

## Relationships between investments costs for infrastructure and for sport stadia: The case of the World Cup 2006 in Germany

BY NICOLAS BÜTTNER, WOLFGANG MAENNIG AND MARCO MENßEN,  
HAMBURG

### 1. Introduction and Description of the Problem

The costs for works involved in building, reconstructing or extending the stadia for the 2006 World Cup in Germany amount to some € 1.4 billion (cf. Table 1), a considerable part of which was financed by public funds. In addition to other costs such as security (Lutz, 2006), significant investments in infrastructure were required in connection with the construction work for the stadia. In this respect, Germany's Federal Ministry of the Interior [BMI] (2004, p. 3) stated in its third research report on the preparations for the 2006 World Cup that:

Transport infrastructure in Germany is fundamentally capable of dealing with a major international event such as the 2006 World Cup. [...] Some € 3.4 billion have been invested solely in expanding and extending the national network of major roads, which will benefit our ability to deal with extra traffic during the 2006 World Cup. In addition, further extension and expansion measures will also be completed by 2006.

This study tests whether a systematic connection exists between the type or volume of stadium investments on the one hand and the volume of investments in related infrastructure on the other.<sup>1</sup> In particular an examination is undertaken of whether the relative infrastructure costs in the case of “newly-built stadia” differ systematically from those relating to “stadia reconstruction or extension works”. If a differentiation between these two groups should prove possible, it may then be possible to derive useful insights for major sporting events in the future, enabling simplified predictions about the expected volume of the required infrastructure measures based on the level of necessary investment in the sports venues.

The second section provides a summary description of the investments in infrastructure and stadia in Germany for the 2006 World Cup. In section three we use cluster and discriminant analysis to attempt to systematise infrastructure investments in relation to stadia investments. Section four provides a critical conclusion.

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*Corresponding author:*

Prof. Dr. Wolfgang Maennig  
Institut für Verkehrswissenschaft  
Universität Hamburg  
Von-Melle-Park 5  
20146 Hamburg  
eMail: maennig@econ.uni-hamburg.de

<sup>1</sup> This work processes data for ten of the twelve World Cup venues. The relevant sources were not available for the venues Dortmund and Frankfurt.

**Table 1: Costs for newly-built and reconstructed World Cup stadia and their capacities**

Location	Costs (in € million)						Dis- tance from previ- ous venue	Capa- city in Season 99/00	Capa- city in Season 05/06	Capacity change	City inhabi- tants
	Total	Fe- deral	State	City	Ope- rator	Ex- ternal					
Berlin	242	196.0	0.0	0.0	0.0	46.0	0	76 243	76 000	-243	3 390 000
Dortmund	36	0.0	0.0	0.0	36.0	0.0	0	68 600	83 000	14 400	590 000
Frankfurt	126	0.0	20.5	64.0	0.0	41.5	0	61 146	50 300	-10 846	650 000
Gelsen- kirchen	192	0.0	0.0	0.0	33.8	158.2	0.72	62 004	61 524	-480	278 000
Hamburg	97	0.0	0.0	11.0	16.0	70.0	0	55 000	55 000	0	1 700 000
Hannover	64	0.0	0.0	24.0	0.0	40.0	0	56 000	49 000	-7 000	525 000
Kaisers- lautern	48.3	0.0	21.7	7.7	18.9	0.0	0	41 582	40 721	-861	107 000
Cologne	117.5	0.0	0.0	25.5	0.0	84.5	0	46 000	50 374	4 374	1 000 000
Leipzig	90.6	0.0	0.0	63.2	27.4	0.0	0	* 90 000	44 345	-45 655	494 000
Munich	280	0.0	0.0	0.0	280.0	0.0	9.25	63 000	66 000	3 000	1 300 000
Nuremberg	56	0.0	28.0	28.0	0.0	0.0	0	44 600	44 308	-292	490 000
Stuttgart	51.6	0.0	15.3	36.3	0.0	0.0	0	47 000	48 500	1 500	590 000
SUM	1 401.0	196.0	85.5	259.7	412.1	440.2		711 175	669 072	---	

Source: Fédération Internationale de Football Association [FIFA] (2004) as well as Skrentny (2001). Cf. also Kicker Sonderhefte Bundesliga from the years 1995/96 (1995), 1999/2000 (1999) and 05/06 (2005). Distance measurements were undertaken with the aid of Google Earth. \* The team VfB Leipzig was only part of the Bundesliga - Germany's football first division - for one year and was also relegated from the second division after the 95/96 season (Maennig et al., 2005, p. 49). The spectator capacity from this season is given in Table 1 as a comparison value.

## 2. Infrastructure and Stadium Costs for the 2006 World Cup

Table A1 in the appendix presents all federal infrastructure measures undertaken in Germany with respect to the 2006 World Cup in the 12 venue locations. This compilation is based on the list for transport, construction and urban development of the Federal Ministry of Transport, Building and Urban Affairs [BMVBS] (BMVBS, 2005a) entitled "WM-Verkehrsprojekte des Bundes, der Länder, der Austragungsorte und der DB AG" (*World Cup transportation projects undertaken at federal, state and city level and by the German Railways*). Table A1 modifies this list by differentiating between projects determined by the World Cup and those not determined by the World Cup. This differentiation is based on the Federal Transportation Route Plan [BVWP] from the year 2003 and the relevant annexes for individual states. The BVWP 2003 groups the "urgent requirements" into "current and firmly allocated projects" and "new projects". The "current and firmly allocated projects" cover projects that were already planned in the BVWP 1991 and which are either currently in the process of enactment or due to be enacted in the near future. The corre-

sponding projects are not determined by the World Cup since the implementation and funding decisions had already been taken before Germany's bid to host the 2006 World Cup was approved. Other measures from the "new projects" section (i.e. measures newly included in the BVWP's "urgent requirements" in the period 1991 to 2003) were added to the measures not determined by the World Cup if they were able to justifiably be classified as non-World Cup related by the relevant contact person from the venue in question.<sup>2</sup>

The total volume of investment for the infrastructure in the ten cities examined, under consideration of BMVBS (2005a) amounts to well over € 7 billion and is hence almost twice as high the corresponding figure for the BMVBS (2005b), i.e. € 3.7 billion.<sup>3</sup> The infrastructure costs for the individual venue locations displays a large spread, ranging from around € 62 million in Nuremberg to almost € 3 billion in Berlin (cf. Table A1).<sup>4</sup> However, the example of Berlin also illustrates in a particularly clear manner the necessity of differentiating between World Cup related and non World Cup related investments. Attention should thus be drawn, for example, to projects included in Berlin's total investment volume such as the new Central Station and the North-South Tunnel which are determined by Berlin's status as capital city, rather than as host to the World Cup. A similar situation applies to Hamburg with regard to the fourth tunnel under the River Elbe and for Cologne in relation to numerous motorway projects independent of the World Cup.

If we limit ourselves only to the World Cup related projects the absolute range is reduced to € 22.7 million in Hamburg to € 654.4 million in Berlin, without however any significant reduction in the coefficient of variation.<sup>5</sup> In addition the new figure of just under € 1.6 billion for infrastructure investments now only makes up around a quarter of the sum mentioned above.

From Figure 1, which shows the composition of the World Cup related projects we can see that in Gelsenkirchen, Hamburg, Leipzig and Munich the majority of funding is provided by the cities themselves, whereas in Hannover, Cologne, Nuremberg and Stuttgart funding is mainly provided by Federal Government. In Berlin, Federal Government funding even makes up 100% of the World Cup related infrastructure investments.

