



Segmenting volunteers by motivation in the 2012 London Olympic Games



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HIGHLIGHTS

- We conducted a survey of a total of 11,421 London Olympic volunteers.
- We employed a combined factor-clustering method to extract distinct volunteer segments.
- We found three meaningful distinct segments.
- The obligated group contained the largest number of volunteers among three groups.
- The enthusiastic group had the highest satisfaction and the highest retention.

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ABSTRACT

The present research employed seven motivational factors to delineate sports-event volunteer segments for the 2012 London Olympic Games. The investigators conducted a survey of 11,421 volunteers in the 2012 London Olympic Games and used the factor-clustering method to identify three distinct segments (i.e., the obligated, the enthusiastic, and the semi-enthusiastic). In addition, these segments' overall satisfaction, behavioral intentions for other future events, and socio-demographic backgrounds were assessed, uncovering significant differences among the segments. An ANOVA and a chi-square test found the segments to differ significantly from each other in all of these regards.

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1. Introduction

Across a myriad of public activities, from mega-events to local and regional get-togethers, sports-event volunteers are a crucial source of labor and support. Sports-event volunteers have become an indispensable component of the workforce during large athletic events, mega-events, like the Olympics (Reeser, Berg, Rhea, & Willick, 2005), and sports events rely on a large number of volunteers to help (Fairley, Kellett, & Green, 2007). Volunteering means non-salaried service (Cnaan, Handy, & Wadsworth, 1996) requiring a sense of obligation on the part of volunteers in terms of time, effort, and skills development (Holmes, Smith, Lockstone-

Binney, & Baum, 2010). Volunteering is a discretionary activity that is essentially a donation of time, even though the spectrum of activities can be seen as volunteering is broad (Cnaan et al., 1996). Volunteers are as diverse as the events in which they participate, with multivariate nationalities, races, ages, career backgrounds, and personal characteristics represented amongst them. Given this plethora of activities and characteristics of individuals, there must be diverse motives, needs, desires, and behavioral characteristics in play among volunteer groups. Better efficiency in the categorization of volunteers is essential to the organizations and industries that employ volunteers to support and operate their events.

At the same time, empirical studies have long considered motivation to be one of the key elements of segmentation research within the event context (e.g., Oyedele & Simpson, 2011). Motivation is stressed as an important precondition for satisfaction and behavioral intention (e.g., Pan & Ryan, 2007). Adapting these lines of research to the Olympic milieu, this study identifies specific volunteer motivations for the Olympics and provides a

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segmentation of the volunteer pool based on these motivations. This research is vital as selecting sports-event volunteers who are not only competent but who are drawn to the Olympics by appropriate motives that will be important to the success of future Olympiads. Since satisfaction plays a significant role in employee retention, it will also be useful to identify factors that relate to positive volunteer satisfaction (Costa, Chalip, Green, & Simes, 2006). Satisfied employees—and satisfied volunteers—are more likely to stay with their organizations (e.g., Borzaga & Tortia, 2006). Therefore, this research investigates the distinctiveness of clusters on satisfaction, future behavioral intentions, and socio-demographic variables.

Even as related studies on sporting-event volunteerism have investigated various motivations, levels of satisfaction, and behavioral intentions extensively, there has yet to be a produced specific study of volunteer segmentation and motivation employing a large sample of volunteers for a mega event such as the 2012 London Olympic Games. This failing leaves a crucial knowledge gap where volunteers are concerned. Further, relatively little of the research that has investigated volunteering for mega-events has been conducted using volunteers. To fill this gap and verify the characteristics of volunteers in advance of future Olympics, this research examines the motivations, satisfaction, and behavior of volunteers to develop meaningful volunteer segments. Moreover, to create a profile of the emerging clusters, this research presents socio-demographic profiles to design appropriate strategies for the organizations to target key audiences. Accordingly, the research evaluates the strategic importance of understanding the sports-event volunteer segments and profiles. Using different characteristics on each segment, this research will make suggestions for a targeted-communication approach for each volunteer group.

2. Literature review

2.1. Volunteer-motivation research

Motivation is considered to be one of the strongest psychographic variables affecting segmentation as it is a personal inner state that directly satisfies a felt need and triggers a behavioral intention (Park & Yoon, 2009). Motivation is therefore a key construct when attempting to understand an individual's decision to become a volunteer (Kim, Zhang, & Connaughton, 2010). Overall, event managers can benefit from establishing and developing an organizational process for recruiting, selecting, and retaining volunteers. Identifying the unique motivations of volunteers can help managers—including Olympic Games managers—to organize sports events that maximize volunteer participation, satisfaction, and retention. Knowing the motivations of volunteers can contribute to hosting a successful event and ensure the volunteer experience is worthwhile for both volunteers and organizers.

Among the dimensionalities addressing sport event volunteer motivations, the volunteer functions inventory has been used in various settings including sport volunteering (Eley & Kirk, 2002; Kim et al., 2010). This inventory includes six functions of volunteer motivation (i.e. value, understanding, social, career, protective, and enhancement) that have been identified by Clary et al. (1998). The value function refers to altruistic and humanitarian concern for others and distinguishes between volunteers and non-volunteers. The understanding function represents the opportunity to use knowledge, skills, and abilities that would otherwise not be used, while the social function implies developing relationships with new individuals or existing friends or engaging in an activity that is viewed favorably by a peer group. The career function means preparing for a new job field or volunteering so as to remain current in career status, as with résumé building. Finally, the protective

function refers to reducing negative emotions, and the enhancement function entails the positive aspects of building oneself up.

