



2016 Olympic Games

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AN ANP MODEL DESIGNED TO CHOOSE THE BEST CITY.

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Abstract

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- IOC chooses the host city seven years in advance of the games
- Previous hosts have been accused of taking part in scandals to “guarantee” games at their cities.
- Rio de Janeiro was the actual city chosen to host the 2016 games on 10/2/2009.
- Searching for an objective manner of choosing Olympic cities

Olympic Games Introduction

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- First games were held in 1896, in Athens, Greece.
- Games have evolved into a grand spectacle of athletes and culture.
- Choosing the host city is extremely challenging for the IOC.
- Each city vying for the spot as host has unique qualities to offer the world

Our ANP Project Goal(s)

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- Our challenge: compose an Analytic Network Process model for choosing the host city of the 2016 Olympic Summer Games.
- We must eliminate subjectivity & bias and embrace objectivity & fact.

ANP Alternatives

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**FINALIST CITIES THAT MAY
HOST THE 2016 OLYMPIC
GAMES...**

**RIO DE JANEIRO, BRAZIL
CHICAGO, UNITED STATES
TOKYO, JAPAN
MADRID, SPAIN**

Rio de Janeiro, Brazil

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- Rio is a coastal city in the southern portion of Brazil.
- Well known for its spectacular views and unique culture.
- It is also one of the most violent cities in the world.
- It is scheduled to host the 2014 World Cup.
- This would be the first South American nation to ever host the Olympic Games (a potential strength towards receiving the bid)

Chicago, United States of America

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- Chicago is one of the largest metropolitan cities in the U.S.
- The city is deep with sports tradition.
- It has invested over \$50 million dollars into their bid for the 2016 games.
- President Barack Obama and his wife Michelle campaigned for the city's bid in Copenhagen
- Many believe it is the most lucrative and safe place to hold the games.

Tokyo, Japan

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- Tokyo is one of the largest & most populated cities in the world.
- It is believed to have over \$4 billion dollars ready to begin their preparations for the games.
- Tokyo previously hosted the Olympic Games in 1964

Madrid, Spain

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- Madrid is the largest city in Spain, 3rd largest in the European Union.
- It is considered a major financial center in Europe, and hosts the HQ of 3 of the world's top 100 companies.
- Olympic Games were previously held in Barcelona, Spain in 1992.

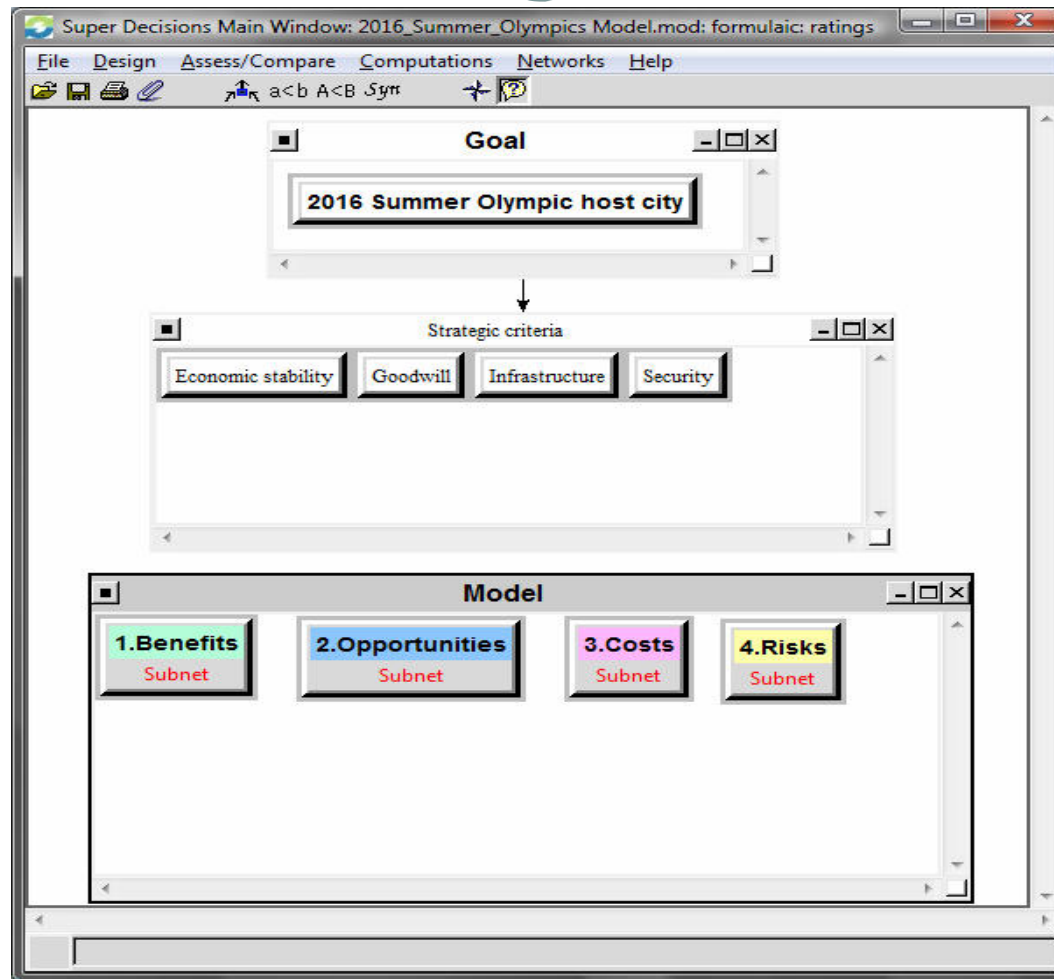
ANP Model

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**DEVELOPING A BENEFITS, OPPORTUNITIES, COSTS &
RISKS MODEL WAS IMPORTANT FOR THIS PROJECT.
THIS ALLOWED US TO REACH THE MOST
COMPREHENSIVE SOLUTION WHEN SELECTING THE
2016 CITY.**

First, we developed the top-level network...

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Next step, enter the subnets of the model cluster...