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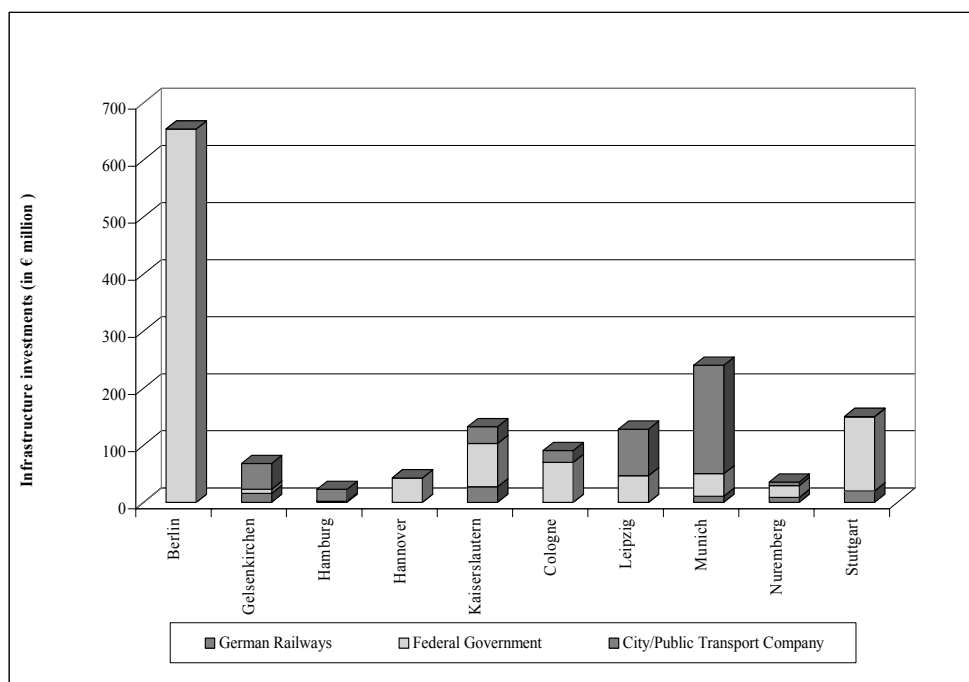
<sup>2</sup> The "current and firmly allocated projects" listed in the BVWP 2003 include a number of projects that were realised ahead of schedule as a result of Germany's successful bid to host the 2006 World Cup, cf. information provided in a telephone conversation with Mr. Joop, Department S 10 of the BMVBS on 16.01.2006. The names of the contact persons from the individual venue locations are listed in the relevant part of Table A1 in the appendix.

<sup>3</sup> The investment volume of € 3.7 billion given in BMVBS (2005b) was adopted and disseminated by the great majority of media in Germany. No information is available on the basis for the calculation nor on the composition of the € 3.7 billion.

<sup>4</sup> The coefficient of variation of the total infrastructure costs stands at 1.2.

<sup>5</sup> The coefficient of variation of the World Cup related infrastructure costs stands at 1.19.

**Figure 1: Infrastructure investments in the World Cup venue locations (only World Cup related projects)**



Data source: see Table A1.

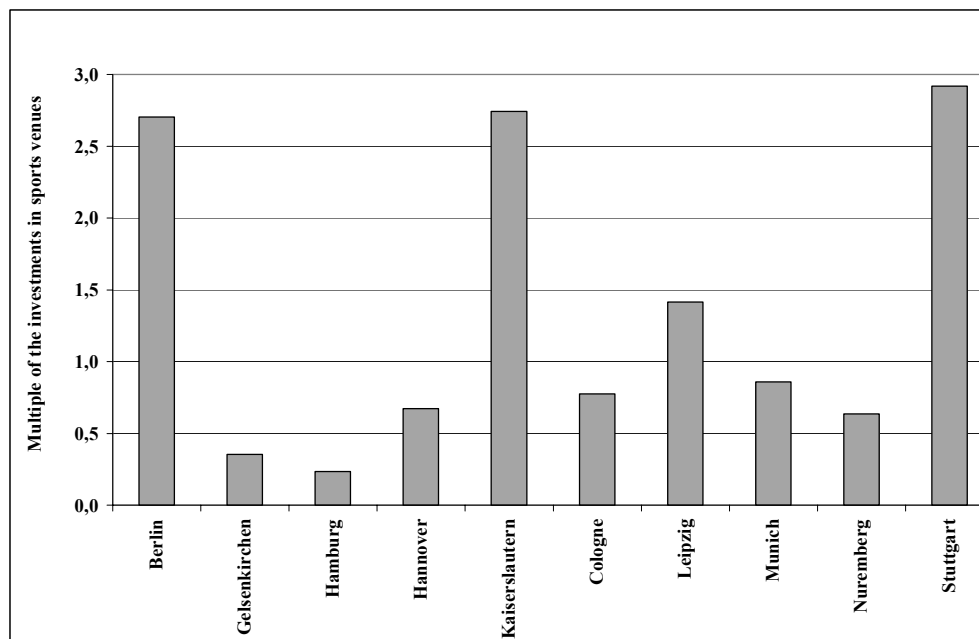
If the World Cup related infrastructure investments are set in relation to the expenditure for sporting venues, then Stuttgart, Kaiserslautern and Berlin display the highest values (Figure 2). For Stuttgart and Kaiserslautern this is due to the low costs for the reconstruction and/or extension of the individual sports venues, whilst for Berlin it can be deduced from the high investment costs in the World Cup related infrastructure. By contrast for Gelsenkirchen and Hamburg the relation is relatively low, at 0.4 and 0.2 respectively, which is a result of the high costs of the construction work for the new sports venues.

Taking into account the expenditure for sports venues and their character (new construction/reconstruction),<sup>6</sup> Leipzig displays relatively high World Cup related infrastructure costs for a venue location with a newly-built stadium, whilst Hannover, Cologne and Nuremberg display low relation for venue locations with reconstructed stadia. The stadia in the last three venue locations mentioned are “quasi new buildings”, which were relatively ex-

<sup>6</sup> According to the definition provided by FIFA (2004), the stadia in Gelsenkirchen, Hamburg, Leipzig and Munich were newly-built, whilst those in Berlin, Hannover, Kaiserslautern, Cologne, Nuremberg and Stuttgart were reconstructed or (in the case of Kaiserslautern), extended.

pensive as “reconstruction works”. In the case of Hannover it should also be taken into consideration that the infrastructure had already been modernised in the run-up to the EXPO 2000.

**Figure 2: Infrastructure investments as a multiple of the investments in sports venues (only World Cup related projects)**



Data source: see Tables 1 and A1.

Overall it becomes clear that at € 1.6 billion for ten of the twelve World Cup stadia, the infrastructure measures are more extensive and costly than the stadium investments alone (€ 1.4 billion for 12 stadia). When planning for large-scale sporting events the focus, which hitherto has tended to be on stadium costs, should therefore be increasingly directed towards the infrastructure. In addition it can be seen that in three of the six venue locations with stadium reconstruction or extension works (Berlin, Kaiserslautern and Stuttgart), the infrastructure costs were significantly higher than the stadium costs, whilst this was the case in only one of the four venue locations with newly-built stadia (Leipzig). This leads to the hypothesis, which we will test for below: we test the assumed differentiation by relative infrastructure costs into two groups (venue locations with newly-built stadia and venue locations with stadium reconstruction or extension works) according to the allocation undertaken by FIFA (2004).

### 3. Methods and Results

Due to the small data set it seems appropriate to begin testing the hypothesis of a differentiation or group formation by newly-built and reconstructed stadia with the aid of a cluster analysis. The objects of the analysis are the ten World Cup venue locations which can initially be clustered according to the parameters of investments in sports venues and infrastructure investments. Furthermore it also seems appropriate in view of the apparent connection with the investments to cluster according to the parameters of the number of city inhabitants, the capacities of the sports venues,<sup>7</sup> the change in capacity of the sports venues and the distance of the venues to the respective previous venue. The sources of the relevant data can be seen in Table 1.

Given that according to Table 2, the parameter “capacity” is significantly correlated with “stadium costs”, “city inhabitants” and “infrastructure costs”, we will dispense with this parameter when performing the cluster analysis. All of the parameters are metrically scaled and were z-standardised to avoid distortions.<sup>8</sup>

**Table 2: Bivariate correlations of the parameters**

Variables	Correlations between the variables
Stadium costs and infrastructure costs	0.622
Stadium costs and capacity	0.907 **
Stadium costs and inhabitants	0.586
Stadium costs and capacity change	0.205
Stadium costs and distance to previous venue	0.676 *
Infrastructure costs and capacity	0.735 *
Infrastructure costs and inhabitants	0.814 **
Infrastructure costs and capacity change	0.082
Infrastructure costs and distance to previous venue	0.145
Capacity and inhabitants	0.793 **
Capacity and capacity change	0.321
Capacity and distance to previous venue	0.414
Inhabitants and capacity change	0.204
Inhabitants and distance to previous venue	0.087
Capacity change and distance to previous venue	0.189

Notes: \* Significant at the level of 0.05 (two-sided); \*\* Significant at the level of 0.01 (two-sided)

Source: authors' own calculations.

