

15-05-2012

Plant location

http://pt.wikipedia.org/wiki/Anexo:Lista_de_distritos_portugueses_ordenados_por_popula%C3%A7%C3%A3o
<http://www.daftlogic.com/projects-google-maps-distance-calculator.htm>

Castelo Branco	195433 inhabitants
Évora	168034
Portalegre	24930
Badajoz	151565
Cáceres	95026
Mérida	57797
Santarém	32000
Tomar	15764

Distances from DaftLogic

	Castelo Branco	Évora	Portalegre	Badajoz	Cáceres	Mérida
Castelo Branco	0	143,9	59,8	113,6	103,1	141,1
Évora		0	88,9	88,3	166,7	141,6
Portalegre			0	61,6	93,6	102,4
Badajoz				0	85,2	53,5
Cáceres					0	62,3
Mérida						0

Coords. from gif

	X	Y	Castelo Branco	Évora	Portalegre	Badajoz	Cáceres	Mérida							
Castelo Branco	176	325	0	98,234414	39,319207	78,39005	70,384657	95,462034	1,4648634	1,5208852	1,4491635	1,4648079	1,4780745		
Évora	151	420		0	63,529521	60,539243	112,80071	95,880134		1,3993495	1,45855804	1,4778276	1,476844		
Portalegre	181	364			0	42,011903	61,188234	68,44706			1,46625112	1,5297059	1,4960467		
Badajoz	207	397				0	56,400355	36,221541				1,5106288	1,4770217		
Cáceres	241	352					0	41,048752					1,5177075		
Mérida	243	393						0							
Lisboa	78	408	for reference							Average, stdev:		1,47918236	0,033103		

Conversion factor

Distances, calculated

	Castelo Branco	Évora	Portalegre	Badajoz	Cáceres	Mérida							
Castelo Branco	0	145,31	58,16	115,95	104,11	141,21	1,4066111	1,6397235	2,35317935	1,0117433	0,1057568		
Évora		0	93,97	89,55	166,85	141,82		5,071746	1,24858073	0,1528187	0,2242017		
Portalegre			0	62,14	90,51	101,25			0,54326573	3,0914437	1,1543168		
Badajoz				0	83,43	53,58				1,7735906	0,0782637		
Cáceres					0	60,72					1,5814111		
Mérida						0						1,43	1,33 km

Coordinates and distances, km

	X	Y	Castelo Branco	Évora	Portalegre	Badajoz	Cáceres	Mérida	Weight
Castelo Branco	260,3	480,7	0	145,3	58,2	116,0	104,1	141,2	195433
Évora	223,4	621,3		0	94,0	89,5	166,9	141,8	168034
Portalegre	267,7	538,4			0	62,1	90,5	101,2	24930
Badajoz	306,2	587,2				0	83,4	53,6	151565
Cáceres	356,5	520,7					0	60,7	95026
Mérida	359,4	581,3						0	57797

Where is the depot ?

	X	Y	Weight	Dist_to_dep	Depot: X	Y	gif: X	Y
Castelo Branco	260,3	480,7	195433	88,26	291,55	563,29	197,10076	380,81462
Évora	223,4	621,3	168034	89,50				

Cost = $r \sum w_i d_i$ Minimize Solver model 48840983

Portalegre	267,7	538,4	24930	34,44
Badajoz	306,2	587,2	151565	28,06
Cáceres	356,5	520,7	95026	77,67
Mérida	359,4	581,3	57797	70,25
	km	km	kg	

4,88E+07

2
100

About halfway between Portalegre & Badajoz
286,96 562,83

Rate, $r = 1$ \$ / kg-km





Where is the depot ?

Increase the weight of Castelo Branco (or any other)

195000, 400000, ...

	X	Y	Weight	Dist_to_dep
Castelo Branco	260,34	480,73	195433	0,00
Évora	223,36	621,26	168034	145,30
Portalegre	267,73	538,42	24930	58,16
Badajoz	306,19	587,24	151565	115,95
Cáceres	356,48	520,67	95026	104,11
Mérida	359,44	581,32	57797	141,20
	km	km	kg	

Depot: X Y
 260,34 480,74 km
 Cost = $r \sum w_i d_i$ Minimize
 6,15E+07

fraction weight
 28,21%
 24,25%
 3,60%
 21,88%
 13,72%
 8,34%
 1

Solver model
 6,15E+07
 2
 100

Rate, r = 1 \$ / kg-km

Castelo Branco 431150 critical