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Benefits							
Economic			Political			Social	
Local Businesses	Tourism	Economic Status	Political System	World Opinion	Power	Morale	Nationalism
Hotels	Landmarks	Agricultural	Communist	Outstanding	Crowd Control	High	Exceedingly Proud
Restaurants	Recreational Activities	Blue Collar	Democratic	Above Average	Organization	Neutral	Somewhat Proud
Stores	Tours	White Collar	Socialist	Average	Perception of Safety	Low	Indifferent
				Below Average	Police Presence		Embarrassed
				Terrible	Pomp and Circumstance		

Opportunities				
Economic		Social		
Jobs	Tourism	Internal Perception	Infrastructure	External Perception
Full-Time	Landmarks	Morale	Appearance	Acceptance
Part-Time	Recreational Activities	National Pride	Communication	Goodwill
Temporary	Tours		Facilities	Viability
			Transportation	

Costs				
Economic			Social	
Infrastructure	Security	Marketing	Citizens	Tourists
Communication	Accommodations	Celebrations	Affordability	Added Expenses
Facilities	Equipment	Ceremonies	Congestion	Cultural Differences
Maintenance	Personnel	Online	Crime	Event Availability
Transportation	Training	Print	Limited Access	Language Barrier
		TV/Radio		Safety

Risks							
Weather			Security		Infrastructure		
Climate	Natural Disaster	Detrimental Conditions	History	Capabilities	Facilities	Transportation	Communications
Arid	Earthquake	Excessive Cold	Air Tight	Excellent	Inadequate	Confusing	Insufficient
Mediterranean	Flooding	Excessive Heat	Crime Infested	Fair	Under Construction	Congested	Outdated
Mountain	Hurricane	Excessive Rain	Some Problems	Poor			
Polar	Tornado	Excessive Wind					
Temperate	Tsunami						
Tropical	Volcanic Eruption						

Benefits

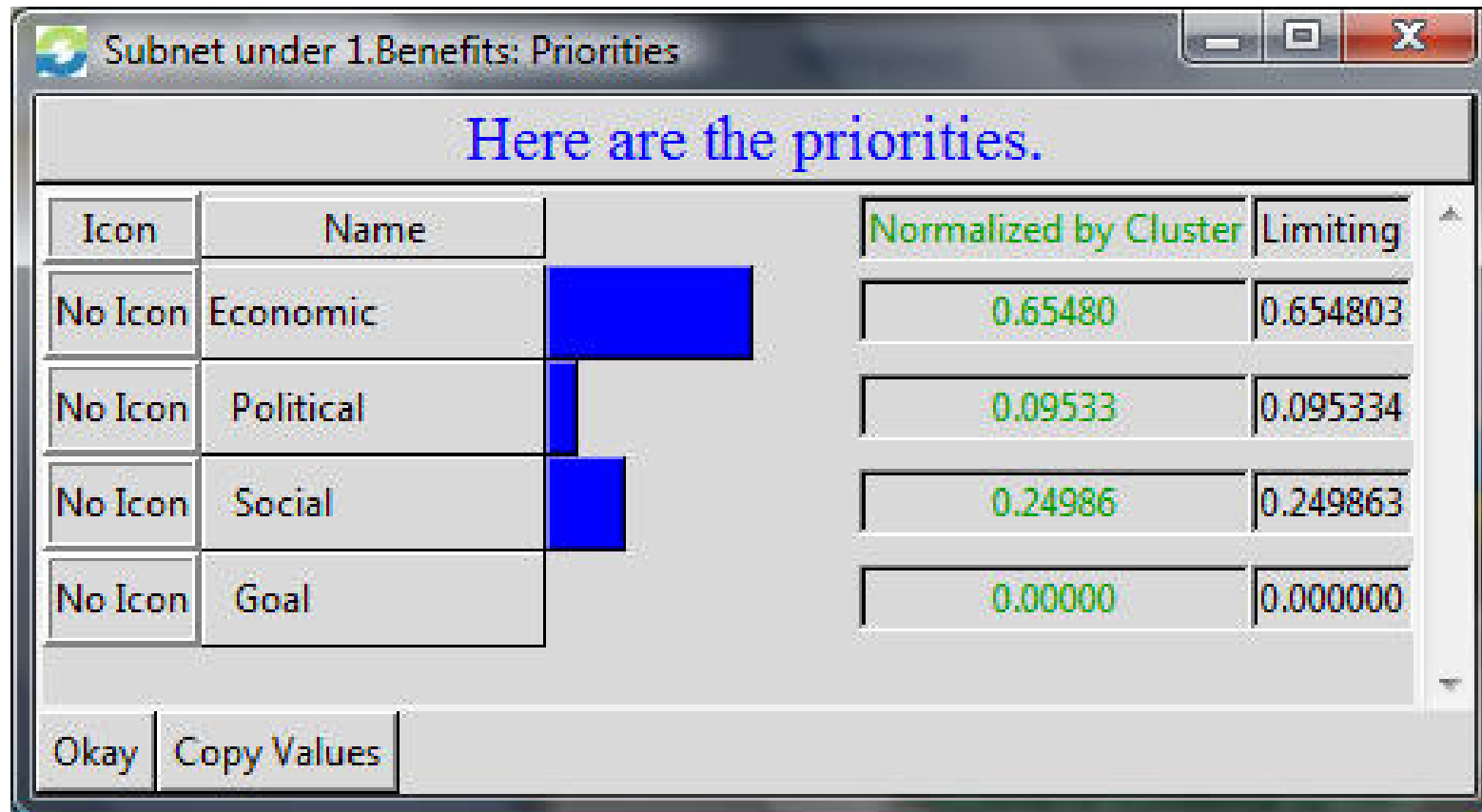
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The first breakdown we'll show is the Benefits subnet.

Benefits							
Economic			Political			Social	
Local Businesses	Tourism	Economic Status	Political System	World Opinion	Power	Morale	Nationalism
Hotels	Landmarks	Agricultural	Communist	Outstanding	Crowd Control	High	Exceedingly Proud
Restaurants	Recreational Activities	Blue Collar	Democratic	Above Average	Organization	Neutral	Somewhat Proud
Stores	Tours	White Collar	Socialist	Average	Perception of Safety	Low	Indifferent
				Below Average	Police Presence		Embarrassed
				Terrible	Pomp and Circumstance		