Some scholars (e.g. Farrell, Margaret, & David, 1998) have stated that motivations for special-event volunteerism are different from motivations for human-services volunteerism, such as that studied by Clary et al. (1998) and Cnaan and Goldberg-Glen (1991). It is, however, logically assumed that volunteers' have common motivations regardless of the types of events because volunteering is ultimately based on altruistic commitment to carry out assigned tasks without receiving payment or rewards of any other nature (Moreno, Moragas, & Paningua, 1999). In related veins, Güntert, Neufeind, and Wehner (in press) studied event volunteering in the context of a 2008 European football championship, making explicit use of the functional approach and modifying it to address sports-event volunteers' motives.

2.2. Motivation research in mega sport event volunteerism

Recently, volunteer motivation studies have more focused on mega sport events (e.g., Bang & Ross, 2009; MacLean & Hamm, 2007). In relation to Olympic volunteers specifically, the greatest motivations have been reported to be the desire of volunteers to associate themselves with the Olympic movement, to be involved in the Olympics, or to meet with Olympic athletes (Giannoulakis, Wang, & Grey, 2008). Bang and Ross (2009) added and validated another motivation category: Olympic values. That is, Olympic volunteering may also be motivated by pride in one's own country, social contact and friendship, or a desire to feel needed and valued by society (Minnaert, 2012).

Wang (2004) used five constructs—altruistic value, personal development, community concern, ego enhancement, and social adjustment—for volunteers at the Sydney 2000 Olympics. Edwards, Dickson, and Darcy (2009) surveyed volunteers of the Sydney World Masters Games 2009 using motivations including Olympic-related ideals and personal-development goals. Karkatsoulis, Michalopoulos, and Moustakatou (2005) explored the case of volunteers in the Athens 2004 Olympic Games. The Karkatsoulis study demonstrates that national identity was the major motivational factor for the 2004 Olympic volunteers. They found that, from the younger group (15–17 years) through to the older (over 65), volunteers expressed patriotic reasons for volunteering; the 18–24 year-old group—which constituted the hard core of volunteers—focused on this widely-held motive.

In addition, Kemp (2002) surveyed volunteers in the Lillehammer 1994 Olympic Winter Games and the Sydney 2000 Summer Olympic Games and found that volunteers in both events were strongly motivated by pride in their countries and culture, social contact, and friendship. Bang and Chelladurai (2009) validated the volunteer motivation scale (i.e., expression of values, patriotism, interpersonal contacts, career orientation, personal growth, and extrinsic rewards) for international sporting events in a study of the 2002 FIFA World Cup in Korea. Khoo and Engelhorn (2011) investigated motivational differences (i.e., commitments, external traditions, family traditions, purposiveness, and solidarity) in different demographic and experiential groups in an American national Special Olympics event. Ralston, Downward, and Limsdon (2004) found that three factors (altruism, involvement, and the uniqueness of the event) motivated volunteers in the 2002 Manchester Commonwealth Games; Reeser et al. (2005) found similar motives among volunteers at the 2002 Salt Lake City Winter Olympic Games.

2.3. Satisfaction and behavioral intentions

The satisfaction levels of volunteers have been examined in a variety of contexts including sporting events such as the Olympic

Games (e.g., [Treuren, 2014](#)). Relevant studies have attempted to define volunteers based on segmentation variables including behavioral intentions and motivations (e.g., [Jiranek, Kals, Humm, Strubel, & Wehner, 2013](#)). When compared with related prior research, this research considered a broader set of psychosocial aspects affecting motivations, satisfaction levels, and behavioral intentions. This enhanced methodology is crucial as the comprehension of motivations is a precursor to understanding individuals' behavioral intentions. The current examination of event volunteers' satisfaction and future behavioral intentions will allow sports-event managers to better ensure pleasurable and enriching experiences for volunteers. The result will be volunteers who are more likely to return to serve in future events. To understand how individuals come to a volunteer opportunity, it is important to assess their motivations, satisfactions, and behavioral intentions.

3. Methods

3.1. Questionnaire development

The questionnaire survey items for the present research were developed through collaborative efforts between the researchers and a contact within the Head of Research and Insight for the London Organising Committee of the Olympic and Paralympic Games (hereinafter, LOCOG). Consulting with this body ensured this research produced quality data that represented both the needs of the researchers and the organization. The measurement items were largely originated from relevant studies (e.g. [Clary et al., 1998](#)). In other words, the instrumentation was developed by leaning on instruments validated in the prior literature, with some targeted revisions made by the current researchers and partner organization. To establish the validity of the question sets, industry practitioners in the events sector evaluated all questionnaire items before finalization of the questionnaire.

Respondents were asked to reflect upon their London 2012 Games volunteer experiences and indicate their levels of satisfaction in each targeted area. Twenty-one items addressing motivation were measured on a 5-point Likert scale (5 = strongly disagree, 1 = strongly agree). Items that addressed dissatisfaction were also measured on a 5-point Likert scale (5 = very dissatisfied, 1 = very satisfied). Fifteen additional items were developed ad hoc for this research ([Balzer et al., 1990](#); [Omoto & Snyder, 1995](#)).

In this research, intention for future volunteering meant anticipation of planned volunteering activity later in life. For such future behavioral intentions ([Ajzen & Fishbein, 1980](#); [Fishbein & Manfredo, 1992](#)), the items used a 6-point Likert scale format. The Likert scale remains very popular and useful, but the question as to its ideal number of scale points can be controversial. Some notable scholars ([Leung, 2011](#)) assert that there is no major difference in internal structure in terms of means, standard deviations, item–item correlations, item–total correlations, Cronbach's alpha, or factor loadings among 4-, 5-, 6-, and 11-point Likert scales. Finally, demographic questions evaluated volunteers' gender, work status, income level, ethnicity, age and so on.

3.2. Data collection and sample

Access to the sample was obtained by developing a relationship with LOCOG that involved many discussions of research goals and methods. This relationship was fostered through online communication, telephone conversations, and in-person meetings. Data was directly obtained from the organization, which was well situated to identify volunteers not only from the host city but also in the several localities beyond London in which some Olympic events took place. The data were collected after the conclusion of the

Olympic and Paralympic Games, specifically during the period from September 11, 2012 to September 18, 2012.