<sup>7</sup> This refers to the capacity at the start of the World Cup season 05/06 from Table 1.

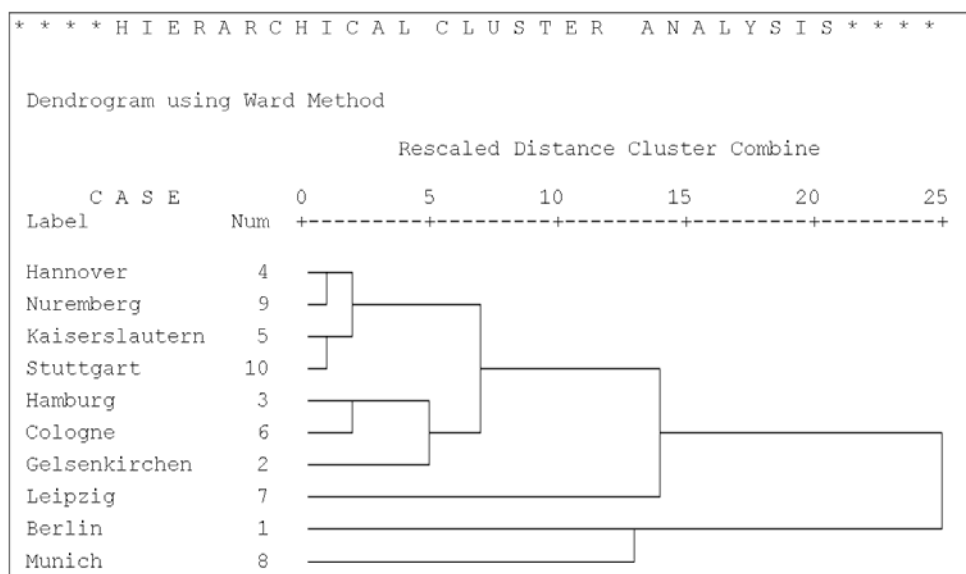
<sup>8</sup> The standardisation is performed with  $z_{ki} = \frac{x_{ki} - \bar{x}_i}{S_i}$ , whereby  $z_{ki}$  describes the value of parameter i for

Object k,  $\bar{x}_i$  the mean of parameter i and  $S_i$  the standard deviation of parameter i, cf. Fisher, (1921, p. 1-32).

In order to attain an indicator of the “natural number” of clusters and a relatively optimal fusion algorithm for the objects, the hierarchic-agglomerative procedure according to Ward was initially used, for which the Euclidian distance was taken as a measurement of distance.<sup>9</sup>

The dendrogram in Figure 3 shows that the four cities Hannover, Nuremberg, Kaiserslautern and Stuttgart, all of which have sports venues that were reconstructed or extended, were allocated to a cluster. After a relatively low increase in heterogeneity, the cities Hamburg, Cologne and Gelsenkirchen are also added to this group, whereby Hamburg and Gelsenkirchen display newly-constructed stadia, and Cologne a reconstructed stadium that however has already been identified as a de facto new stadium. After a further, relatively low increase in heterogeneity Leipzig (new stadium) is then added to the group. Only the venues Berlin and Munich are allocated to the second cluster. A separation of the two clusters according to venues with reconstructed or extended sports venues on the one hand and newly-built sports stadia on the other can therefore not be recognised.

**Figure 3: Cluster analysis (Ward method)**



Source: authors’ own illustration.

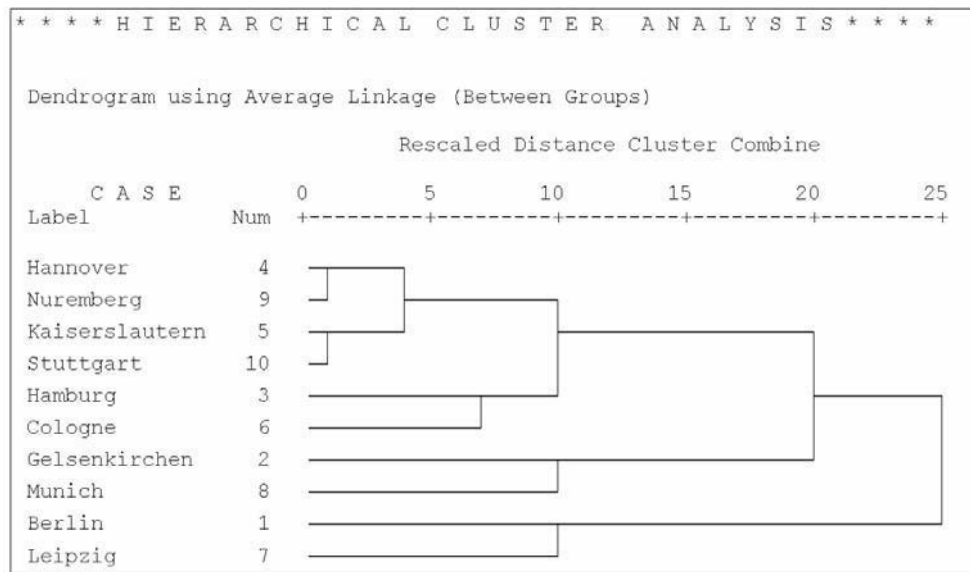
<sup>9</sup> Cf. Ward (1963, pp. 236-244) and Moray et al. (1983, pp. 325-327). The Euclidian distance is calculated with

$$d_2(k,l) = \sqrt{\sum_{i=1}^p (x_{ki} - x_{li})^2} \text{ .or . } d_2(k,l) = \sqrt{\sum_{i=1}^p (z_{ki} - z_{li})^2} , \text{ since } z\text{-standardisation is}$$

used, cf. Fisher (1921, pp. 1-32).

As an alternative specification the average linking method for cluster creation was used which, like the Ward method, also represents a “conservative” method (Lance and Williams, 1966, p. 374). In addition the Q correlation coefficients were used for the measurement of distance.<sup>10</sup> The parameters used remain the same. Figure 4 shows the result.

**Figure 4: Cluster analysis (average linkage method)**



Source: authors' own illustration.

The ten analysed sports venues now fall into three clusters, with Hannover, Nuremberg, Kaiserslautern, Stuttgart, Hamburg and Cologne forming the first cluster. Gelsenkirchen and Munich form the second cluster and Berlin and Leipzig the third. In addition one may also discern the considerable heterogeneity among the objects in the second and third clusters.

It is noticeable that the reconstruction of the Berlin Olympic Stadium can still be found in the cluster of newly-built stadia, although Hamburg's AOL Arena by contrast is allocated to the cluster which otherwise contains reconstructed and extended stadia. Figure 4 demonstrates the special position of Hamburg and Cologne among the World Cup venues with reconstruction or extension works, which is expressed in a higher level of heterogeneity in

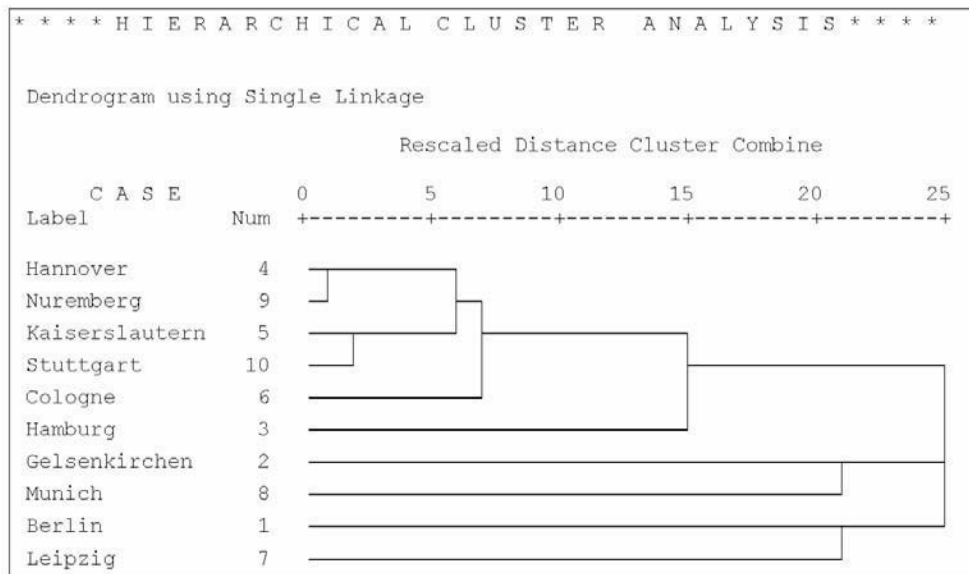
<sup>10</sup> The Q correlation coefficients are a measurement of similarity that transfers the approach developed by Bra-vais and Pearson to binary parameters (Gower, 1967, pp. 623-638). Although measurement of distance is usually prevalent in metrically scaled parameters, under certain conditions the measurement of similarity may be meaningful. The Q correlation coefficient is not suited to parameter values between -1 and +1 if only two variables (i.e. parameters) are being analysed. However, this is not the case here, since the five known parameters are always included in the analyses.