Benefit Priorities

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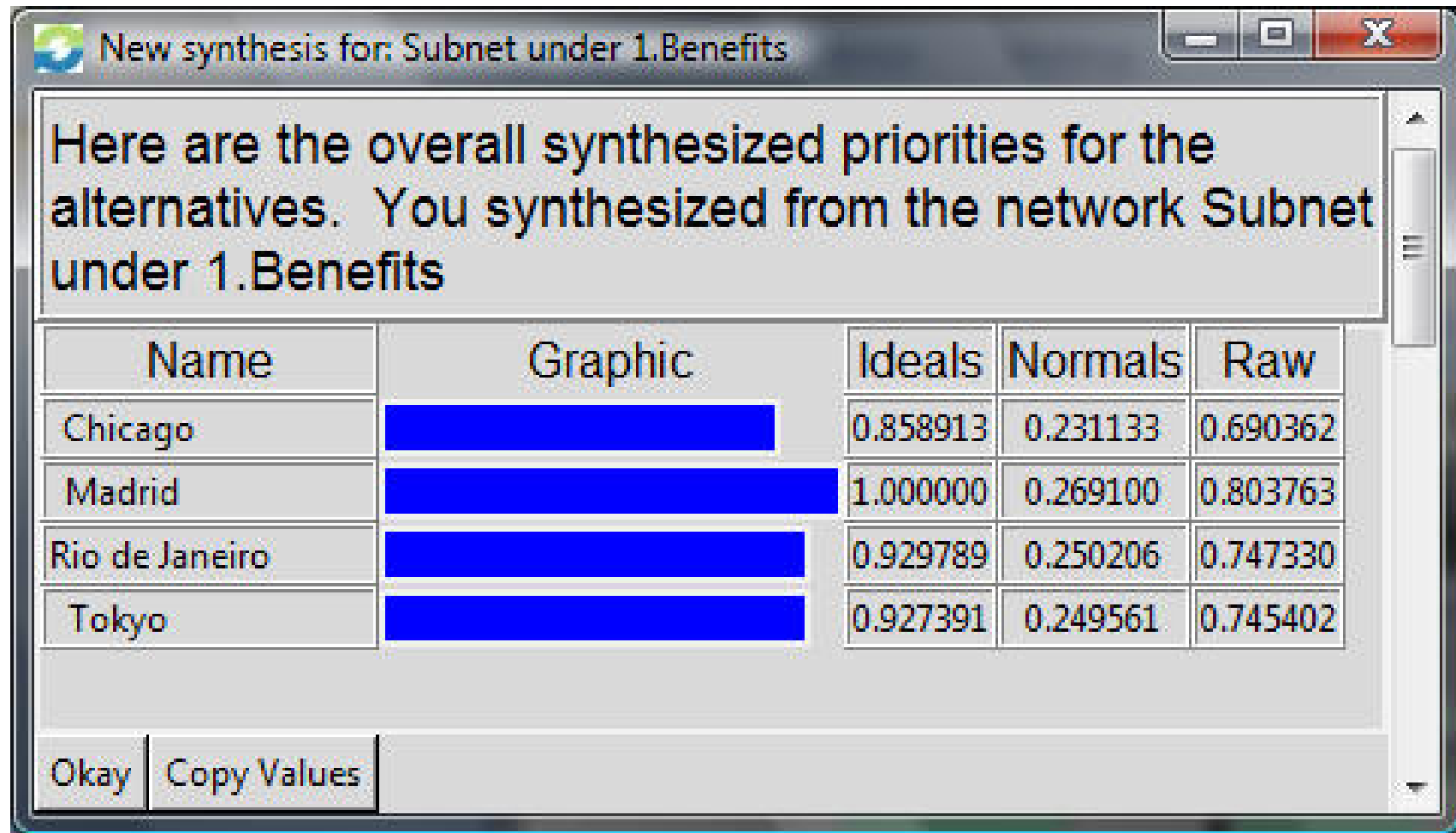
Benefit Priorities (con't)

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- The heaviest weight is placed upon the economy, as a country that hosts the games sees billions of dollars in revenue come into their region.
- Economically, the revenue potential is there if your city has the resources to host the event.
- We separated this subnet into three groups: local business, tourism, and economic status.

Overall synthesized Benefits

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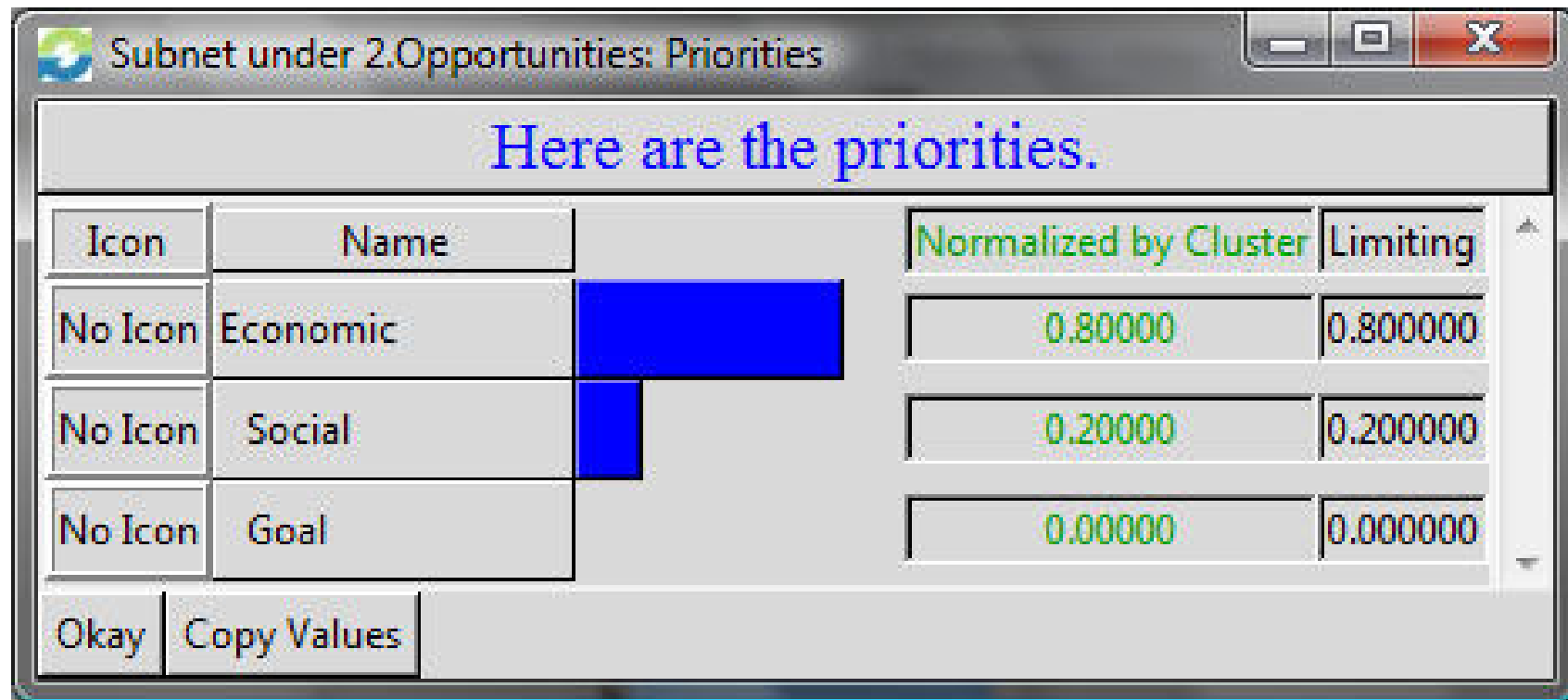
Opportunities Subnet Breakdown

