted by the Spanish National Statistics Institute (INE). The TUS is the first survey on individual time use in Spain. Specifically, we study the correlates of the number of times an individual has attended cultural events and practiced sports during the previous four weeks.

The main objective of this paper is to test whether participation in cultural or sports activities and the frequency of such participation respond to the same explanatory variables. First, we estimate separate

demands for sports and cultural events in the aggregate, and we subsequently apply the model to estimate specific activities. We use socio-demographic and economic variables as correlates and compute wage and non-labour income elasticities in order to determine whether relevant differences in behaviour exist depending on the activity in question. These elasticities are indicative of the importance of the economic variables in the practice of specific sports and attendance at various cultural events.

In addition, we run separate estimates by gender. Gender is a key variable in leisure time allocation research. In fact, previous studies have generally found important differences between males and females in leisure time demands. However, most of the literature that focuses on sports and cultural participation does not distinguish samples by gender and instead includes gender only as an explanatory variable.

The rest of the paper proceeds as follows: Section 2 reviews the literature on participation in sports and cultural activities. Section 3 discusses the database and defines the dependent and independent variables that are used in our empirical estimates. Section 4 analyses the econometric methodology in detail. Section 5 shows the results for aggregated and specific activities and compares them with the previous literature on the subject. Section 6 provides a summary and our main conclusions.

## 2. Literature review

The beneficial effects of cultural activities and sports for individuals, as well as society as a whole, have led to a large number of recent

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studies on the socioeconomic factors explaining individual participation in these leisure activities. Breuer et al. (2010) and Downward et al. (2009, 2011) review the economic literature on sports,<sup>1</sup> and Seaman (2005, 2006) surveys the contributions of cultural economics. Both of these streams of literature have generally progressed separately. However, Fernández-Blanco and Prieto-Rodríguez (2001), Kopczynski and Hager (2003), Montgomery and Robinson (2006, 2008, 2010), Swanson et al. (2008), and Loyland and Ringstad (2009) have conducted joint analyses of sports and cultural activities.

When analysing time allocation toward cultural and sports activities, a distinction is typically made between three modes of participation: attendance (e.g., going to the theatre or to football games), engaging in activities (e.g., jogging, playing an instrument), and consuming cultural and sports programmes across diverse mass media (McCarthy and Jinnett, 2001).

Moreover, empirical analyses use different measures of participation. Whilst some studies focus on whether individuals perform or not the activity in question, others also analyse the frequency or intensity of participation. This frequency (intensity) is measured as the number of times an individual participates in the activity or as the time spent on the activity in a given period.

In sports economics, Farrell and Shields (2002), Stratton et al. (2005), Taks and Scheerder (2006), Hovemann and Wicker (2009), Breuer et al. (2010), and Van Tuyckom et al. (2010) belong to the first group mentioned above.<sup>2</sup> While Farrell and Shields (2002) use a Random Effects Probit Model, all the other studies apply logistic regression to estimate participation decisions. The majority of these studies conclude that males participate in sports more frequently than do females. Participation usually has a direct relationship with an individual's educational level and income. There is also a positive association between sports participation and health. In contrast, family responsibilities appear to place a constraint on participation, as married or cohabiting individuals and parents, tend to engage in sports to a lesser extent.

The second set of research in the field of sports participation examines not only whether individuals participate in sports but also the frequency with which they do so. Here, Tobit and Heckman selection models are often used to study engagement and intensity.<sup>3</sup> However, other econometric approaches have been applied, such as the double-hurdle model (Buraimo et al., 2010; Humphreys and Ruseski, 2011), the Zero-Inflated Ordered Probit (Downward et al., 2011) and the Seemingly Unrelated Regression methodology (García et al., 2011; Muñiz et al., 2011). Within the studies that focus on frequency, we would also like to highlight the following recent empirical studies: Humphreys and Ruseski (2006, 2007, 2011), Lera-López and Rapún-Gárate (2007), Ebert and Smith (2010), Dawson and Downward (2011), and Ruseski et al. (2011). There is a consensus in these studies that men are more involved in sports and do sports more frequently than females. Economic variables, such as income, usually have a positive influence on participation. However, some studies find the opposite effect on frequency of participation. In addition, married people are less likely to participate in sports and furthermore their frequency of participation is lower than the rest. Finally, educational level positively affects participation, although contradictory results regarding its effect on the frequency of participation have been reported.

