

Crime mapping in Belo Horizonte

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UFMG - Universidade Federal de Minas Gerais

5/6/2007



Belo Horizonte, Brazil

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Pointer 19°55'12.00" S 43°56'23.99" W

Streaming ||||| 100%

Eye alt 4126.09 mi



Santiago, Chile

Buenos Aires, Argentina

São Paulo, Brazil

Belo Horizonte, Brazil

Rio de Janeiro, Brazil

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Pointer 19°27'21.22" S 51°01'53.19" W

Streaming ||||| 100%

Eye alt 2958.38 mi



Brasília

Goiânia

Belo Horizonte, Brazil

Belo Horizonte

São Paulo

Rio de Janeiro

Curitiba

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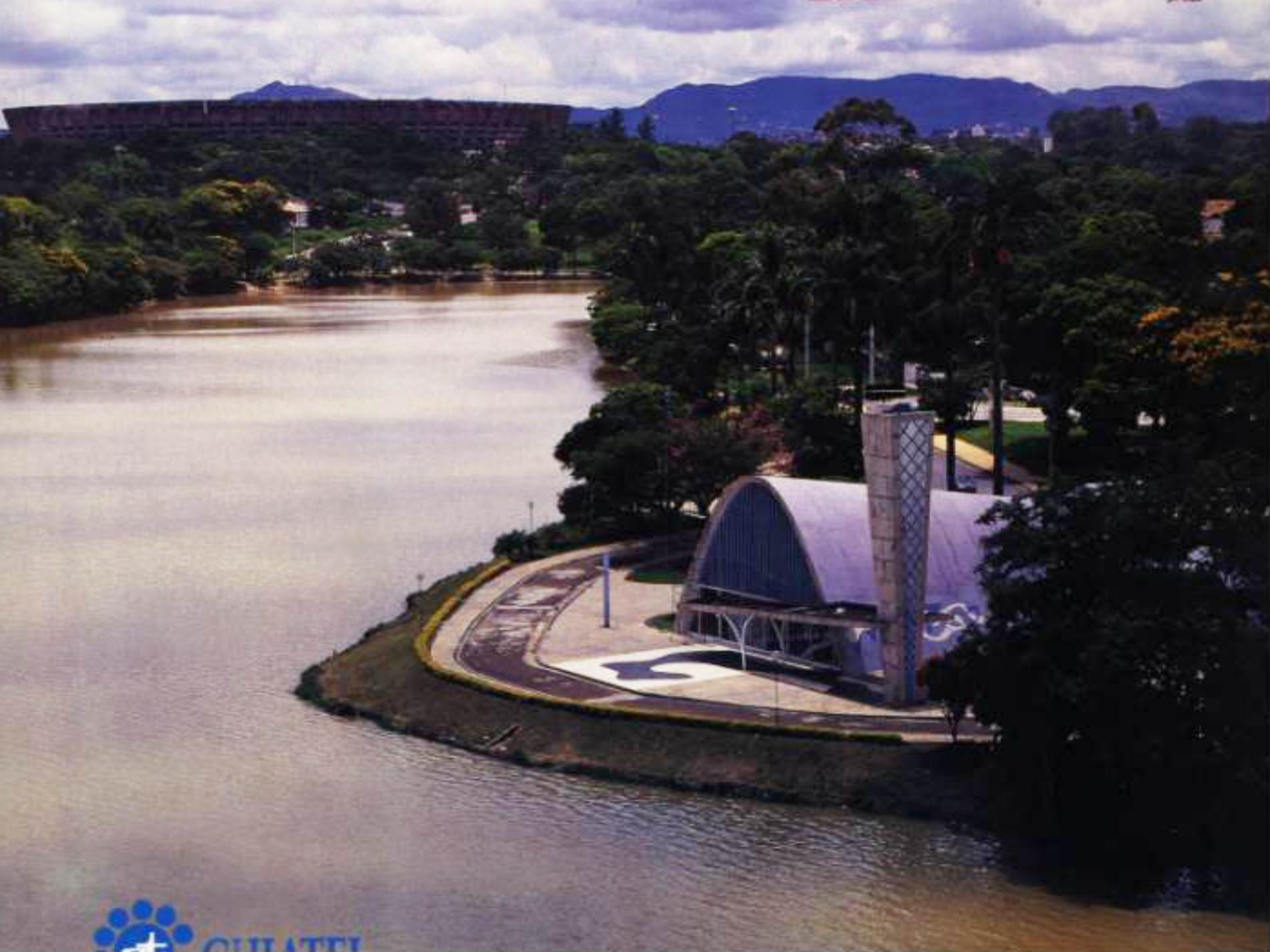
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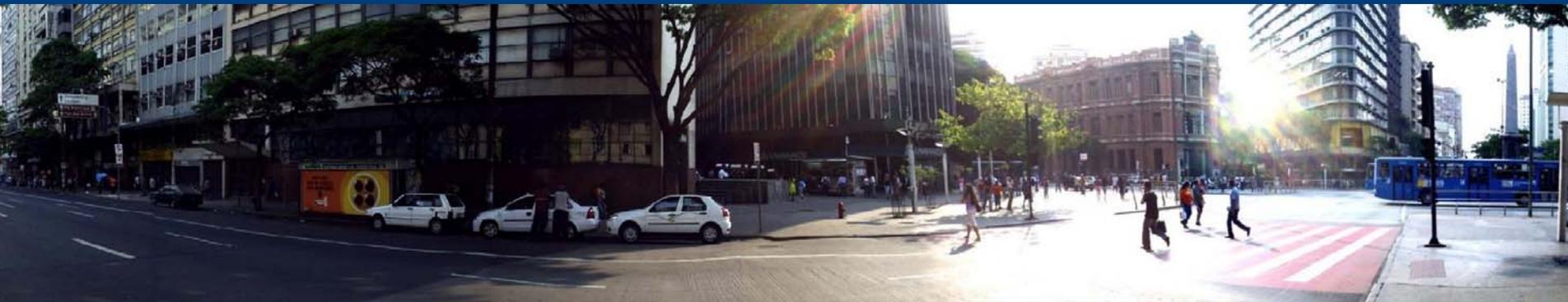
Pointer 20°09'35.99" S 45°57'34.51" W