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Opportunities				
Economic		Social		
Jobs	Tourism	Internal Perception	Infrastructure	External Perception
Full-Time	Landmarks	Morale	Appearance	Acceptance
Part-Time	Recreational Activities	National Pride	Communication	Goodwill
Temporary	Tours		Facilities	Viability
			Transportation	

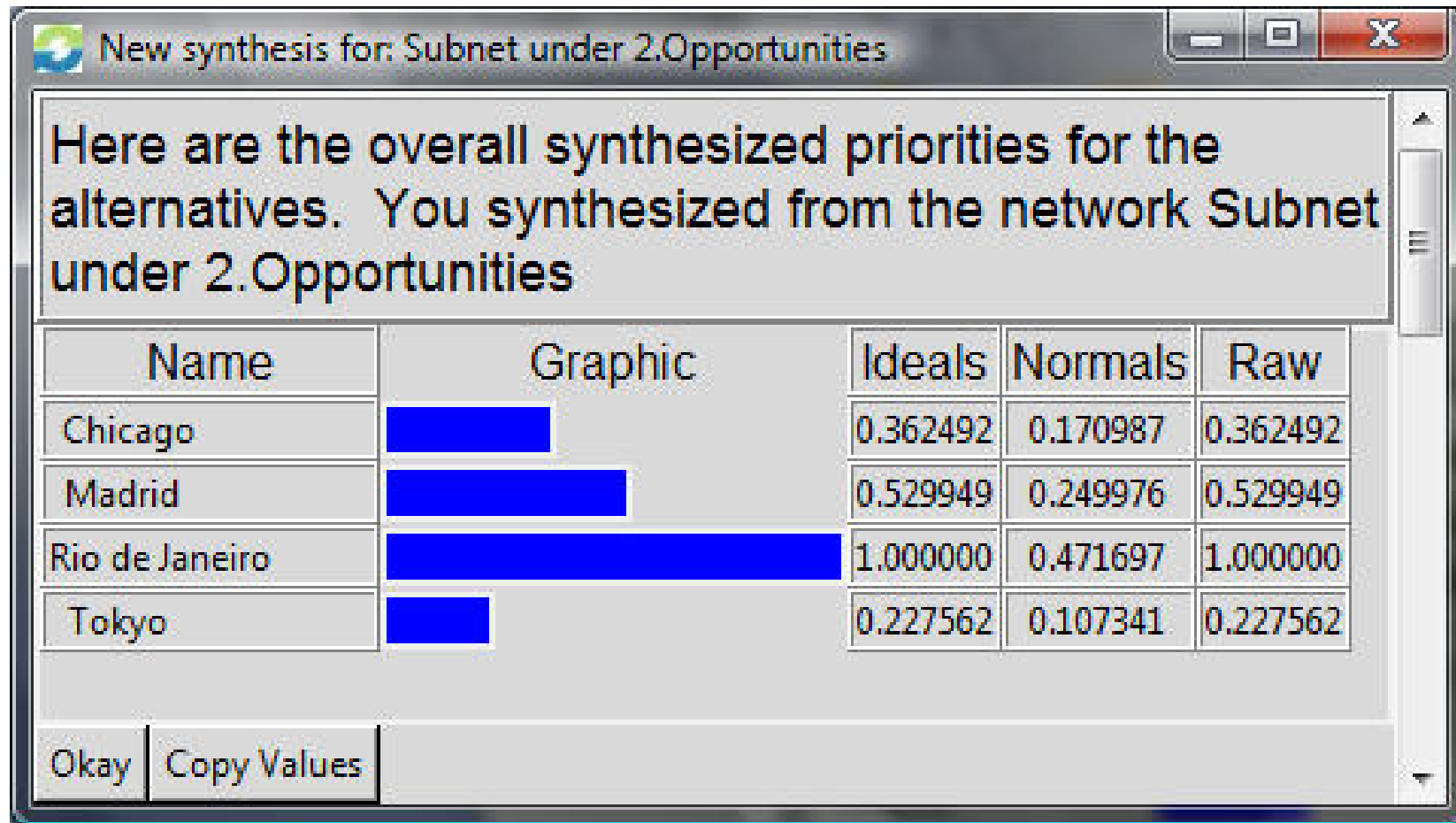
Opportunity Priorities

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Overall Opportunities Subnet Results

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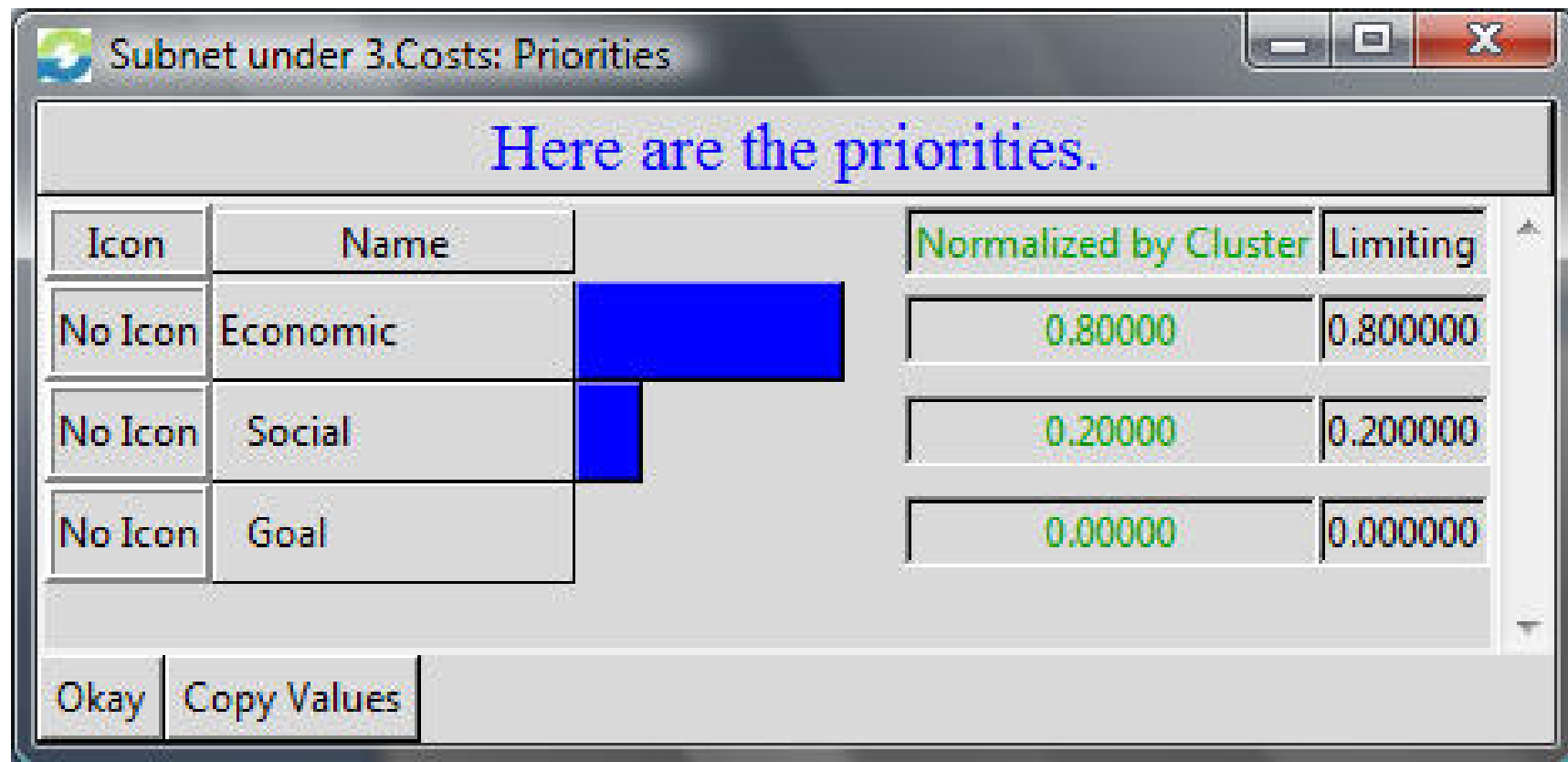
Costs Subnet Breakdown