The questionnaire was sent out via e-mail to individuals who had volunteered either pre-Games, during the Games, or post-Games. The e-mail invited Olympic volunteers to complete the questionnaire, which was available for one week. Individuals were only allowed to respond to the questionnaire one time to eliminate the possibility of repeat submissions. Through collaboration with London 2012 Olympic volunteer teams, 44,700 questionnaires were sent out. This effort collected 11,521 unique samples, and, after outliers and incomplete responses were removed, a total of 11,451 questionnaires remained for data analysis. This sample size was wholly appropriate as a sample size of more than seventy times the number of variables has proved to be adequate in studies using market-segmentation analysis ([Dolnicar, Grün, Leisch, & Schmidt, in press](#)).

3.3. Data analysis

Data were analyzed in three stages. First, before the motivations of the respondents were identified and discussed, a profile of those who took part in the survey was developed to provide context. Descriptive-statistics analysis was applied to the collected data to explore the overall sample profile. Second, a factor analysis was then used to identify the underlying constructs related to the twenty-one items for motivations. Factor extraction was conducted to determine the smallest number of factors giving the best presentation of all variables ([Pallant, 2007](#)). Among all extraction methods, a Varimax-rotated principal-component analysis (PCA) was conducted with criteria for the simplest possible solution that retained sufficient explanatory power. This research employed the criteria suggested by both [Hair, Black, Babin, and Tatham \(2005\)](#) and [Heung and Cheng \(2000\)](#): (1) factor loading equal to or above .50, (2) eigenvalues equal to or above 1.0, and (3) results of the factor analysis explaining at least 61.2% of the total variance. Afterwards, reliability (Cronbach's α) was computed to check the internal consistency of the items with each dimension.

After assessing the motivations of volunteers, this research attempted to identify different groupings of participants based on their motivations. One way to explore the needs of volunteers is to identify the underlying segmentation of a market, acknowledging that needs are likely to vary across segments. Market segmentation is applied to divide a heterogeneous market into homogeneous subgroups based on the identification of segments defined by, in this case, volunteer motivations. This research also integrated a number of clusters for the segments a priori based on related studies. To identify the optimal number of clusters, a K-means cluster-analysis approach, which is a non-hierarchical clustering method, was used to classify the respondents. When the sample size is over 1,000, K-means clustering has been recommended by relevant studies to identify homogenous groups ([Boo & Jones, 2009](#)). This technique is designed specifically to group cases and can be more efficiently applied to large data sets ($n > 200$) than the hierarchical technique ([Brida, Osti, & Barquest, 2010](#); [Johnson & Wichern, 1998](#)).

The investigators conducted cluster analysis on the seven motivations of volunteer participation in an effort to gain a deeper understanding of volunteers with different motives. The K-means clustering procedure uses the mean values of the seven motivation factors extracted as a result of factor analysis for motivation. After analyzing solutions ranging from two to five clusters, a three-cluster solution was considered to be the most appropriate in terms of respondent differentiation and meaningful cluster interpretation. A similar size exists among the groups in the three-cluster solution. The differences among clusters in satisfaction,

future behavioral intentions, and demographics were assessed by suitable analyses including one-way analysis of variance (ANOVA) and chi-square. This research then further attempted to identify the profile of the three clusters by employing five demographic variables (i.e. gender, age, ethnicity, household income, and job position). Each cluster was cross-tabulated with volunteers' socio-economic characteristics and behavioral characteristics. The chi-square tests indicated that all three clusters were statistically significantly different in terms of their respondents' characteristics.

4. Results

4.1. Sample profile

There were more female respondents (59.13%) than male respondents (40.87%), as shown in Table 1. Respondents indicated their largest ethnicity to be White British (80.23%). In terms of age, 62.03% of the respondents were 45 or older. About 35.86% of the respondents' annual household income was reported as £22,001 through £50,000, making this the largest income group. A total of 80.37% previously had volunteer experience before the London Olympics. In addition, 54.92% of the respondents acquired information about volunteering directly from the London 2012 website. Among the respondents, 66.50% were employed full- and/or part-time.

Most respondents reported currently residing in London (29.2%) or South East (excluding London; 29.1%). The largest blocks of respondents reported themselves to have time to volunteer for the Games as a benefit of paid leave/holidays from work (33.32%) or current unemployment (including the retired, the unemployed, and those on university holidays; 28.60%).

4.2. Factor analysis

4.2.1. Motivation scale

As shown in Table 2, there were twenty-one items measuring motivation functions. Using a factor analysis, seven factors were extracted from these items and combined into a smaller number of uncorrelated factor dimensions by calculating the factor scores. PCA with Varimax rotation was conducted to identify the dimensions. The resulting model explained 66.64% of the variance, and the primary factor loadings from the pattern matrix for the twenty-one items ranged from .55 to .82 with a seven-factor solution.

Factor loadings of all relevant variables in the rotated factor matrix were clearly related to only one factor each. No variables with low factor loadings were observed. The first four items identified (eigenvalue = 2.78) represented the career function; the second four items (eigenvalue = 2.29) comprised the value function; the next three items (eigenvalue = 2.28) were the Olympic function; a further three items (eigenvalue = 1.95) were the enhancement function; another three items (eigenvalue = 1.80) entailed the understanding function, and two more items (eigenvalue = 1.47) represented the social function. The two final items (eigenvalue = 1.44) became the protective function.

Cronbach's α scores and average variance extracted scores were computed for each dimension. Cronbach's α for the seven factors ranged from .55 to .82. The overall reliability was found to be mostly satisfactory based on the current sample scores. In addition, the correlation coefficient of the two social function items was .404, while that of the protective functions was .420.

4.2.2. Satisfaction scale behavioral intention

In Table 3, the original fifteen items were reduced to eleven items as most of the respondents found four items inapplicable. These items were deleted because of loading and interpretation

Table 1
Characteristics of the respondents ($N = 11,451$).