relation to the other cities of this cluster. A clear and unambiguous separation between cities with reconstructed or extended stadia on the one hand and newly-built stadia on the other cannot however always be depicted.

Finally the single linkage clustering (or nearest neighbour method) was used, which is particularly good at finding elongated or large area clusters.<sup>11</sup> Following Figure 5 indicates the ten World Cup venues once again resolve into two clusters. Hannover, Nuremberg, Kaiserslautern, Stuttgart, Cologne and Hamburg are arranged in the first, whereby Hamburg is only allocated to this cluster after a conspicuous increase in heterogeneity. This can convincingly be explained by Hamburg's particular status as newly-built stadium among the reconstruction and extension works. The second cluster contains the objects Gelsenkirchen, Munich, Berlin and Leipzig. Berlin is the only declared reconstruction in this cluster of new buildings.

**Figure 5: Cluster analysis (single linkage method)**



Source: authors' own illustration.

However, this "misallocation" can also be interpreted. Berlin's € 242 million stadium reconstruction was only marginally cheaper than the most expensive newly-constructed stadium (Munich's Allianz Arena, € 280 million). The high level of heterogeneity between the

<sup>11</sup> This is a contractive method, in contrast to the conservative methods of the Ward and average linking methods, cf. Lance and Williams (1966, p. 374).

individual objects of the “new stadium cluster” can clearly be seen. The cluster analysis thus confirms a fundamental impression of the relations between the investments as given in Figure 2: the heterogeneity, particularly among venue locations with new buildings, is apparently too great to be of use with regard to venue investments in making any statements about the expected volume of infrastructure investments.

The results of the cluster analyses which saw the allocation of the objects into two clusters (Ward method, single linkage method) was tested with a two-group discriminant analysis, in which as before the five independent variables: volume of sports venue investment costs, volume of World Cup related infrastructure costs, number of city inhabitants, change in stadium capacity and distance to previous venue were used, as well as a constant.

The variables were standardised in order to improve the explanatory power of the discriminant coefficients. The discriminant coefficients were normalised, because the eigenvector of the discriminant coefficients is only determinable up to an arbitrary factor. The normalisation was performed in such a way that the pooled variance of the discriminant values becomes equal to one:  $(s_d^2)^{pooled} = 1$ . The values of the standardised discriminant coefficients in Table 3 show that the sports venue investments have the greatest discriminant power on which of the two clusters a World Cup venue is allocated to. To check whether and to what extent the correlations reported in Table 2 lead to distortions of the standardised discriminant coefficients, Table 3 also shows the corresponding structure coefficients. These clearly illustrate that the influence of the volume of stadium investment costs on the separation power of the discriminant variables tends to be biased downward, whilst the influence of the volume of infrastructure investment costs and the number of inhabitants tends to be biased upwards. Overall the volume of stadium and infrastructure investment costs have the greatest discriminant power in the separation of the two groups. However, the variables number of inhabitants, change in capacity and distance to previous sports venue display an isolated influence of at least 11%.

The eigenvalue of the discriminant criterion amounts to 30.00, the canonical correlation coefficient to 0.984 and Wilks' lambda to 0.032. At 18.887, the Bartlett chi-square distributed test statistic is also beyond the critical value of 11.1 for  $\chi^2_{(5;0.95)}$ . The null hypothesis, that the discriminant function is unsuited to the separation of the two groups, should be discounted with less than 1% probability of error.

Overall the discriminant analysis confirms the cluster analysis according to the Ward and single linkage methods as far as the goodness of the separation between the two groups is concerned (Hannover, Nuremberg, Kaiserslautern, Stuttgart, Hamburg und Cologne one the one hand and Gelsenkirchen, Munich Berlin and Leipzig on the other). The discriminant analysis also clearly shows that the separation can primarily be deduced from the variables of the volume of stadium and infrastructure investment costs and only secondarily

from the auxiliary variables of number of inhabitants, change in capacity and distance to previous venue. The intended separation of the two groups into locations with reconstructed and extended stadia on the one hand and locations with newly-built stadia on the other can evidently not be achieved, even with the aid of cluster and discriminant analyses and a number of coherent auxiliary variables.

**Table 3: Standardised discriminance coefficients and structure coefficients**

Variable	Standardised canonical discriminance function coefficients			Structure matrix		
	Values	Percentage of the absolute values	Significance ranking	Values	Percentage of the absolute values	Significance ranking
Stadium costs	-3.996	36.14%	1	-0.234	40.67%	1
Infrastructure costs (World Cup related projects)	-1.084	9.80%	5	-0.116	20.09%	2
Inhabitants	2.169	19.62%	3	-0.064	11.10%	5
Change in capacity	2.595	23.47%	2	0.072	12.49%	4
Distance to previous sports venue	1.212	10.97%	4	-0.090	15.65%	3
Sum (of the absolute values)	11.056	100.00%		0.576	100.00%	
<b>Test statistic</b>	<b>Eigenvalue</b>	<b>Canonical correlation coefficient</b>	<b>Wilks' lambda</b>	<b>Chi-square</b>	<b>Significance</b>	
Value	30.00	0.984	0.032	18.887	0.002	

Source: authors' own calculations.

#### 4. Summary

The costs of the 12 stadia for the 2006 World Cup amount to some € 1.4 billion. The volume of the World Cup related infrastructure investments in the 10 World Cup locations examined here amounts to some € 1.57 billion.

In addition to the insights gained from the collation and systematisation of the data, the objective of this study was to discover, with a view to the planning of future large-scale sporting events, possible relationships between the type of sports venue investments and the volume of the infrastructure investments required in each case.

However, the derivation of such a set of rules entails a number of difficulties. In the case of the 2006 World Cup the variance of the infrastructure investment costs is significantly higher than that of the sports venue investments. A separation or cluster formation in newly-built stadia on the one hand and reconstructed or extended stadia on the other was unsuccessful.

In the case of the 2006 World Cup this may be due to certain particularities. Thus historical reasons meant that the sports venues in Leipzig, which actually were centrally located and had been used previously, nevertheless provided inadequate access. In Hannover the building work on the stadium, which was officially designated as a reconstruction, but which was so elaborate as to almost be a new building, benefited from a large-scale event that had taken place a few years before (the EXPO 2000).

Particularities of this kind mean that it is not directly possible to transfer the results on the infrastructure costs of the 2006 World Cup to other large-scale sporting events and/or to other nations, especially since in contrast to the soccer World Cup, many other large-scale events essentially only take place in a single location. An attempt to systematise the volume of infrastructure costs may thus be appropriate for other events and other countries.

For economic analyses the insight remains that the infrastructure costs – for the World Cup related investments chosen here – are as a rule significantly higher than the sports venue costs alone. For the planning of future major sporting venues and large-scale events the infrastructure costs should receive more attention in comparison with the sports venue investments.