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Costs				
Economic			Social	
Infrastructure	Security	Marketing	Citizens	Tourists
Communication Facilities Maintenance Transportation	Accommodations Equipment Personnel Training	Celebrations Ceremonies Online Print TV/Radio	Affordability Congestion Crime Limited Access	Added Expenses Cultural Differences Event Availability Language Barrier Safety

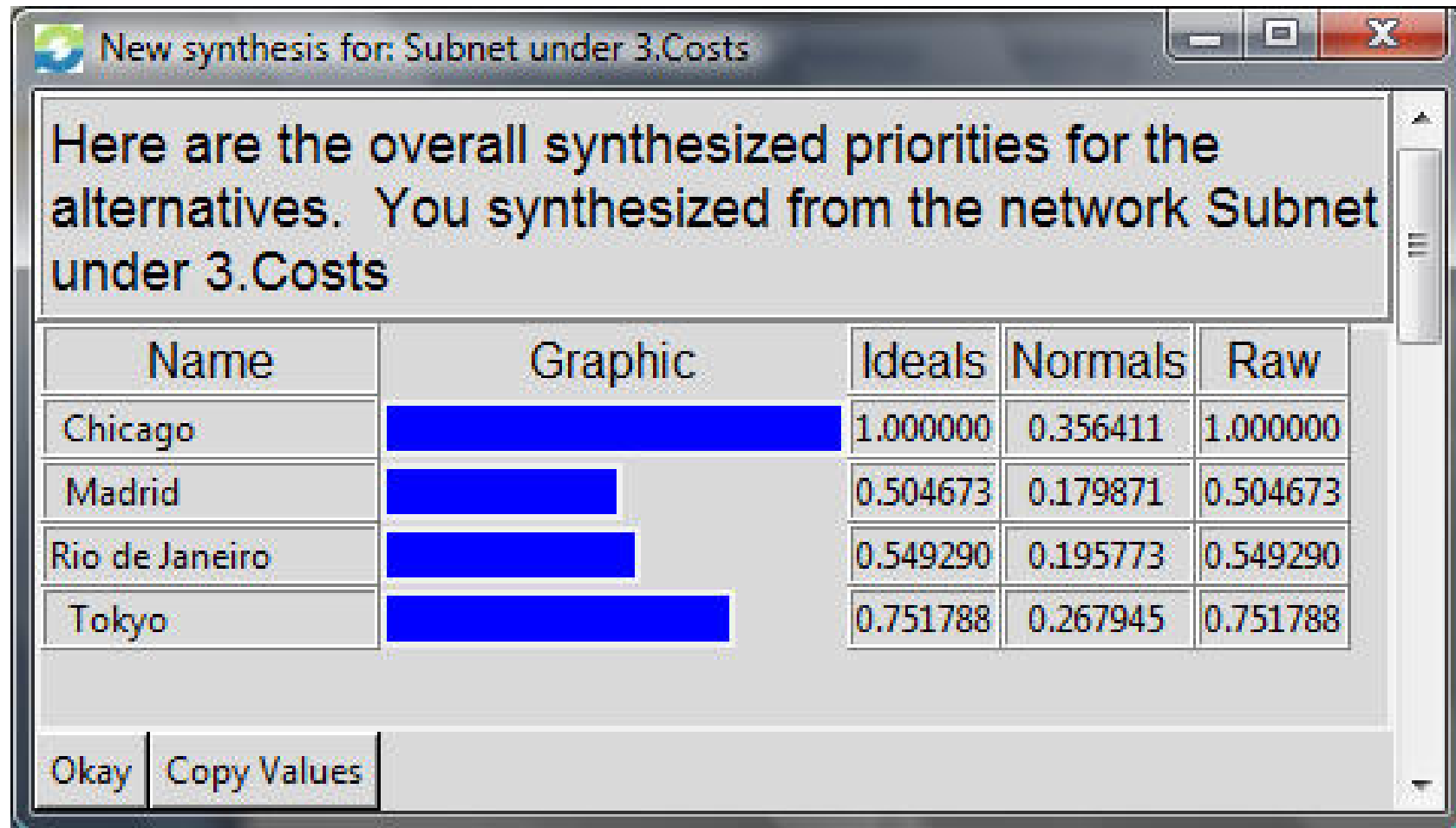
Cost Priorities Breakdown

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Synthesized Costs Subnet Analysis