Variables	Sample size	Percentage
<i>Gender</i>		
Female	6771	59.13
Male	4680	40.87
<i>Age</i>		
16–24	1245	10.87
25–44	3103	27.10
45–64	5889	51.43
65 or older	1214	10.60
<i>Ethnicity</i>		
White British	9187	80.23
Another White background	894	7.81
White and Black Caribbean	42	.37
White and Black African	27	.24
White and Asian	49	.43
Another mixed background	70	.61
Another (e.g. Chinese and Pakistani)	645	5.64
Black Caribbean	137	1.20
Black African	130	1.14
Another Black background	17	.15
Other ethnic group	102	.89
Prefer not to say	151	1.32
<i>Household income</i>		
Less than £22,000	1884	16.46
£22,000–50,000	4107	35.86
Over £50,000	3442	30.06
Prefer not to say	2018	17.62
<i>Places resided in currently</i>		
Scotland	241	2.1
Wales	205	1.8
Northern Ireland	71	.6
London	3341	29.2
South East (excluding London)	3327	29.1
East of England	861	7.5
South West	951	8.3
East Midlands	469	4.1
West Midlands	558	4.9
Yorkshire/Humberside	405	3.5
North East	166	1.4
North West	490	4.3
I do not live in the UK	366	3.2
<i>Time acquisition^a</i>		
Paid leave/holiday from work	4260	33.32
Extra paid leave/holiday from work	869	6.8
Unpaid leave/holiday from work	1928	15.08
Fit in around work	1806	14.13
(e.g., part time worker, still working)		
Not working (including retired, unemployed, university holidays)	3657	28.60
None of these	265	2.07
<i>Employment situation</i>		
Employed full-and/or part-time (including self-employed)	7616	66.50
Retired or pensioner	2242	19.58
Full-time student	873	7.62
Full-time career or parent	131	1.14
Other (e.g., unemployed and/or looking for employment)	589	5.15
<i>Main information source^a</i>		
London 2012 website	9948	54.92
Social media	1915	10.57
Newspaper	1812	10.00
TV	1927	10.64
Others (e.g. Radio and Flyer)	2512	13.87
<i>Volunteer experience</i>		
No	2248	19.63
Yes	9203	80.37

Note.

^a All items on main information source and time acquisition are multiple-choice questions.

issues related to cross loading. Bartlett's test of sphericity showed a value of 33023.81 with $p = .001$, and the KMO statistics obtained were .88. These two tests indicated that the data were suitable for factor analysis. The factor-analysis results confirmed that there

Table 2
Results of factor analysis for motivation.

Items	Factor loadings							Communalities	Item means
	1	2	3	4	5	6	7		
Career function									
Gain skills for future employment	.86							.79	3.22
Gain skills for future volunteering	.80							.66	2.74
Gain experience which might lead to employment	.75							.74	3.68
Broaden horizons	.64							.51	2.21
Value function									
Give something back to London and the U.K.		.83						.73	1.96
Proud of London and the U.K.		.77						.76	1.56
Put something back into the community		.72						.69	1.98
Help make the Games a success		.53						.71	1.25
Olympic function									
Interested in the Games			.83					.60	1.65
Have a passion for the Games			.83					.62	1.43
Have an interest in sport			.82					.43	1.75
Enhancement function									
Ability to attend a Games event				.83				.72	1.78
It was an opportunity to meet elite athletes				.76				.67	3.23
Gain official Games rewards				.67				.61	2.54
Understanding function									
My skills were needed					.80			.68	3.25
Wanted to use my skills					.77			.69	3.89
Have past experience providing similar services					.61			.51	2.48
Social function									
Volunteering is common in my family						.86		.78	2.54
Most people in my community volunteer						.80		.73	1.90
Protective function									
Have more free time than I used to have							.83	.71	3.00
Did not have anything else to do with my time							.78	.66	3.53
Eigenvalue	2.78	2.29	2.28	1.95	1.80	1.47	1.44		
Variance explained (%)	13.21	10.90	10.84	9.27	8.56	7.01	6.85		
Cumulative variance (%)	13.21	24.11	34.95	44.23	52.78	59.79	66.64		
Cronbach's α	.82	.73	.80	.73	.63	–	–		
Average mean score	2.96	1.69	1.65	3.42	2.48	3.52	3.84		

Note: 1 = strongly agree, 5 = strongly disagree; Kaiser-Meyer-Olkin measure of sampling adequacy = .81; chi-square = 72460.01; Bartlett's test of sphericity, $p < .001$.

were three factors with eigenvalues greater than 1, which accounted for 57.74% of the variance. The overall reliability was found to be mostly satisfactory based on the sample scores.

Table 3
Results of factor analysis for satisfaction.

Items	Factor loadings			Communalities	Item means
	1	2	3		
Recruitment session	.64			.48	1.97
Orientation session	.74			.55	2.64
Role training	.76			.63	2.27
Venue training	.61			.47	2.42
Information you received prior to the event	.62			.53	2.12
Your job assignment		.80		.71	1.92
The number of shifts allocated		.79		.66	1.92
How efficiently your time was used during your shifts		.74		.66	2.55
The support and recognition you received from paid staff			.66	.52	2.17
The support and recognition you received from volunteer team leaders			.77	.61	2.09
Recognition of your efforts			.64	.53	1.83
Eigenvalue	2.44	2.11	1.80		
Variance explained (%)	22.21	19.20	16.33		
Cumulative variance (%)	22.21	41.41	57.74		
Cronbach's α	.74	.76	.60		
Average mean score	2.28	2.13	2.03		

Note: 1 = very satisfied, 5 = very dissatisfied; Kaiser-Meyer-Olkin measure of sampling adequacy = .880; chi-square = 33023.81; Bartlett's test of sphericity, $p < .001$.