### Abstract

This study uses the example of the 2006 soccer World Cup in Germany to examine whether any systematic relationships exist between infrastructure investments on the one hand and investments in the respective stadium on the other. Particular attention is paid to an examination of whether the relative infrastructure costs in the case of newly-built stadia differ from those relating to stadia that have been reconstructed or extended. Such systematic relationships, or “rules of thumb”, could be used in the future to simplify the prediction of the expected volume of necessary infrastructure measures for major sporting events (other soccer World Cups, the Olympic Games, etc.) on the basis of the investment required for the sports venues. Our study makes use of a cluster and discriminant analysis and concludes that such general rules cannot be derived from the 2006 World Cup in Germany.

*Keywords:* Infrastructure investments; sport stadia costs; cluster analysis; discriminant analysis

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## Appendix

Table A1: Infrastructure costs of the individual World Cup venue locations

Location	Sector	Allocation	No.	Name	Responsible	Costs (in € million)
Berlin	public transport	non World Cup related	1	Railway junction Berlin Central Station/Lehrter Station. Construction of new central intercity station; transfer opportunities between North-South connections and the East-West city railway	German Railways	700.0
			2	North-South intercity railway tunnel	German Railways	500.0
			3	Gesundbrunnen station: Construction of a new, additional intercity and regional station with connections to the city railway and underground.	German Railways	315.0
			4	Expansion of the railway line from Berlin-Warsaw (Berlin-Frankfurt/Oder): expansion, modernisation and speed increase	German Railways	224.1
			5	Expansion/new construction work on the railway line Anhalter Railway, Berlin section (Berlin-Halle/Leipzig-Nuremberg-Munich) including Berlin South Station (Papestrasse)	German Railways	355.0
			6	Increasing performance of the city railway connection from Berlin's Bahnhof Zoo to the Olympic Stadium	German Railways	not available
			7	Reconstruction and modernisation of the Charlottenburg city railway station	German Railways	not available
			8	Construction of a new underground line Central Station/Lehrter Bahnhof-Brandenburger Tor (U 55) including the stations Reichstag (partial extension for commuter transport up to the World Cup in line with the Capital City Contract)	Land Berlin and BVG	28.0
			9	Construction of the missing second access points to the underground line 2 (Pankow-Ruhleben): Deutsche Oper, Sophie Charlotte-Platz and Theodor Heuss-Platz (here also with construction of lifts)	State of Berlin and BVG	8.3
		<i>Sum</i>				2 130.4
	private transport	World Cup related	1	A11 3-way motorway junction Schwanebeck - motorway interchange Uckermark, overhaul extension with addition of missing hard shoulder	Federal Government	173.1
			2	A113 3-way motorway junction Neukölln - junction Späthstrasse or Adlershof, new 6-lane section (PART)	Federal Government	314.6



			3	B5 bypass Wustermark A10 - major road - GR BB/BE (2nd lane), 4-lane expansion/ construction of new 4-lane section	Federal Government	37.5
			4	B96 A10 (junction Rangsdorf) - major road - GR BB/BE, 4-lane expansion	Federal Government	39.5
			5	B96a Schönefeld - Mahlow (2nd lane), 4-lane expansion	Federal Government	9.0
			6	B 101n Federal motorway feeder Grossbeeren, construction of new 4-lane section	Federal Government	71.6
			7	B101 Marienfelder Allee, 4-lane extension	Federal Government	9.1
			8	B5 Heerstrasse, extension with creation of a continual regular 4-lane cross-section and addition of missing left-turn lane (contained in no. 3)	Federal Government	0.0
				<i>Sum</i>		654.4
			1	A113 3-way motorway junction Neukölln - junction Späthstrasse or Adlershof, new 6-lane section (PART)	Federal Government	157.4
				<i>Sum</i>		157.4
				<i>Sum</i>		811.8
Total Sum Berlin						2 942.2

Source: Cf. BVWP (20003a, p. 97), Doelfs (2005, p. 1), Stockmann (2005, p. 4), N.N. (2005a, p. 1), N.N. (2005b, p. 1), N.N. (2005c, p. 1), email from the BVG (Berlin Public Transport), Mrs. Rubbel, from 11.08.2005 as well as information by telephone from Department S 10 of the BMVBS, Mr. Joop, from 12.08.2005. According to information by telephone from DB Netz & Betrieb (*German Railways Network and Operation*), Mr. Zimmermann, from 26.09.2005, the collated cost data on the German Railway's public transport projects are too low. However, the German Railways were not able to provide their own cost estimates for the projects in Berlin.

**Table A1: Infrastructure costs of the individual World Cup venue locations (Cntd. 1)**

Location	Sector	Allocation	No.	Name	Responsible	Costs (in € million)
Gelsenkirchen	public transport	World Cup related	1	Gelsenkirchen Central Station, station redesign	German Railways/State City of Gelsenkirchen/ BO-GESTRA	15.7
			2	Central Station, reconstruction of the platforms to enable 2 double traction trains to stop	Gelsenkirchen/ BO-GESTRA	2.5
			3	Overhead electrical cables for Line 302, double traction trains incl. disabled access, Buer, bus station	City of Gelsenkirchen/ BO-GESTRA	7.0

			4	Additional platform for the city railway station Arena Auf Schalke	BOGESTRA	1.0	
			5	Roofing of the city railway station Arena Auf Schalke	City of Gelsenkirchen/ BOGESTRA	2.5	
			<i>Sum</i>				28.7
private transport	World Cup related		1	A2 junction Essen/Gladbeck - junction Gelsenkirchen/Buer - reconstruction of the junction Essen-Gladbeck A2/B224 (6-lane extension)	Federal Government	7.5	
			2	A42 new construction of the junction Schalke (No.17) to relieve junction Gelsenkirchen-Bismark (No. 18), Gelsenkirchen-Schalke (No.16, the City Center) and Gelsenkirchen-Buer (A2, No.6), improved access to Arena auf Schalke.	City of Gelsenkirchen	22.4	
			3	Vinckestrass (B226), improving performance (access road to the Arena).	City of Gelsenkirchen	2.6	
			4	Uferstrasse, between Kurt Schumacher-Str. (L608) and Grothusstr. (L633), improvement in the crossing area, Arena access road.	City of Gelsenkirchen	4.3	
			5	Optimisation of transport processes, improvement in transport management and signals.	City of Gelsenkirchen	2.5	
			<i>Sum</i>			39.3	
			1	A2 Gelsenkirchen-Buer-junction Herten (6-lane expansion)	Federal Government	45.9	
			<i>Sum</i>			45.9	
			<i>Sum</i>			85.2	
Total Sum Gelsenkirchen						113.9	

Source: Cf. BVWP (2003b, pp. 123-125). Information by telephone from the City of Gelsenkirchen, Mr. Konietzka, from 30.04.2005.

**Table A1: Infrastructure costs of the individual World Cup venue locations (Cntd. 2)**

Location	Sector	Allocation	No.	Name	Responsible	Costs (in € million)
Hamburg	public transport	World Cup related	1	City railway, modernisation of Stellingen station	German Railways Station & Service	1.9
			2	Improvement in access from the city railway station Stellingen to the stadium	City of Hamburg	1.8

		3	Improving attractiveness of the connection between the city railway station Stellingen and the shuttle bus line	City of Hamburg	4.0
		4	Reconstruction of the square in front of Othmarschen station and creation of a bus shuttle to the stadium	City of Hamburg	0.5
			<i>Sum</i>		8.2
		1	Renovation of the railway bridge Reichsbahnstrasse and modernisation of Eidelstedt station	German Railways	0.8
		2		Flughafen Hamburg GmbH (Hamburg Airport)	Not available/not a World Cup project according to the City of Hamburg
			Airport Terminal 2 extension, forecourt roads	Airport (Hamburg Airport)	0.8
			<i>Sum</i>		9.0
private transport	World Cup related	1	Expansion Sylvesterallee for buses, taxis and pedestrians	City of Hamburg	0.6
		2	Expansion Hellgrundweg	City of Hamburg	0.6
		3	Expansion Stadionstrasse	City of Hamburg	0.3
		4	Reconstruction of the junction Volkspark on the A7 including reconstruction Schnackenburgsallee	Federal Government/Hamburg	2.7
		5	New construction of a bus parking area with approx. 70 places in the Schnackenburgsallee	City of Hamburg	1.9
		6	Interim bus parking area (approx. 300 places)	City of Hamburg	1.0
		7	Sign posting of the Arena in the city network	City of Hamburg	0.2
		8	Additional cameras for traffic management around the Arena (motorway junction Northwest, junction Volkspark)	City of Hamburg	0.3
		9	Dynamic parking system for the Arena	City of Hamburg	0.8
		10	Networking of the operative traffic management centres	City of Hamburg	0.0
		11	Bilingual (German/English) city public transport direction system	City of Hamburg	0.0
		12	Internet platform for the 2006 World Cup (Verkehrsinform-Hamburg.de)	City of Hamburg	0.1