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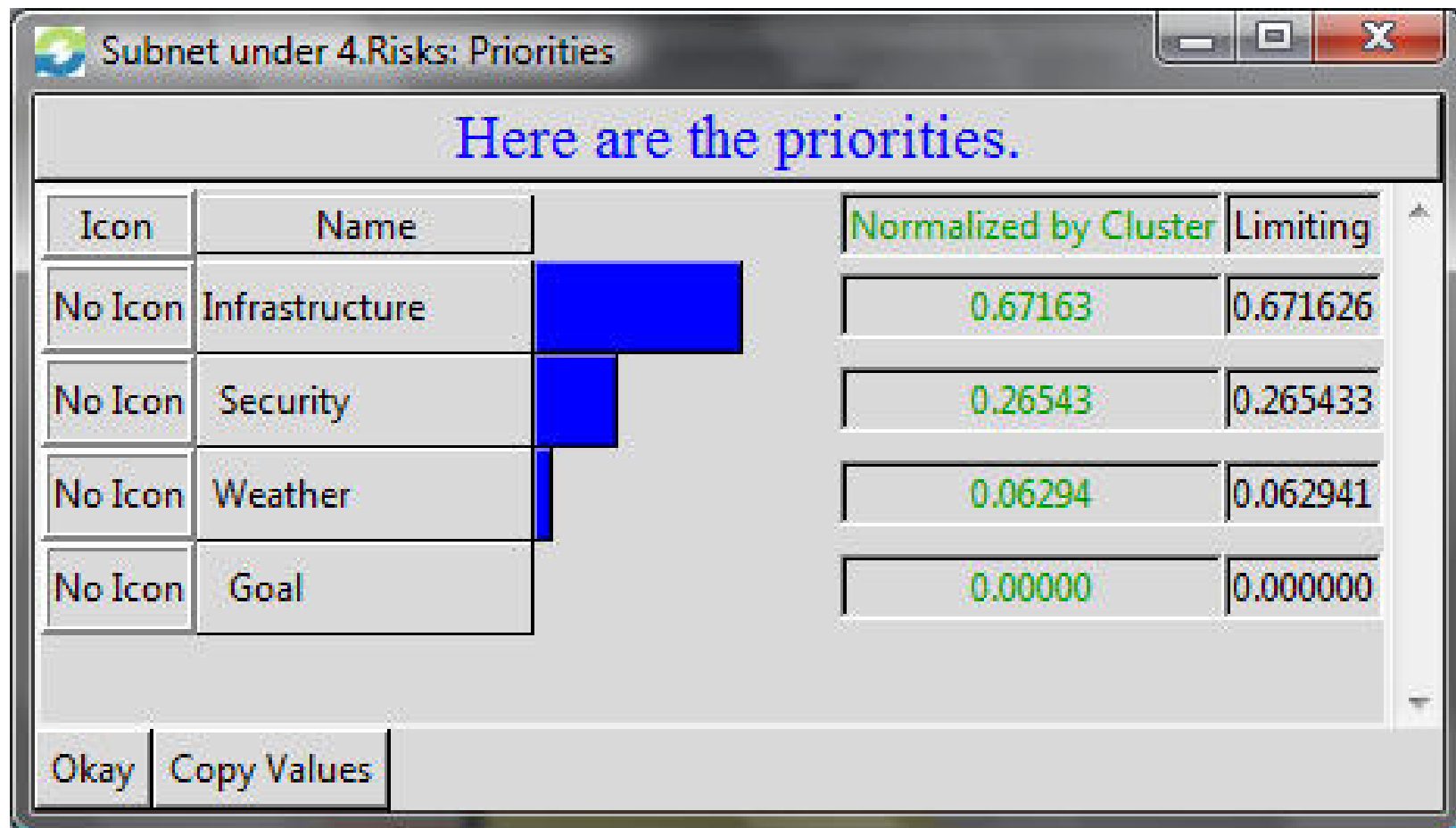


Risks Subnet Breakdown

Risks							
Weather			Security		Infrastructure		
Climate	Natural Disaster	Detrimental Conditions	History	Capabilities	Facilities	Transportation	Communications
Arid	Earthquake	Excessive Cold	Air Tight	Excellent	Inadequate	Confusing	Insufficient
Mediterranean	Flooding	Excessive Heat	Crime Infested	Fair	Under Construction	Congested	Outdated
Mountain	Hurricane	Excessive Rain	Some Problems	Poor			
Polar	Tornado	Excessive Wind					
Temperate	Tsunami						
Tropical	Volcanic Eruption						

Risks Priorities Breakdown

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Subnet under 4.Risks: Priorities

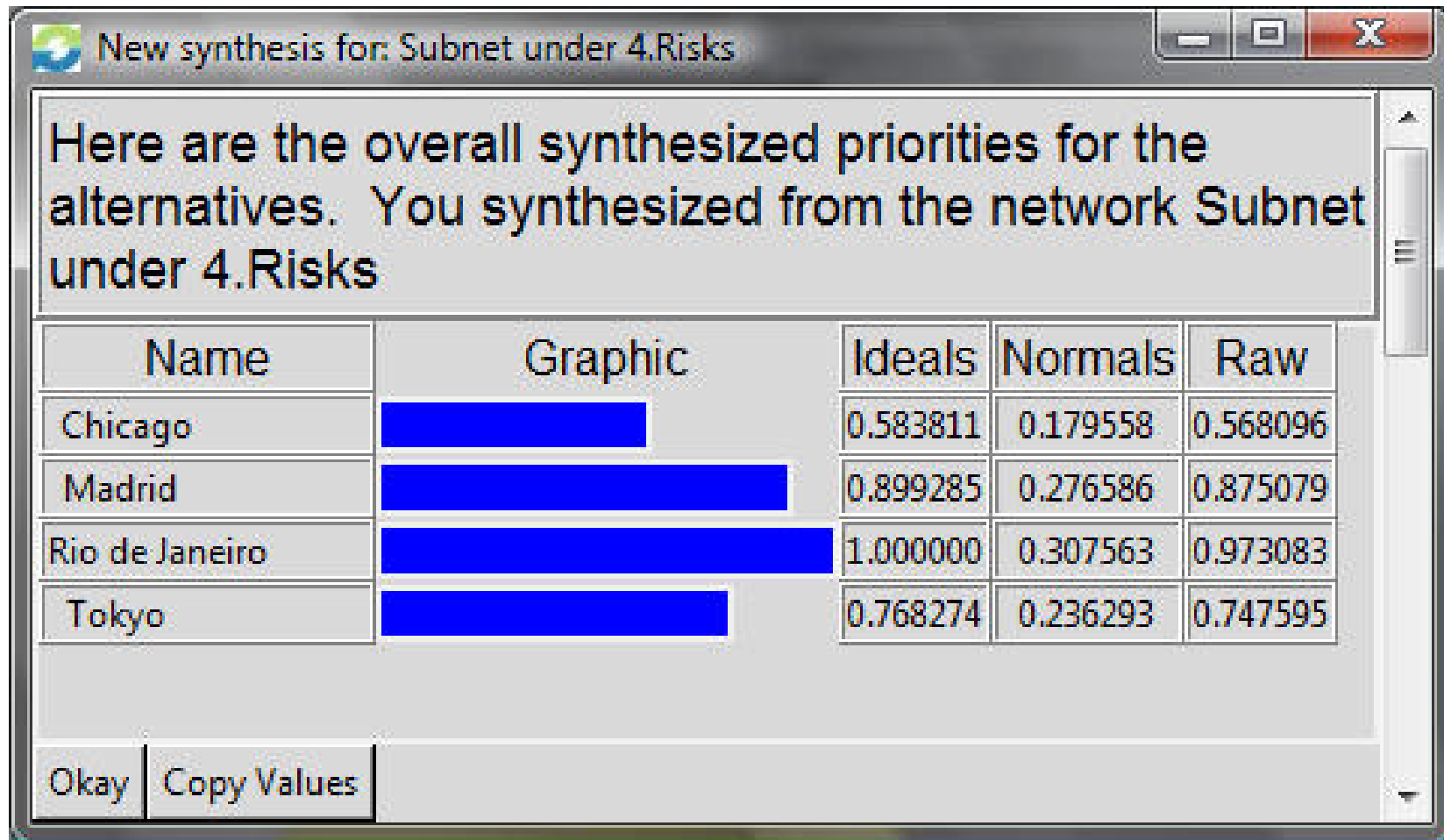
Here are the priorities.