Streaming ||||| 100%

Eye alt 795.73 mi









Luxemburgo



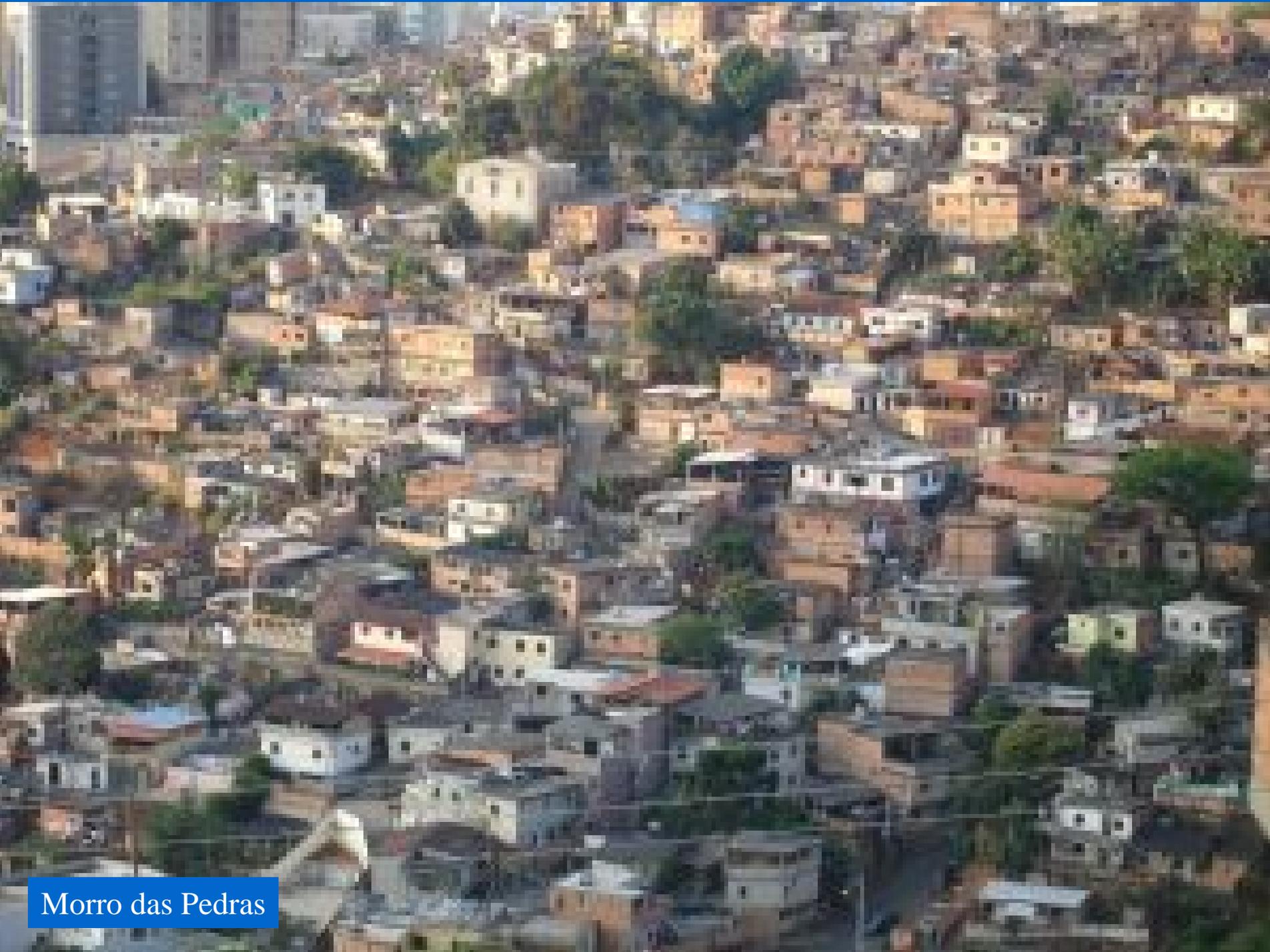
Cidade Jardim



Savassi



Aglomerado da Serra



Morro das Pedras



Morro das Pedras

Morro das Pedras



Image © 2007 DigitalGlobe

Google

Pointer 19°54'09.25" S 43°56'52.90" W elev 2878 ft Streaming ||||| 100%

Eye alt 6124 ft



Morro do Papagaio

Image © 2007 DigitalGlobe

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Morro do Papagaio

Image © 2007 DigitalGlobe

Google™

Pointer 19°57'12.28" S 43°56'29.38" W elev 3373 ft Streaming ||||| 100%

Eye all 6984 ft

Worst case: Morro das Pedras

- **More than 25 thousand residents**
- **24% of the families have TOTAL income below minimum wage**
- **41% of labor force was unemployed. Most engage in informal activities: washing cars or sellings goods in the streets, carrying out small repair services, etc.**
- **10% had no regular income**