4.3. Segmenting volunteers

Table 4 displays the segment names and final cluster centers. Segment names were created by the researchers after a thorough interpretation of the final cluster scores and a comprehensive literature review (e.g., Treuren, 2014). This interpretation led to the

Table 4
Factor means among the three clusters.^{a,b}

Factor	Cluster I ($n = 4175/$ 36.5%)	Cluster II ($n = 3336/$ 29.1%)	Cluster III ($n = 3940/$ 34.4)	Mean	F-value
Career function	3.76L	2.53M	2.49H	2.93	3977.09***
Value function	1.83L	1.59H	1.63M	1.68	184.93***
Olympic function	1.94L	1.55M	1.43H	1.64	636.47***
Enhancement function	4.14L	2.98H	3.04M	3.39	3026.99***
Understanding function	2.94L	2.19H	2.24M	2.46	1367.84***
Social function	3.80L	3.12H	3.57M	3.50	610.85***
Protective function	4.05M	2.77H	4.54L	3.79	6424.63***

Note.

*** $p < .001$. Looking across columns.

^a Number of volunteers; 1 = strongly agree, 5 = strongly disagree.

^b H, M and L indicate high, medium or low levels of combined means for each segment.

Table 5
Summary of discriminant-analysis results.

Function	Eigenvalue	Percent of variance explained by function	Canonical correlation	Wilks' lambda	Chi-square	df	Significance
1	1.54	61.13	.78	.20	18482.77	14	.001***
2	.98	38.87	.70	.51	7813.57	6	.001***
Discriminant loading			Function 1	Function 2			
Career			.46	.40			
Value			.02	.01			
Olympic			.18	.12			
Enhancement			.43	.30			
Understanding			.25	.22			
Social			.26	-.07			
Protective			.56	-.81			

Note: 96.0% of original grouped cases correctly classified; 95.9% of cross-validated grouped cases correctly classified; *** $P < .001$.

identification of the most meaningful interpretable and distinguishable segments from both theoretical and practical perspectives. Table 4 also displays the segment names and final clusters. These were titled the (a) obligated, which accounted for 4175 respondents; (b) enthusiast, which accounted for 3336 respondents; and (c) semi-enthusiast, which accounted for 3940 respondents.

A series of one-way ANOVA tests was conducted to identify mean differences in motivations from the different clusters. Detailed results are displayed in Table 4. Significant differences ($p < .001$) were found in the motivations related to the career, value, Olympic, enhancement, understanding, social, and protective factors. It was discovered that volunteers in relative cluster 3 (aforementioned orderly mean = 2.49, 1.63, 1.43, 3.04, 2.24, 3.57, and 4.54) were significantly ($p < .001$) likely to be motivated moderately relative to the other clusters. In regards to motivation for value, cluster 2 (mean = 2.53, 1.59, 1.55, 2.98, 2.19, 3.12, and 2.77) was overall significantly ($p < .001$) more likely to be motivated compared to other clusters, whereas relative cluster 1 (mean = 3.76, 1.83, 1.94, 4.14, 2.94, 3.80, and 4.05) was significantly ($p < .001$) less likely to be motivated by all motivations than the other clusters. These results are also presented in the table below.

Recent research has recognized that distinct self-views and motivations may coexist within individuals and can be temporarily activated depending on the situation (Kareklas, Carlson, & Muehling, 2014). Hence, this research reflects overall motivation scores in defining the name of each cluster. Reflecting on these findings, the respective clusters were named: cluster 1, "obligated volunteers"; cluster 2, "enthusiasts"; and cluster 3, "semi-enthusiasts." After cluster analysis, whether and how the identified clusters of motivations differed in relation to satisfaction, behavioral intention, and demographics was analyzed.

4.4. Discriminant analysis

The resulting discriminant functions were each subjected to an analysis to decide the statistical significance of the functions. Discriminant analysis is meant to validate the results of clusters. The results of the discriminant functions were subjected to a chi-square test to decide the further significance of the functions. The three functions were found to be statistically significant, as measured by the chi-square statistic. In order to decide the significance of each of the seven motivational factors, a Wilk's lambda test and a univariate F test were conducted.

As shown in Tables 5 and 6, all seven motivational factors have statistical significance to their discriminant functions. In addition, standardized structure coefficients were used to interpret the functions. The three canonical discriminant functions were significant. This indicates the models explained a significant relationship between the functions and the particular dependent variables. To decide if the functions were valid predictors, the classification matrices of respondents were also investigated. In total, 96.0% of

the 11,451 grouped cases were flawlessly classified. Hence, they were retained for interpretation in this research. The results of the discriminant analysis are also shown in Tables 5 and 6. Function 1 (Wilk's lambda = .20, chi-square = 18482.77*, df = 14), with an eigenvalue of 1.54, explained 61.13% of the variation. With an eigenvalue of .98, Function 2 (Wilk's lambda = .51, chi-square = 7813.57*, df = 6) explained 38.87% of the remaining variation.

A series of chi-square tests was conducted to investigate if there were statistically significant levels of association between the clusters and selected socio-demographic variables. These results were used to identify distinctive socio-demographic characteristics among the clusters. Table 7 shows the demographic background of the Olympic volunteers in each cluster. The chi-square tests confirmed that all variables were notably dissimilar among clusters as their significant levels were less than .001. Only two demographic characteristics could be used to differentiate meaningfully among the clusters. For instance, the significance of age as a differentiating variable in discerning motivation-based segments may be related to the finding that age is strongly related to one's life-cycle changes in needs or wants (Lee, Kang, & Lee, 2013). This research was able to consider three generations (16–24-year-olds, 25 to 44-year-olds, and a 45-years-or-older group).