Icon	Name		Normalized by Cluster	Limiting
No Icon	Infrastructure	<div></div>	0.67163	0.671626
No Icon	Security	<div></div>	0.26543	0.265433
No Icon	Weather	<div></div>	0.06294	0.062941
No Icon	Goal		0.00000	0.000000

Okay Copy Values

Synthesized Risks Subset Analysis

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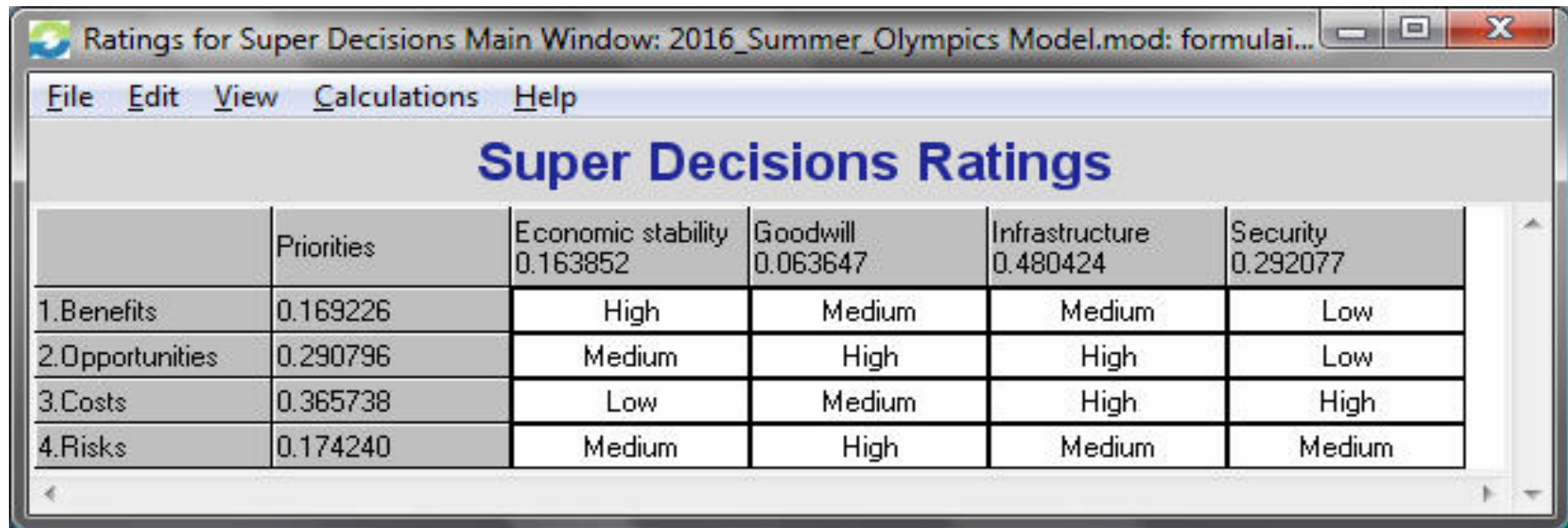
Combined Results

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	Positive		Negative	
	Benefits	Opportunities	Costs	Risks
	Ideals	Ideals	Ideals	Ideals
Chicago	0.8589	0.3624	1.0000	0.5838
Madrid	1.0000	0.5299	0.5047	0.8993
Rio de Janeiro	0.9298	1.0000	0.5492	1.0000
Tokyo	0.9274	0.2276	0.7518	0.7682

Weighing Each Subnet's Importance

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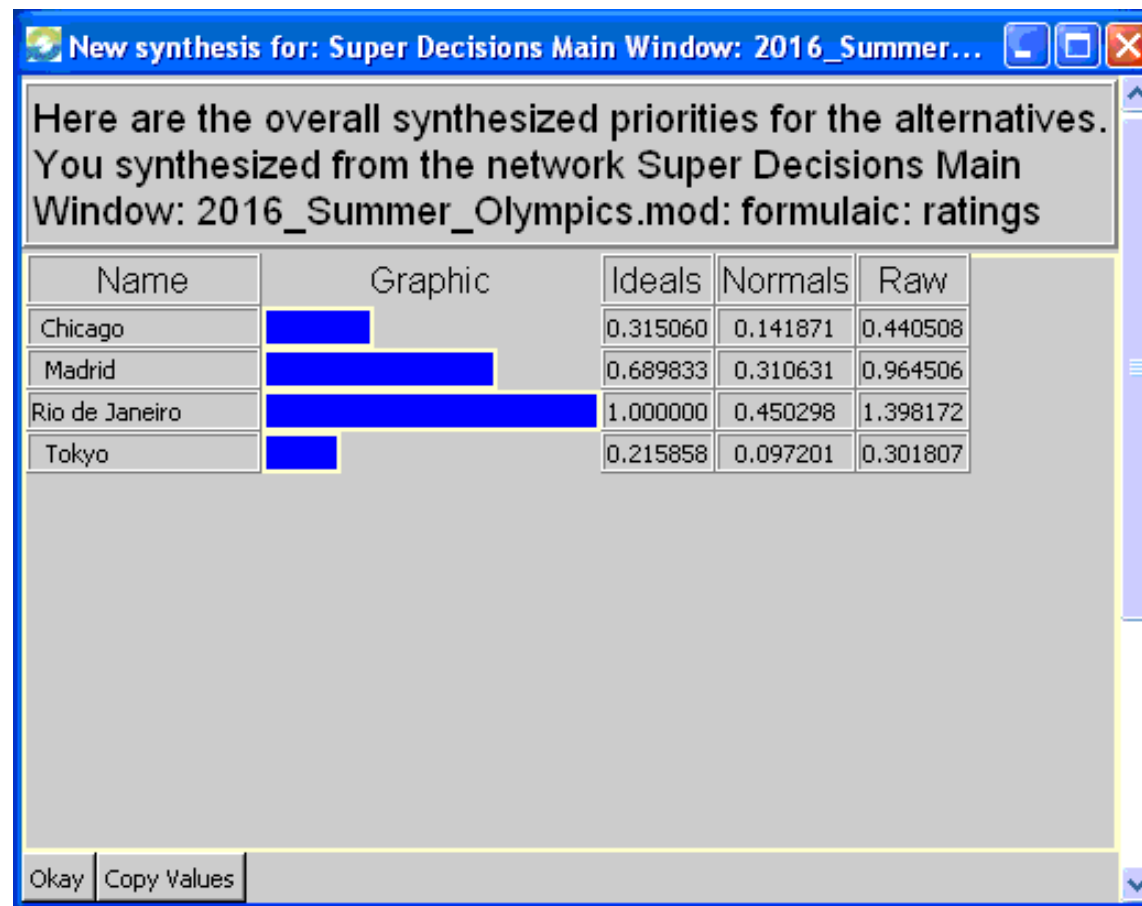
The screenshot shows a software window titled "Ratings for Super Decisions Main Window: 2016_Summer_Olympics Model.mod: formulai...". The window contains a menu bar with "File", "Edit", "View", "Calculations", and "Help". Below the menu bar is a section titled "Super Decisions Ratings" which contains a table. The table has six columns: "Priorities", "Economic stability", "Goodwill", "Infrastructure", and "Security". The first column lists four categories: "1.Benefits", "2.Opportunities", "3.Costs", and "4.Risks". The second column contains numerical values for each category. The remaining four columns contain qualitative ratings (High, Medium, Low) for each category across the different subnets.