Police Districts

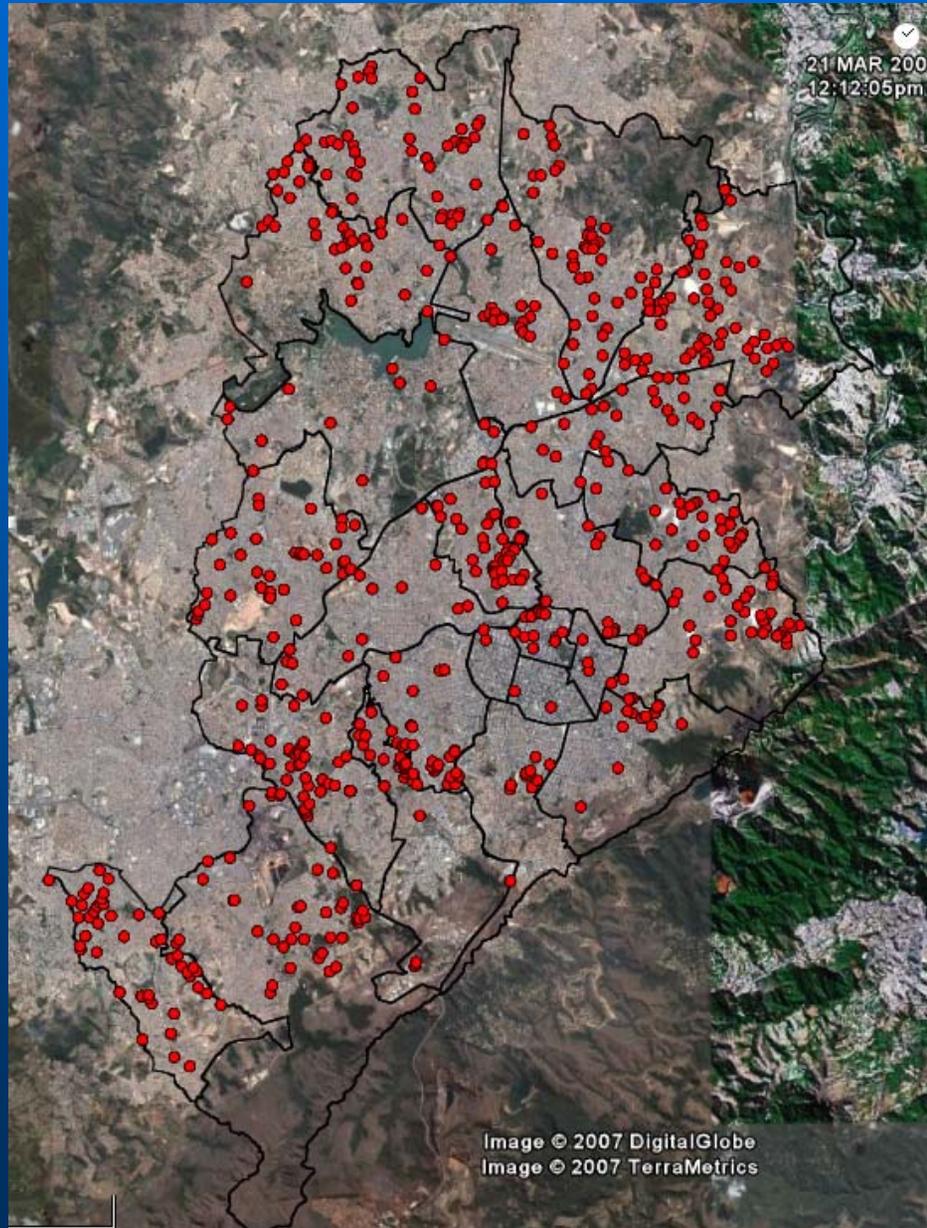


**There are
about 5,600
police officers
divided into 24
police districts.**

Image © 2007 DigitalGlobe
Image © 2007 TerraMetrics

