

# Debunking myths and building realities: Human body donation in times of crisis

**Francisco J. Valderrama-Canales, Eva Maranillo Alcaide, Fermín Viejo Tirado, Ángel Peña Melián, Teresa Vázquez Osorio**

*Department of Human Anatomy & Embryology I, Faculty of Medicine, Complutense University of Madrid, Madrid, Spain*

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A recent publication based on the study of 536 questionnaires answered by surgeons and clinicians about the relevance of basic sciences in undergraduate studies (gross anatomy, physiology, and pharmacology) reached the conclusion that the role of gross anatomy is more relevant in health studies (Sañudo et al., 2007; Arráez et al., 2010). Teaching gross anatomy is based on the dissection of human cadavers, and it therefore relies on the availability of human bodies. Consequently, body donation is a crucial aspect for any department of Anatomy.

Historically, Spanish departments of Anatomy have experienced a very low rate of body donation. The Faculty of Medicine of the Complutense University of Madrid, one of the biggest in Spain, only registered 20 bodies for 500 students during the year 1967 (Delmas, 1967). During the seventies and eighties of the nineteenth century many departments of Anatomy made body donors campaigns. However, the results of these were never published, as far as we know.

The lack of reliable data does not mean that an important number of anatomists report to media their personal perceptions about the number of donors, admissions, or causes of donation. For instance, the Head of our department in 2010 (Dr. Jorge A. Murillo) declared to a relevant Spanish newspaper, *El País*, that: «*The increase (in the number of donors and body admissions in the anatomical departments) responds an economical reason: burials are too expensive and many old people want to spare their sons from the expenses.*» The journalist follows with this interviewed assert: «*...Jorge Murillo... has seen increase the donations to 40% in two years...*» (García, 2010).

Taking into consideration the absence of quantitative studies, we have undertaken this study. We have reviewed the records of our own department during the period of time between 1981 and May 2012. A total of 3.271 signed donor forms were checked and 364 body admissions recorded. In that period of time (31 years), we have analysed: 1) number of people that became a donor in each year (Table 1); 2) body admissions per year (Table 1); and 3) year when he/she became donor for each body admission (Table 2).

When these data are represented graphically, they show that the curve “donors” rises

Corresponding author:

Francisco J. Valderrama-Canales. Dpto. de Anatomía y Embriología Humana I, Facultad de Medicina, Universidad Complutense, Campus Universitario, 28040 Madrid, Spain. Phone / Fax: +34 91 394 13 74. E-mail: fvalde@med.ucm.es

YEAR	Nº DONORS	Nº BODY ADMISSIONS
1981	6	0
1982	31	0
1983	17	1
1984	32	0
1985	16	1
1986	22	1
1987	21	5
1988	23	0
1989	22	0
1990	26	2
1991	14	2
1992	29	1
1993	18	0
1994	27	8
1995	37	5
1996	28	9
1997	36	7
1998	38	7
1999	47	11
2000	58	12
2001	82	11
2002	82	13
2003	71	20
2004	114	16
2005	250	16
2006	338	24
2007	280	42
2008	331	24
2009	293	30
2010	384	41
2011	330	42
2012 (january to may)	168	13
<b>TOTAL Nº</b>	<b>3271</b>	<b>364</b>

Table 1. Number of donors and body admissions per year from 1981 to 05/2012.

progressively from the low numbers in the beginning of the studied period, increasing its slope at the end of the last century, and suffering a prominent increase around 2003, to remaining fairly stable around 300 donors from 2006 up to the present (Fig. 1). The curve “body admissions” displays a slow but continuous increase in its numbers, keeping above 20 bodies per year from 2006 up to the present (Fig. 1). On the other hand, the relation between the year when someone became a donor and the year of his/her body admission shows that the body admissions for a defined year came mainly from people who became donors in the same year, or the year before (Fig. 2).

The data obtained from the historical records of our archives allow us to reach three conclusions:

1. Donors campaigns or donations of important persons (Fig. 1) have undergone a progressive and continuous increase in the

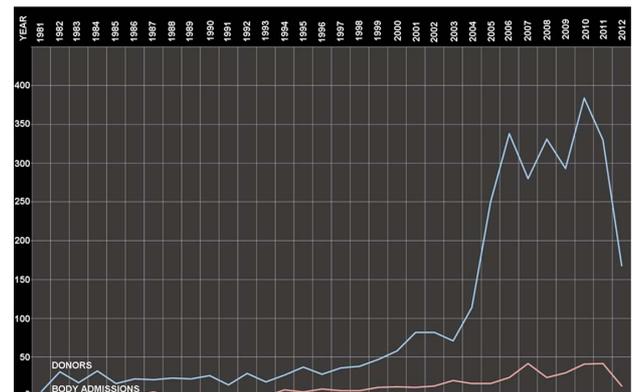


Figure 1. Curves of the number of donors and body admission along the period studied.