	Priorities	Economic stability 0.163852	Goodwill 0.063647	Infrastructure 0.480424	Security 0.292077
1.Benefits	0.169226	High	Medium	Medium	Low
2.Opportunities	0.290796	Medium	High	High	Low
3.Costs	0.365738	Low	Medium	High	High
4.Risks	0.174240	Medium	High	Medium	Medium

Short-Term Results

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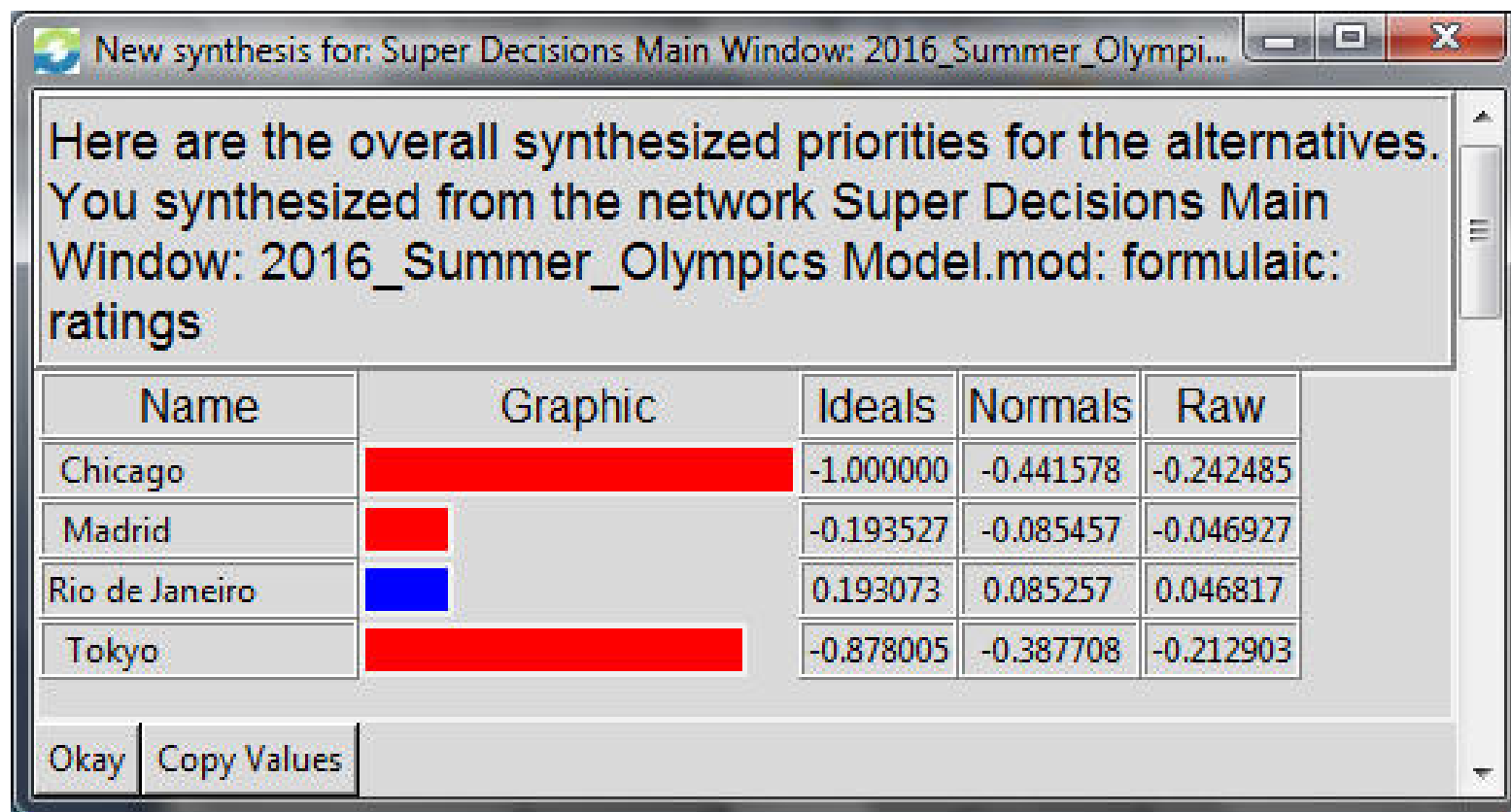
Multiplicative Formula



Overall Synthesized Priorities for the Alternatives

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Additive Formula



Our results vs. IOC

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OUR RESULTS

- 1.RIO DE JANEIRO
- 2.MADRID
- 3.TOKYO
- 4.CHICAGO

IOC RESULTS

- 1.RIO DE JANEIRO
- 2.MADRID
- 3.TOKYO
- 4.CHICAGO

Sensitivity Analysis

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- This analysis was run on all four of the subnets – benefits, opportunities, costs, and risks.
- Benefits, opportunities, and costs did not provide an additional insight into the ANP model.
- However, risks could have played a large role in the selection process if we given it greater emphasis.

Sensitivity Analysis

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