Furthermore, Table 8 shows the overall satisfaction and future behavioral intention by cluster. The ANOVA results confirm that there were significant differences among the clusters in their overall satisfaction and future behavioral intentions. Modeling satisfaction and behavioral intention remains a significant research area in the event-management literature. The results of this research are summarized in Table 9. To understand the profiling and to support the development of broad strategies for organizations, profiling is provided. The market segments and socio-demographic profiles described above can be used to develop marketing strategies and develop and niche target markets as part of a diversification strategy.

4.5. Summary of cluster profiles

4.5.1. Cluster 1 (36.5%)

This cluster, representing obligated volunteers, exhibited low motivation in nearly all seven factors. This group of volunteers

Table 6
Evaluation of cluster formation by classification results.

Cluster case	Predicted group membership			
	Cluster I	Cluster II	Cluster III	Total
Cluster I	3951 (94.63%)	160 (3.83%)	64 (1.53%)	4175 (100.0%)
Cluster II	13 (.39%)	3217 (96.43%)	106 (3.18%)	3336 (100.0%)
Cluster III	48 (1.22%)	69 (1.75%)	3823 (97.03%)	3940 (100.0%)

Note: Bold figures indicate number of respondents correctly classified in each cluster.

Table 7
 Socio-demographic profiles of motivation clusters (N = 11,451).^a

Volunteer's profile ^b	Cluster I (36.5%)	Cluster II (29.15)	Cluster III (34.4%)	Total (100%)	Statistics	
<i>Volunteer experience</i>						
No	907 (40.35%)	586 (26.07%)	755 (33.59%)	2248	Chi-square = 21.16, <i>p</i> < .001***	
Yes	3268 (35.51%)	2750 (29.88%)	3185 (34.61%)	9203		
<i>Gender</i>						
Female	2366 (34.94%)	1933 (28.55%)	2472 (36.51%)	6771	Chi-square = 33.65, <i>p</i> < .001***	
Male	1809 (38.65%)	1403 (29.98%)	1468 (31.37%)	4680		
<i>Age</i>						
16–24	122 (9.80%)	621 (49.88%)	502 (40.32%)	1245	Chi-square = 2008.66, <i>p</i> < .001***	
25–44	844 (27.20%)	524 (16.89%)	1735 (55.91%)	3103		
45–64	2627 (44.60%)	1658 (28.16%)	1604 (27.24%)	5889		
65 or older	582 (47.94%)	533 (43.90%)	99 (8.15%)	1214		
<i>Ethnicity</i>						
White British	3612 (39.32%)	2666 (29.02%)	2909 (31.66%)	9187	Chi-square = 313.77, <i>p</i> < .001***	
Another White background	254 (28.41%)	201 (22.48%)	439 (49.11%)	894		
White and Black Caribbean	12 (28.57%)	12 (28.57%)	18 (42.86%)	42		
White and Black African	8 (29.63%)	9 (33.33%)	10 (37.04%)	27		
White and Asian	6 (12.24%)	23 (46.94%)	20 (40.82%)	49		
Another mixed background	15 (21.43%)	26 (37.14%)	29 (41.43%)	70		
Another Asian background	110 (16.05%)	279 (40.73%)	296 (43.22%)	685		
Black Caribbean	44 (32.12%)	39 (28.47%)	54 (39.42%)	137		
Black African	27 (20.77%)	44 (33.85%)	59 (45.38%)	130		
Another Black background	3 (17.65%)	7 (41.18%)	7 (41.18%)	17		
Other ethnic group	12 (11.76%)	38 (37.25%)	52 (50.98%)	102		
Prefer not to say	72 (47.68%)	32 (21.19%)	47 (31.13%)	151		
<i>Household income</i>						
Less than £ 22,000	433 (22.98%)	779 (41.35%)	672 (35.67%)	1884		Chi-square = 457.35, <i>p</i> < .001***
£22,000 to 50,000	1476 (35.94%)	1160 (28.24%)	1471 (35.82%)	4107		
More than £50,000	1581 (45.93%)	687 (19.96%)	1174 (34.11%)	3442		
Prefer not to say	685 (33.94%)	710 (35.18%)	623 (30.87%)	2018		
<i>Job position</i>						
Employed full- and/or part-time (including self-employed)	2834 (37.21%)	1425 (18.71%)	3357 (44.08%)	7616	Chi-square = 2462.71, <i>p</i> < .001***	
Retired or pensioner	1069 (47.68%)	1065 (47.50%)	108 (4.82%)	2242		
Full time student	97 (11.11%)	464 (53.15%)	312 (35.74%)	873		
Full time parent	46 (35.11%)	60 (45.80%)	25 (19.08%)	131		
Other	129 (21.90%)	322 (54.66%)	138 (23.44%)	589		

Note: ****P* < .001.

^a Chi-square tests were used to test for significant differences between the segments.

^b Looking across columns for each variable.

called obligated volunteers is not very interested in the event or the organization (Treuren, 2014). This was the largest cluster, containing more than one third of the respondents. In terms of the demographic and behavioral characteristics of this segment, this obligated cluster had more females (*n* = 2366; 34.94%), much older members such as baby boomers (46–64, *n* = 2627; 44.60%) and silent groups (65 or older, *n* = 582; 47.94%), and members with higher incomes (more than £50,000, *n* = 1581; 45.93%). The presence here of the oldest age groups (those above some 45 years of age) was in line with age categories from existing studies (e.g., da Cruz Vareiro, Remoaldo, & Ribeiro, 2013; Konu, Laukkanen, & Komppula, 2011). This cluster had the lowest level of satisfaction (2.50) and future behavioral intention (2.90). Table 7 shows columns for each variable (i.e., gender) compared with other clusters relatively.

4.5.2. Cluster 2 (29.1%)

After it was carefully compared to the other segments, this cluster (29.1% of sample) was labeled enthusiasts. This group

Table 8
 ANOVA of overall satisfaction and future behavioral intention.