In cultural economics, it is also common to use discrete choice models to analyse individual participation. Again, we differentiate between studies that focus exclusively on participation (e.g., Favaro and Frateschi, 2007; Hand, 2009) and those that simultaneously analyse whether repetitive behaviour exists within this mode of participation.

In the first category, Favaro and Frateschi (2007) and Hand (2009) analyse participation in musical activities, applying a multinomial Logit model. Lévy-Garboua and Montmarquette (1996), Bihagen and Katz-Gerro (2000), Fisher and Preece (2003), Borgonovi (2004), Ateca-Amestoy (2008, 2010), and Masters et al. (2011) have conducted notable studies measuring the frequency of participation. The econometric methodologies that are applied vary from author to author, in part depending on the available data. Lévy-Garboua and Montmarquette (1996) use the Heckman model to examine the demand for theatre. Bihagen and Katz-Gerro (2000) estimate ordinary least squares (OLS) models to research cultural consumption patterns, and Fisher and Preece (2003) use a linear probability model to evaluate musical concert audiences. Borgonovi (2004) employs ordered logistic models to analyse performing arts attendance for theatre, classical music, opera, ballet, and dance. Ateca-Amestoy (2008, 2010) examines theatre attendance and other cultural event attendance using Zero-Inflated Count Data models. Finally, Masters et al. (2011) investigate the determinants of attendance at various performing arts and art galleries using ordered Probit models. The main results of these studies show that variables such as income, age, gender, household composition, and degree of urbanisation affect both cultural participation and the frequency of such participation. Furthermore, most of these studies report that cultural variables have greater power than economic factors in explaining participation.

In the field of sports economics, Dawson and Downward (2011) recently used count data models to examine the relationship between actively practicing sports and watching sports events live or via the media. In the field of cultural economics (apart from Ateca-Amestoy (2008, 2010)), count data have been used to analyse demand for various cultural activities: film festivals (Devesa et al., 2009), reading habits (Fernández-Blanco and Prieto-Rodríguez, 2009), and participation in Spanish Easter Week (Palma et al., 2013).

The literature on sports economics often includes gender as an explanatory variable in models of sports participation (e.g., Farrell and Shields, 2002; Humphreys and Ruseski, 2006, 2007; Taks and Scheerder, 2006). Humphreys and Ruseski (2011) point out that differences in behaviour between genders may be due to biological factors as well as social and cultural influences that differentially affect the behaviour of males and females. All these factors give rise to a complex relationship between family responsibilities, social expectations and work.

Cultural economics has also addressed the issue of gender differences. Participation in performing arts is usually reported to be a female phenomenon (Ateca-Amestoy, 2008; Castiglione, 2011; Gray, 2003). Theoretically, explanations of the differences in participation in terms of gender are based on two frameworks: the battle of the sexes and the human capital approach. According to the battle of the sexes (Luce and Raiffa, 1957), single males derive greater utility from attending sports events than from attending art events, and vice versa for females, whereas married individuals derive utility from participating in activities with their spouse. The human capital approach (Upright, 2004) assumes that differences in behaviour are based on the early socialisation to the arts in females. This socialisation argument helps explain how the gender gap in cultural capital is transferred from one generation to the next (Bourdieu, 1984; Lizardo, 2006).<sup>4</sup> Although their hypotheses differ, these two models predict that the attendance patterns of married males and females will converge compared to those of singles (Montgomery and Robinson, 2010).

Given the differences found in the literature between males and females, we perform separate estimates by gender. We consider this approach to be more flexible than a joint estimation that includes a gender dummy as an explanatory variable, as it allows the effects of the explanatory variables to vary by gender.

<sup>1</sup> Bauman et al. (2002) provides a review of the literature focused on sports participation in the health literature.

<sup>2</sup> There are few studies focused on participation in certain types of sports (Breuer et al., 2011; Humphreys and Ruseski, 2007), which is not the case in cultural economics, where there are ample studies for the various performing arts (Gray, 2003).

<sup>3</sup> See e.g. Downward and Riordan (2007) for an application of Heckman models and Downward and Raschke (2010) for an application of Tobit models.

<sup>4</sup> Cultural capital can be defined as the acquired taste that enables individuals to appreciate art (Klamer, 2002).

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