		13	Improving accessibility for parking areas around the stadium including refurbishment of approx. 8,000 parking places and improvement of a pedestrian access route from the car park to the stadium	City of Hamburg	6.1
			<i>Sum</i>		14.5
	non World Cup related	1	A7 Hamburg-Othmarschen - Hamburg-Waltershof (additional 4th tunnel for the Elbe tunnel), 8-lane expansion (tunnel construction)	Federal Government	874.3
		2	Bypass Fuhlsbüttel (1st + 2nd construction stages), 4-lane connection to airport	Federal Government	223.9
			<i>Sum</i>		1 098.2
			<i>Sum</i>		1 112.7
Total Sum Hamburg					1 121.7

Source: Cf. Notification from the Authority for Urban Planning and the Environment (BSU) Hamburg, Mr. Welschinger, from 26.07.2005 as well as BMVBS (2005a, pp.123-125).

**Table A1: Infrastructure costs of the individual World Cup venue locations (Cntd. 3)**

Location	Sector	Allocation	No.	Name	Responsible	Costs (in € million)	
Hannover	public transport		1	Passenger information and directing as a city railway security, direction and information system as well as passenger directing at the city railway stations	German Railways/ City of Hannover	0.0	
				<i>Sum</i>		0.0	
			1	Reconstruction of the passenger interchange at Linden station	German Railways	25.6	
				<i>Sum</i>		25.6	
	private transport	World Cup related		1	A7 motorway junction Hannover North - junction Grossburgwedel (PART)	Federal Government	0.2
				2	A7 junction Grossburgwedel- motorway interchange Hannover-Kirchhorst (PART)	Federal Government	9.6
				3	A7 motorway interchange Kirchhorst - motorway interchange Hannover Ost (PART)	Federal Government	5.1
4				A7 motorway interchange Hannover Ost - junction Hildesheim	Federal Government	28.1	
				<i>Sum</i>		43.0	
			1	A2 motorway interchange Hannover Ost - Marienborn L-GR NI/ST	Federal Government	685.0	

		2	A7 motorway junction Hannover North - junction Grossburgwedel (PART)	Federal Government	31.0
		3	A7 junction Grossburgwedel- motorway interchange Hannover-Kirchhorst (PART)	Federal Government	21.1
		4	A7 motorway interchange Kirchhorst - motorway interchange Hannover Ost (PART)	Federal Government	21.1
		5	B217 bypass Weetzen Evestorf	Federal Government	32.0
			<i>Sum</i>		790.2
			<i>Sum</i>		833.2
Total Sum Hannover					833.2

Source: Cf. BVWP (2003c, pp. 115-116), N.N. (2003, pp. 1-2), N.N. (2005d, p. 2), information from the Department of "Coordination and Citizens' Service" of the City of Hannover, Mr. Sonnenberg, from 30.04.2005, as well as information by telephone from 11./12.08.2005 from Department S 10 of the BMVBS, Mr. Joop.

**Table A1: Infrastructure costs of the individual World Cup venue locations (Cntd. 4)**

Location	Sector	Allocation	No.	Name	Responsible	Costs (in € million)
Kaiserslautern	public transport	World Cup related	1	Reconstruction of the Central Station with a direct pedestrian path to the stadium and construction of platform 4	German Railways, Investor "Betze-Galerie"	5.0
			2	Redesign of the square in front of the station with central bus station	City of Kaiserslautern	10.0
			3	Regional and City railway Rhein-Neckar	German Railways	7.0
			4	Extension of the city railway line beyond Kaiserslautern to Homburg	Federal Government, State, German Railways	15.5
				<i>Sum</i>		
			1	Paris-East France-Southwest Germany railway line (POS) on the German side	German Railways	270.0
				<i>Sum</i>		270.0
				<i>Sum</i>		307.5
	private transport	World Cup related	1	A 63 (PART)	Federal Government	75.6
			2	North Expressway: expansion of the Mainzer Strasse; 4-lane expansion of the Mainzer Strasse (partly completed)	City of Kaiserslautern	3.0

	3 South Expressway: expansion of the Zollamtstrasse, expansion of a city road and a previously private German Railways area to form a 2 lane roadway (length approx 950 m.). Construction of a roundabout at the junction with the Bremerstrasse. Connection to the Trippstadter Strasse with traffic light controlled junction.	City of Kaiserslautern	2.3
	4 South Expressway: expansion of the crossing Logenstrasse/Eisenbahnstrasse, expansion of the crossing in the context of the South Expressway project. The crossing is expanded with turn-off lanes and traffic lights.	City of Kaiserslautern	1.0
	5 Expansion of the Pirmasenser Strasse: complete reconstruction of the heavily damaged street with park areas, pedestrian footways and cycling traffic lights	City of Kaiserslautern	0.6
	6 South Expressway: 4-lane expansion of the Dammstrasse in the context of the South Expressway project (length approx. 500m). The street is widened to the north (German Railways property) and the railway bridge demolished. The measure comprises connection with the crossing Brandenburger Strasse/Hohenecker Strasse and junction with the Königstrasse (both with traffic lights).	City of Kaiserslautern	4.8
	7 Expansion of the Eisenbahnstrasse: the Eisenbahnstrasse is the main connecting road between the Fritz-Walter Stadium and the inner city area. In the remaining section it is to be expanded between Karl-Marx-Strasse and Logenstrasse (including park areas and pedestrian paths).	City of Kaiserslautern	1.0
	8 South Expressway: expansion of the crossing Logenstrasse/Rudolf-Breitscheid-Str., expansion of the crossing in the context of the South Expressway project. The crossing is to be expanded with turn-off lanes and traffic lights. The measure to be completed in advance as part of the subsidy planning for the expansion of the Rudolf-Breitscheid-Strasse.	City of Kaiserslautern	0.7

	9	Completion of the redesign of the pedestrian precinct: the pedestrian precinct had already been redesigned over recent years in the sections Fackelstrasse and Riesenstrasse. The remaining section in the Marktstrasse should be completed by the 2006 World Cup.	City of Kaiserslautern	1.2
	10	Redesign of the Willy-Brandt-Platz (square in front of the town hall): elimination of building deficiencies (PART)	City of Kaiserslautern	0.4
	11	Creation of a city information system: this should be completed by the 2006 World Cup and provide information to visitors at entrances to the city and in the inner city area .	City of Kaiserslautern	0.4
	12	Bus parking area Bremerstrasse: the surface of the bus parking area is to be renewed. A stairway to be built between the bus parking area and the stadium. Bus parking area Kniebrech: surface to be renewed.	City of Kaiserslautern	0.2
	13	Reconstruction and renovation of the roads and footpaths around the stadium	City of Kaiserslautern	0.7
	14	Construction of the "Schweinsdell" car park with 2600 spaces directly by the A6	City of Kaiserslautern	2.5
	15	Opening of the military exit as additional motorway exit for a direct connection to the "Schweinsdell" Park and Ride area (Kaiserslautern East).	City of Kaiserslautern	0.5
	16	Rendering of the car park surface in IG-North	City of Kaiserslautern	0.1
		<i>Sum</i>		<i>95.0</i>
	1			not available/ not a World Cup project according to the City of Kaiserslautern
non World Cup related	2	A6 Kaiserslautern West - junction Landstuhl	Federal Government	not available/ not a World Cup project according to the City of Kaiserslautern
	3	B270 A6 Siegelbach	Federal Government	of Kaiserslautern
		A 63 (PART)	Federal Government	21.9

		4	B 37 bypass Hochspeyer	Federal Government	15.3
		5	North Expressway: 4-lane expansion of the Ludwigstrasse	City of Kaiserslautern	3.9
		6	Redesign of the Willy-Brandt-Platz (square in front of the town hall): elimination of construction deficiencies (PART)	City of Kaiserslautern	0.3
			<i>Sum</i>		<i>41.4</i>
			<i>Sum</i>		<i>136.4</i>
Total Sum Kaiserslautern					443.9

Source: Cf. BVWP (2003d, p. 132), Glahn (2003, p. 1), Bross (2003), N.N. (2005e), notification from the Department of Law and Order – Traffic Authority of the City of Kaiserslautern, Mr. Dressing from 26.07.2005 and information by telephone from 11./12.08.2005 from Department S 10 of the BMVBS, Mr. Joop. Two private transport projects listed under (2005a, p. 11), the expansion of the A6 Kaiserslautern West - junction Landstuhl as well as the connection of the B270 to the A6 near Siegelbach, are completely unrelated to the 2006 World Cup according to the City of Kaiserslautern and for this reason are not even listed here under the summary including the non World Cup related projects.