Variable	Cluster I	Cluster II	Cluster III	Mean	<i>F</i> ratio	Significance level
Overall satisfaction	2.50	2.23	2.28	2.34	189.12	.001***
Future behavioral intention	2.90	2.69	2.70	2.76	41.58	.001***

Note: satisfaction (5-point scale); behavioral intention (6-point scale). ****p* < .001.

showed the highest level of motivation in almost all motivation categories. Cluster 2, however, had relatively fewer cases. In terms of demographics, the enthusiastic cluster was also predominately female volunteers. Among the variables (e.g., gender), this was apparently a cohort of the young (mostly composed of generation Y denizens, with an age range of 16–24; *n* = 621; 49.88%), and it reported the lowest income (less than £22,000, *n* = 779; 41.35%) in comparison to the other clusters. Not surprisingly, yet these young enthusiastic volunteers were found to be the most satisfied overall (mean of 2.23), and they displayed the highest level of future behavioral intention (mean of 2.69) with regard to the Olympics.

Table 9
 Summary of characteristics of clusters.

Prominent socio-demographic and profiles	Cluster I	Cluster II	Cluster III
Volunteer experience	Yes	Yes	Yes
Gender	Female	Female	Female
Age	45 years or older	Volunteers (16–24)	Volunteers (25–45)
Ethnicity	White British	White British	White British
Income (£)	More than 50,000	Less than 22,000	22,000 to 50,000
Job position	Employed full- and/or part-time	Employed full- and/or part-time	Employed full- and/or part-time
Overall satisfaction	The least satisfied	The most satisfied	Somewhat satisfied
Future behavioral intention	Least likely to volunteer	The most likely to volunteer	Somewhat likely to volunteer

4.5.3. Cluster 3 (34.4%)

This group was cognized as the semi-enthusiasts. In terms of demographics, this cluster was, like the others, predominantly female. These volunteers comprised the second oldest age group (mostly generation X; ages 25–44, $n = 1735$; 55.91%) and reported moderate earnings (£22,000 to 50,000, $n = 1471$; 35.82%) in comparison to the other clusters. These semi-enthusiastic volunteers reported a moderate level of overall satisfaction (mean of 2.28) and the second highest level of future behavioral intention (mean of 2.76).

5. Conclusion and discussion

5.1. Initial discussion

Identifying volunteer motivation for participating in and supporting mega-events is essential for organizing and hosting massive undertakings (Lee, Reisinger, Kim, & Yoon, 2014), such as the Olympics. Typologies exist to classify volunteers into homogeneous subgroups to better understand and predict their behaviors—yet scant literature has been developed to apply these volunteer typologies to segment mega-event volunteer markets. Rarer still are specific studies classifying or clustering volunteers drawn to the Olympic movement, let alone those who gave their time and efforts to make the London 2012 Olympic Games a success. This research aims to alleviate that gap.

Volunteers and events must form a symbiotic, mutually beneficial relationship to ensure ongoing support. Such a relationship requires event organizers to understand the needs not only of their customers but also of their volunteers. In order to help organizers adequately address volunteer needs, this research attempted to understand the motivations for volunteer participation in the London 2012 Olympic Games using a broad sample of real volunteers. A factor-cluster approach was employed to identify volunteer–segment profiles based on motivations, allowing segmentation and comparison of volunteers based on mutually exclusive clusters. The findings revealed the existence of three main volunteer segments that could be differentiated primarily on the basis of their motivations. Each of the segments was found to possess a unique profile in terms of overall satisfaction, future behavioral intentions, and socio-demographic background. This research's explication of demographics and socio-psychological variables should provide knowledge and insight on the London Olympic volunteers—with results that indicate differences in key socio-demographic attributes—as a touchstone for wider conclusion about mega-event volunteers.

Among the three segments, the enthusiastic volunteer group (Cluster 2) whose members were highly motivated to be involved in the 2012 Olympic Games through volunteering was most likely to report an intention to continue volunteering. These volunteers also achieved the greatest level of satisfaction during their volunteering experiences. The obligated group (Cluster 1) contained the largest number of individuals. This group contained older individuals compared to the other groups. Some prior literature supports this finding, suggesting older volunteers have been excluded from more active participation (e.g., Barlett & Martin, 2002). The semi-enthusiastic group (Cluster 3) including volunteers with an age range from 25 to 45 years; these individuals were somewhat likely to intend to continue volunteering and somewhat satisfied with their volunteer experience at the event.

5.2. Study limitations and suggestions for future studies

In spite of these significant contributions, some noteworthy issues are left unanswered in this research. Low internal consistency

for some motivation dimensions is a possible limitation because this might obscure the relationships between the variables (Cullen, Baranowski, & Owens, 2003). While this research's massive sample (11,451 responses) is one of its strongest points, the inherent limitation of a quantitative study must be noted. Even though relevant studies investigating volunteers' motivations have often used a quantitative approach such as a factor-cluster analysis, the potential value of findings from a qualitative study of sports-event volunteers' motivations is also urged. Using in-depth interviews, journaling, and other qualitative techniques would lead to different discoveries complementing those found in this quantitative investigation. Further, future research should employ a Likert-type scale format consistently. Some scholars (e.g., Dillman, 2007) argue that the 6-point Likert scale measuring behavioral intentions did not have equal numbers of positive and negative answer choices for scale questions, which could have led to biased results. Although this research's questionnaire was created in collaboration with the Olympic organizer, some scholars may argue that some uncommonly items were employed such as satisfaction.

The sample of this research includes only volunteers to the 2012 London Games. In order to increase generalizability, it would be beneficial to repeat this methodology at other events such as the FIFA World Cup or smaller single or multi-sport events like the Asian Games, as well as in developing countries or the BRIC economies. Although this research took pains to provide complete demographic information regarding its sample of volunteers, future research might enhance the methodology by investigating non-local/visitor volunteers and resident volunteers separately. Future research could also take into account paid-employee and community-volunteer event workers separately. Because this research did not collect data from all 70,000 volunteers in the 2012 Games, its findings are not absolutely generalizable to the entire London Olympic volunteer population. Going forward, research could investigate volunteers' motivations before future Games and satisfaction or behavioral responses after a Games' conclusion. Finally, future research should of course attempt to identify segments using other motivations.