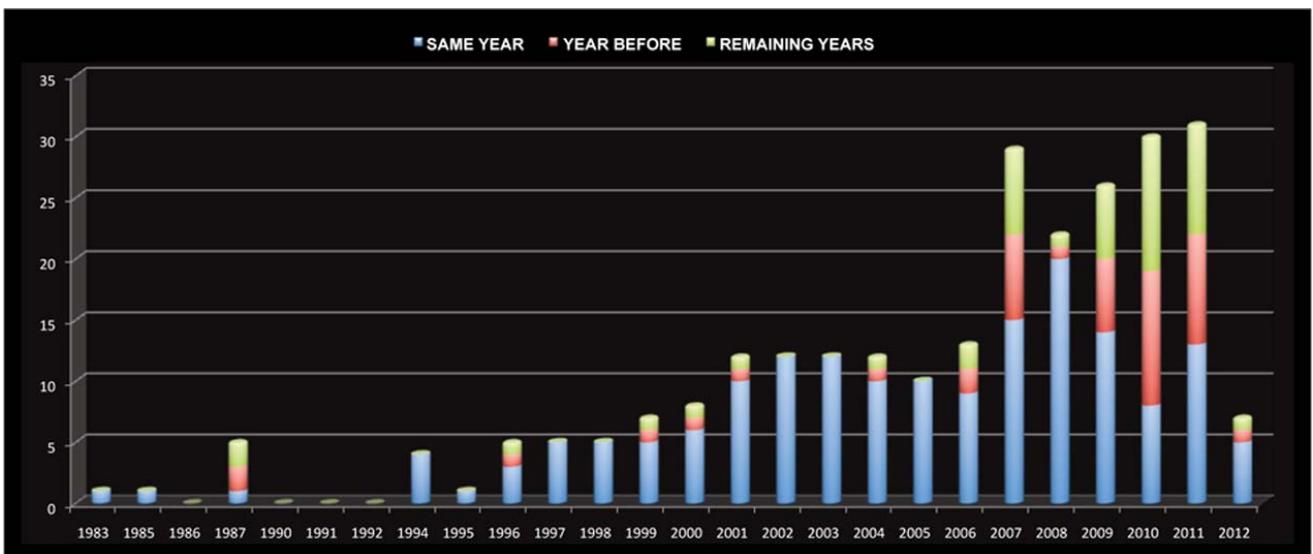


Figure 2. Bars diagram showing the number of body admissions pertaining to people that became donor in the same year of the death, the year before, and the remaining years.

YEAR BECOME DONOR	YEAR OF BODY ADMISSION																					
	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1992	1991	1990
2012	5																					
2011	1	13																				
2010	2	9	8																			
2009		3	11	14																		
2008	2	5	3	6	20																	
2007	1	2	1	1	1	15																
2006		3	5	3		7	9															
2005		1	3	1	1	7	2	10														
2004		1	2				3		10													
2003			1	1		5	1		1	12												
2002	2		1	2			3	2	1		12											
2001		2	2			2		1		2		10										
2000				1			1		3	1		1	6									
1999			1	1		3	1			2			1	5								
1998			1		1			1				1	1	5								
1997						1		1		1					5							
1996							3		1							3						
1995		1					1						1		1		1					
1994										2										4		
1993													1				1	1				
1992			1											1	1	1		1	1			
1991		1				1											1					
1990													1				3	1				
UNKNOWN														1								1
Nº BODIES/YEAR	13	41	40	30	23	41	24	15	16	20	12	11	11	8	7	6	9	4	5	0	0	1

Table 2. Correlation between the year of the body admissions and the year the deceased became donor in the period between 1990 and 05/2012.

number of donors and body admissions along the registered years, without any relevant disturbance in the curve.

2. If we regard 2008 as the first year of the economic crisis, the evolution in the number of donors between 2006 and 2011 is quite similar (Fig. 1). Also, the projection of the expected numbers for 2012, taking into account the rate of the first five months, will yield similar results to those for 2007, 2010 and 2011. In a recent study, despite the current economic recession, only 8% of respondents are prompted by economic motives to bequeath their bodies (Bolt et al., 2010). In that study the principal factor analysis revealed three dimensions underlying ten different motivations for body donation: a desire to be useful after death, a negative attitude towards funerals, and expression of gratitude (Bolt et al., 2010).

3. The correlation between donors and the year of body admission is very similar along the analysed period, and the higher percentage of body admissions occurs just in the period comprising the year of death and the year before. This situation is known as «last-minute» donations (Wijbenga et al., 2010). The abovementioned study showed that a substantial number (an average 29%) of persons registered between 2003 and 2008 died with-

in one year after registration, and seem to have made a «last-minute» donation decision (Wijbenga et al., 2010). «Last-minute» registrations are significantly more likely to relate to male than to female donors (Wijbenga et al., 2010).

Our hypothesis for «last-minute» donation is that, just as many people think along their lives about the funeral (cremation or burial) and decide at the last moment, so do people think about the possibility of donation.

#### FINAL COMMENTS AND SUGGESTIONS

1. This should encourage similar studies with the aim of predicting numbers of admission for future years, taking into account the correlation of number of registered body donations and «last -minute» decisions.

2. As the bequest comes from citizens, maximum transparency of data should be a duty. This should require complementary information concerning requirements for becoming a donor, application forms, specific uses of bodies (preclinical, continuing professional courses, research, etc.), thanksgiving services, etc. All these should be published in our websites.

3. Studies should be promoted in order to record not only the information analysed here

but another important items, such as caused of death, causes of rejection, nationalities, profession, religion, motives for donation, etc. All these issues should contribute to obtain more accurate knowledge of our «benefactors». This knowledge could facilitate more efficient future donors campaigns.

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