**Table A1: Infrastructure costs of the individual World Cup venue locations (Cntd. 5)**

Location	Sector	Allocation	No.	Name	Responsible	Costs (in € million)
Cologne	public transport	non World Cup related	1	Inclusion of the Cologne/Bonn Airport in the German Railway's intercity network and Cologne's city railway network	German Railways	19,1
			2	Reconstruction of the city railway station RheinEnergie Stadium, extension of city railway line 1 and connection with planned city railway station Bonnstrasse	City of Cologne, German Railways	6.9
			3	City railway connection Cologne/Bonn Airport – planned city railway station Bonnstrasse	City of Cologne, German Railways, VRS, State of NRW	3.0
			4	Construction of the city railway station Bonnstrasse with related measures including extension of city railway line 1 to city railway station Bonnstrasse and creation of the P+R area with 400 spaces	City of Cologne, German Railways, VRS, State of NRW	7.1
			5	Installation of a direction system at the public transport connections and at stops from where the RheinEnergie Stadium can be reached on foot	City of Cologne, German Railways, VRS	3.8



<i>Sum</i>					39.9
private transport	World Cup related	1	A4 new junction Bonnstr. (L 183) in sector Frechen, new construction	Federal Government	3.0
		2	A3 motorway interchange Cologne-East - motorway junction Heumar, 8-lane expansion	Federal Government	67.0
		3	P+R area Bonnstr., 1st building stage	City of Cologne	Contained in no. 3 (public transport)
		4	Expansion of the traffic management system to the area of the stadium: dynamic traffic information and directions, pedestrian direction system and local resident protection plans	City of Cologne	0.6
		5	Dürener Str. (B 264) from Marsdorfer Str. to the federal motorway A1	City of Cologne Kölner Sportstätten GmbH (Cologne)	9.8
		6	Cycle and pedestrian paths around the stadium	Sports Venues)	0.4
		7	Dynamic traffic information and directions	City of Cologne	1.3
		8	Inclusion of the stadium car parks in the car park traffic direction system	City of Cologne Landesbetrieb Straßenbau NRW (NRW state-run road construction company)	Contained in no. 7
		9	Dürener Str. from Salzburger Weg to Marsdorfer Str. (3-lane expansion) including lane signalling system	City of Cologne	1.6
		10	Renovation of roads and paths around the stadium	City of Cologne Kölner Sportstätten GmbH (Cologne)	1.3
		11	Construction and rebuilding work on the stadium car parks as well as measures to redesign the area around the stadium	Sports Venues)	6.0
<i>Sum</i>					90.9
non World Cup related		1	A1 motorway interchange Cologne-North-German Railways Aachen-Cologne line, 6-lane expansion	Federal Government	99.0
		2	A1 German Railways Aachen-Cologne line - motorway interchange Cologne-West, 6-lane expansion	Federal Government	106.0
		3	A4 junction Weisweiler - junction Düren (m) (o Rur bridge), 6-lane expansion	Federal Government	46.6

			A4 motorway interchange Kerpen - motorway interchange Cologne-West, 6-lane expansion	Federal Government	78.0
			A1 junction Remscheid - TR Remscheid, 6-lane expansion	Federal Government	32.9
			A4 junction Eschweiler - junction Weisweiler, 6-lane expansion	Federal Government	46.5
			Cycle/pedestrian path from Schulstr. to Bonnstr.	City of Cologne	0.1
			Expansion of the traffic management system to the area of the stadium: dynamic traffic information and directions, pedestrian direction system and local resident protection plan	City of Cologne	0.2
			<i>Sum</i>		<i>409.3</i>
			<i>Sum</i>		<i>500.2</i>
Total Sum Cologne					540.1

*Source:* Cf. BVWP (2003b, pp. 123-125) as well as information from the Office of Urban Development and Statistics of the City of Cologne, Mr. Kolm, from 08.07.2005 and from 18.01.2006. Cf. information from the Office of Urban Development and Statistics of the City of Cologne, Herr Kolm, from 18.01.2006. According to the City of Cologne, the extensions with regard to the BMVBS (2005a, pp.13-14) are World Cup related projects under the responsibility of the Landesbetrieb Straßenbau NRW (*North-Rhine-Westphalia state-run road construction company*), the City of Cologne and the (*Cologne Sports Venues*). The City of Cologne bears a proportion of approx. € 14 million of the overall infrastructure costs. If calculations are based just on the World Cup related projects, the City of Cologne's share is still some € 10.9 million.

**Table A1: Infrastructure costs of the individual World Cup venue locations (Cntd. 6)**

Location	Sector	Allocation	No.	Name	Responsible	Costs (in € million)
Leipzig	private transport	World Cup related	1	A14 motorway interchange Schkeuditz - junction Central Leipzig, 6-lane expansion and overhaul with hard shoulder extension	Federal Government	46.7
			2	S1, relocation south of Lindenthal (motorway access road to the A 14, Leipzig North)	State of Saxony	1.6
			3	S1, relocation north of Lindenthal (motorway access road to the A 14, Leipzig North)	State of Saxony	Contained in no. 2
			4	S 8a western airport approach road	State of Saxony	Contained in no. 2
			5	S38a, relocation near Liebertwolkwitz	State of Saxony	Contained in no. 2

		6	S 43 new, expansion near Großpösna	State Saxony	of	Contained in no. 2	
		7	Marschnerstrasse from Käthe-Kollwitz-Str. to Ferdinand-Lassalle-Strasse	City Leipzig	of		0.8
		8	Expansion of junction Leutzscher Allee/Waldstrasse	City Leipzig	of		1.5
		9	Junction Leutzscher Allee/ Friedrich-Ebert-Str. (roundabout)	City Leipzig	of		0.4
		10	Rückmarsdorfer Strasse with bridge over German Railway facilities	City Leipzig	of		5.8
		11	Junction Merseburger Str./Hupfeldstr. as well as Merseburger Str./Rückmarsdorfer Str.	City Leipzig	of		3.1
		12	Jahnallee from Zeppelinbrücke-Leibnizstr.-Rosenthal	City Leipzig	of		25.3
		13	Junction Goedelerring	City Leipzig	of		4.0
		14	Johannisplatz	City Leipzig	of		5.4
		15	Pragerstr./city railway line 15 with Prager Brücke (Section Kregelstr. - An der Tabaksmühle)	City Leipzig	of		14.8
		16	Expansion of the Lützener Str. between Zschochersche Str. and Odermannstr.	City Leipzig	of		1.5
		17	Friedrich-Ebert-Str. - Westplatz	City Leipzig	of		2.7
		18	Station Angerbrücke	LVB GmbH			4.0
		19	Willy-Brandt-Platz	LVB GmbH			10.7
			<i>Sum</i>				<i>128.3</i>
	non World Cup related	1	A38 southern ring road Leipzig: junction Leipzig Southwest (B186) - junction Leipzig South (B2/B95), construction of new 4-lane section	Federal Government			155.9
		2	A72 BA: junction Borna North - junction Borna South (bypass Borna) construction of new 4-lane section	Federal Government			12.9
		3	A72 BA 1.1: motorway interchange Chemnitz (A4/A72) to Hartmannsdorf, construction of new 4-lane section	Federal Government			53.0
		4	A72 construction stage 1.2: Hartmannsdorf - Niederfrohna, construction of new 4-lane section	Federal Government			45.0
		5	A14, junction Central Leipzig - junction Leipzig-Messegelände	Federal Government			49.4
		6	A38 South ring road Leipzig: junction Leipzig-South - junction Leipzig-Southeast, construction of new 4-lane section	Federal Government			52.3