5.3. Implications

From a theoretical point of view, this research's findings hold critical implications for event organizers and participants. Relevant studies have long employed general volunteer motivation survey instruments like the Clary et al.'s (1998) VFI to examine generic motivations for volunteering (Smith & Holmes, 2012). These investigations have attempted to find the general functional aspects of volunteer motivation to be applied to all volunteer activities regardless of activity types and volunteer backgrounds while retaining reliability and validity. However, it is arguable that though a specific Olympic-volunteer motivation is not mutually exclusive from these general functional aspects, neither is it identical. Adding an Olympic value into the six existing motivations of the VFI in this research, may contribute to predicting volunteering intention and behavior in future mega-sports events with greater accuracy, while simultaneously opening a new avenue for theoretical research.

Unlike most sports-event volunteer motivation research; this research attained an ample scope from which to understand London Olympic Games volunteering as its sample size was tremendous. This huge sample was also composed of real volunteer participants, not a student- or potential-volunteer convenience sample. This research, then, falls in line with studies that have encouraged attempts to investigate events using large sample sizes such as 1000 or more for excellent reliability (Comrey & Lee, 1992). Since the number of segmentation studies focusing on mega-events is rather limited, with the widest swath of studies focusing on

moderate-scales events and festivals, this research's overview of a major Summer Games should be valuable. This investigation should be especially relevant as a stepping-stone for further event-management literature rooted in the fertile ground of the London Olympic Games.

From a managerial perspective, individuals participate in mega-events either voluntarily or obligatorily. In addition, volunteers can be dichotomized as guest or as host (resident) volunteers. Hence, volunteers can also be regarded as potential tourists, such as sports tourists, and as consumers because they also may consume the event product they help to produce and spend economically during and after the Games. Some scholars have noted that sports tourists have an economic and social impact upon event destinations (e.g., Gammon & Robinson, 2003). Furthermore, in the case of Olympic Games, the events are not held strictly in the one named host city, e.g., in this case, London, but are dispersed throughout the region—although admittedly, this research effort did not provide sufficient information to classify volunteers as resident or visitor volunteers. Notwithstanding this limitation, as shown in this research's demographic data (see Table 8), some London volunteers indeed hailed from different regions, providing the city of London an opportunity to promote its destination attractions not only to visitors but to volunteers, recruiting them as long-term marketing/promotion tools spreading positive word-of-mouth. In addition, volunteering attracts residents who want to showcase their home or region. Volunteers thus act as a bridge between the tourism sector and the local community (Smith & Holmes, 2012).

The segments identified in this research provide guidelines for formulating strategies to attract and train potential volunteers effectively. Given that this research offers empirical support for the existence of contrasting volunteer segments, this research also suggests that there is a need for organizers to tailor their communications to each segment accordingly. For Cluster 2, this pattern is consistent with findings regarding volunteering that indicate younger individuals are more likely to view a sporting event as an opportunity to strengthen their skills and professional networks. Individuals born in 1990s are now a major portion of the manpower in the events industry (Wong & Huang, 2014). Recognizing this, the organization could choose the age category to promote academic development, future career enhancement and an improved résumé, and self-development to enhance employability to target the younger segment. Furthermore, by targeting these younger volunteers, the organization also serves the purpose of recruiting and retaining volunteers who will make a long-term commitment to the organization, since the present research shows younger volunteers to be enthusiast volunteers.

The identification of Cluster 1—that of obligated volunteers—may be a finding of key interest because the existence of this segment has rarely been demonstrated in related studies on Olympic volunteers. Even more surprising, this was also the largest cluster contained in this research sample. Obligated volunteers may thus be choice volunteer targets in future sporting events even though this research's findings may not be generalized by studies conducting convenience sampling. Based on the findings of this research, obligated volunteers are likely to be over 45 with higher incomes. Elderly individuals may volunteer obligatorily because they already have skills and wisdom gained through life experience and feel compelled to use these talents, yet some scholars state that volunteers aged 50 years and above show declined willingness to take action (Chen, 2010). As this group was the largest among the three groups suggested in this research, these findings may help future sports-event organizations to train their future volunteers internally. By investigating actual volunteers' motivations, future organizations can make differentiated and more effective strategies, such as promotions for

increasing mental health and happiness by volunteerism, providing increased potential opportunities to individuals.

To coopt this group, organizations have been looking at their triple bottom line (environmental, social, and financial performance) and sense of belonging or affiliation to appeal to potential volunteers with low motivation. Cluster 1 (obligatory volunteers) should be informed that the Olympics (or similar events) offer the opportunity for community development and personal relationships among residents. Additionally, in prior training or field education, other-group volunteers could be drawn upon to encourage the obligated groups. Generally speaking, different targeted messages and channels, such as word-of-mouth and utilizing opinion leadership, should be activated to shift this group toward other, more dedicated, groups. For example, in advertising, the organizations can inspire potential volunteers to fantasize about being twenty again or giving back to the society in which they have achieved so much. For less interested volunteers, a recruitment message could be employed that emphasized the direct benefits from participation.

This finding is valuable for events at not only the level of worldwide spectacles represented by London 2012, but also at the smaller local level—and not only during the course of the event, but also over longer periods of time. This research will help managers place volunteers where they can be most effective in future mega-sport events and other activities that require a large number of volunteers, such as the 2014 Commonwealth Games in Glasgow, the Rio 2016 Summer Olympics in Brazil, and the Pyeongchang 2018 Winter Olympics in S. Korea.

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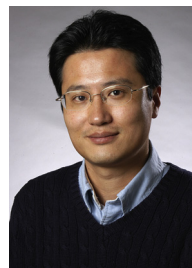
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