			7	A38 South ring road Leipzig: junction Leipzig-Southeast - motorway junction Parthenaue, construction of new 4-lane section	Federal Government		49.2	
			8	North Expressway Schönefeld with Hermann-Liebmann-Bridge	City of Leipzig		34.1	
			9	Eisenbahnstr. (from Rosa-Luxemburg-Strasse - Torgastrasse)	City of Leipzig		4.3	
				<i>Sum</i>			456.1	
				<i>Sum</i>			584.3	
Total Sum Leipzig								584.3

*Source:* Cf. BVWP (2003e, pp. 138-139), information from the Building Department of the City of Leipzig on the World Cup transport projects under the responsibility of the City of Leipzig from 24.06.2005 as well as information by telephone from 11./12.08.2005 from Department S 10 of the BMVBS, Mr. Joop. Since the City of Leipzig was not able to provide any information on measures under the responsibility of the Leipziger Verkehrsbetriebe (*Leipzig Transport Companies*) [LVB], 13 public transport measures that are listed in BMVBS (2005a, p. 15) are not taken into consideration in the above table. This means that the investment sum for transport infrastructure measures in the World Cup location Leipzig is on the low side.

**Table A1: Infrastructure costs of the individual World Cup venue locations (Cntd. 7)**

Location	Sector	Allocation	No.	Name	Responsible	Costs (in € million)
Munich			1	Installation of a traveller information system (DEFAS) and a direction system at all connection points	City of Munich / German Railways	11.0
			2	Underground line 6: extension and expansion of Fröttmaning station, line refurbishment to cope with a capacity of 20,880 persons per hour, expansion and extension of the connecting station Marienplatz, creation of a passenger information system	MVV	98.6
				<i>Sum</i>		109.6
	private transport	World Cup related	1	Installation of a traffic direction system and its connection with the traffic management network on the federal major road network	City of Munich / Federal Government; AV Bayern	14.6
			2	Construction of a main road between the A9 (junction-Munich-Fröttmaning) and the A99 (partial connection stadium)	City of Munich	50.1

			3		Federal Government/City of Munich	6.9
			4	A99, reconstruction westbound motorway interchange Munich-North (partial connection stadium)	Neubau (Kostenträger Stadt)	19.8
			5	A9 motorway interchange Neufahrn North; motorway interchange Munich North - junction Munich Frankfurter Ring	Federal Government	39.3
				<i>Sum</i>		<i>130.7</i>
			1	A99 Langwied (A8) - Unterpfaffenhofen (A96) m junction Germering	Federal Government	30.9
				<i>Sum</i>		<i>30.9</i>
				<i>Sum</i>		<i>161.6</i>
Total Sum Munich						271.2

Source: Cf. BVWP (2003f, pp. 87-88), N.N. (2005f) as well as information from the District Administration Department of the State Capital Munich, Mr. Reif, on World Cup projects under the responsibility of the City of Munich from 24.05.2005.

**Table A1: Infrastructure costs of the individual World Cup venue locations (Cntd. 8)**

Location	Sector	Allocation	No.	Name	Responsible	Costs (in € million)
Nuremberg	public transport	World Cup related	1	Expansion des city railway station Franken Stadium and increase in capacity to 15200 persons per hour – construction of a new special platform	German Railways	8.5
			2	Construction of a direction system from the relevant public transport stops to the stadium and back	City of Nuremberg, Stadium; VGN, VAG, German Railways	contained in measure 5 (IV)
			3	Creation of an intermodal travel schedule information service that can be accessed via PDA and UMTS mobile phones	VGN, German Railways, Free State of Bavaria	0.1
			4	Dynamic destination display (DEFIS) at selected stops	VAG	1.9
			5	Dynamic transmission of video images between VAG and the police	VAG	0.1
				<i>Sum</i>		
			1	A6 motorway interchange Nuremberg/South (flyover)	Federal Government	21.0

port	2	Refurbishment/reinforcement of roads and car parks in the area directly around the stadium (VIP parking area, stadium forecourt, parking direction system pylons, car park S2, car park S5, Hans-Kalb-Strasse/Karl-Steigelmann-Strasse, street lighting, cycle stands, Max-Morlock-Platz	City of Nuremberg	2.7
	3	Connecting the motorway management's traffic computer center to the police's city traffic center and the City's traffic computer	Federal Government/Bavaria, City of Nuremberg	Contained in measure 3
	4	Installation of a dynamic parking direction system	City of Nuremberg	Contained in measure 3
	5	Installation (improvement) of a pedestrian direction system from the car parks to the stadium	City of Nuremberg	0.2
	6	Expansion of the Gleiwitzerstr. between Breslauer Str. and K.-Schönleben-Str.	City of Nuremberg	1.0
	7	Additional right-turn lane from the Breslauer Str. into the Regensburger Str.	Nuremberg Department of Roadworks	0.2
		<i>Sum</i>		<i>25.1</i>
	1	Completion of a dynamic traffic direction system leading from the federal motorway network via the inner-city road network to the car parks around the stadium; including renewed expansion of the traffic direction system	Federal Government, Free State of Bavaria, City of Nuremberg	26.5
	<i>Sum</i>		<i>26.5</i>	
	<i>Sum</i>		<i>51.6</i>	

Total Sum  
Nurem-  
berg

62.1

*Source:* Cf. Information from the Economics Department about the World Cup related transport projects under the responsibility of the City of Nuremberg, Mr. Jülich, from 25.07.2005 and from 17.01.2006. The costs for the two supplemented infrastructure measures in the public transport sector, both of which were the responsibility of the Nuremberg Transport Company VAG, were provided by the Economics Department of the City of Nuremberg. According to information from the City of Nuremberg from 17.01.2006, these are World Cup related projects. In addition the City of Nuremberg differs from the BMVBS (2005a, p. 18) in listing 16 instead of eight infrastructure measures in the private transport sector. Of the 16 stated private transport projects, nine were however listed under No.2 of the World Cup related projects and two under No. 1 of the non World Cup related projects in Table

2, so that the total number of eight infrastructure measures in the private transport sector given by BMVBS (2005a, p. 18) remains.

**Table A1: Infrastructure costs of the individual World Cup venue locations (Cntd. 9)**

Location	Sector	Allocation	No.	Name	Responsible	Costs (in € million)
Stuttgart	public trans-	World Cup	1	Modernisation of the city railway station Gottlieb-Daimler-Stadium, expansion of the station, construction of a second platform.	German Railways/ City of Stuttgart	10.5
			2	Modernisation of the station Stuttgart-Bad-Cannstatt	German Railways/ State	9.5
			<i>Sum</i>			<i>20.0</i>
	private transport	World Cup related	1	A8 junction-Wurmberg-junction Heimsheim, 6-lane expansion	Federal Government	77.0
			2	B14 extension in Stuttgart (Südheimer Platz-Schattenring) construction of new 4-lane section (PART)	Federal Government	53.1
			3	Completion of the junction of the Martin-Schrenk-Weg to the Benzstrasse.	LHS Stuttgart	0.1
			4	Re-signing of "ball" to "stadium" pictogram	LHS Stuttgart	0.1
			5	Pedestrian direction system in Bad Cannstatt	LHS Stuttgart	0.2
			6	Emergency management	LHS Stuttgart	0.1
			<i>Sum</i>			<i>130.5</i>
			1	B14 extension in Stuttgart (Südheimer Platz-Schattenring) construction of new 4-lane section (PART)	Federal Government	5.4
		<i>Sum</i>			<i>5.4</i>	
		<i>Sum</i>			<i>135.9</i>	
Total Sum Stuttgart						155.9

*Source:* Cf. BVWP (2003g, pp. 79-80) as well as information from the Economics Department on the World Cup transport projects under the responsibility of the LHS (*State Capital*) Stuttgart, Mrs. Delarue from 15.07.2005. Three additional projects were also supplemented for Stuttgart (cf. Nuremberg). The costs for these three infrastructure measures in the private transport sector, all of which were under Stuttgart's responsibility, were provided by the Office for Public Order of the LHS Stuttgart. According to this information, the projects were World Cup related.