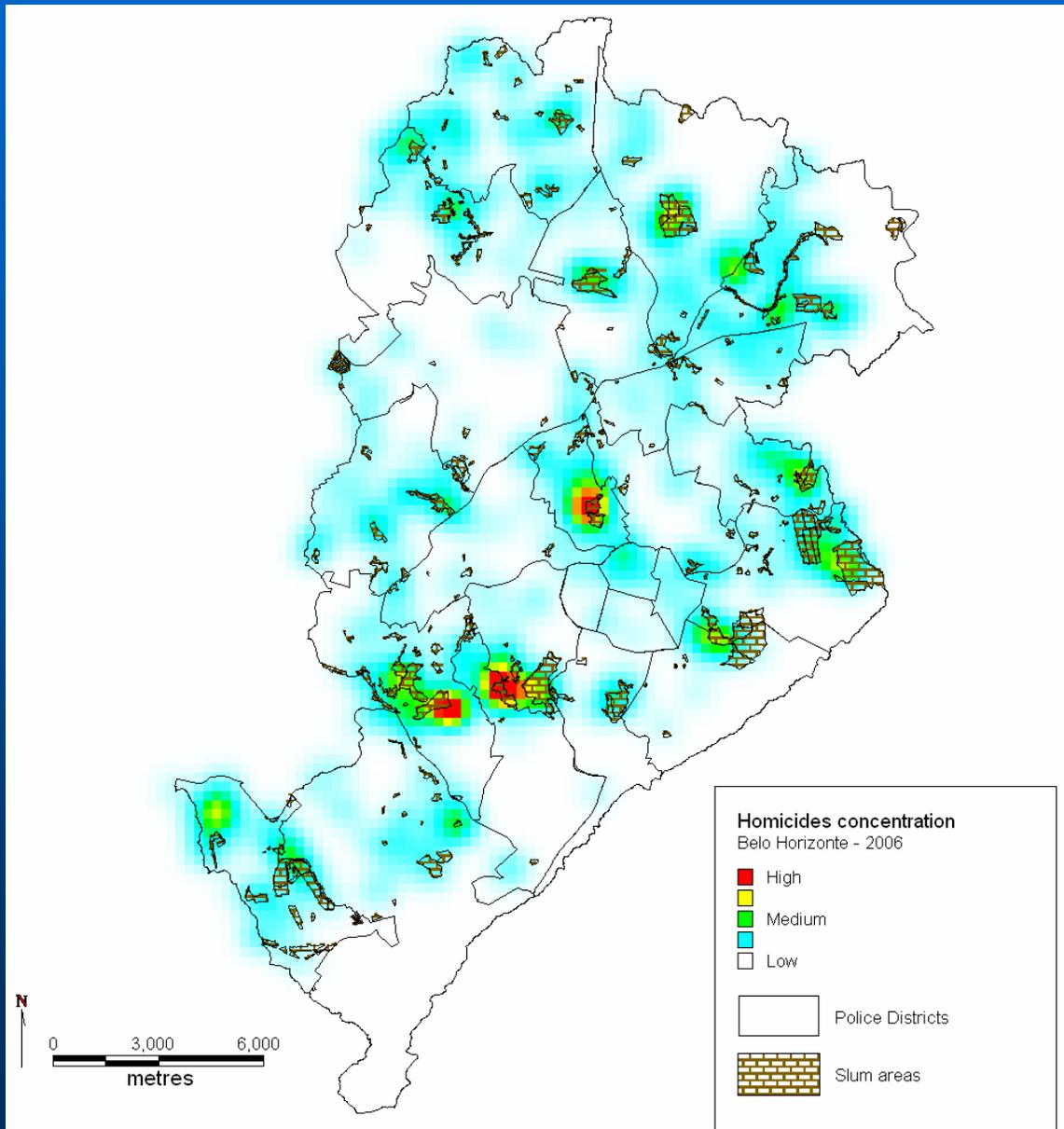
Streaming ||||| 100%

Homicides in 2006



**Spatial
distribution of
2006 homicides
(approx 1000)**

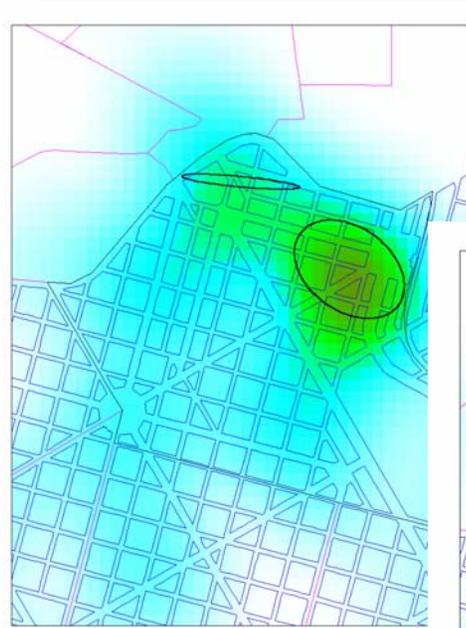
Kernel Density of Homicides



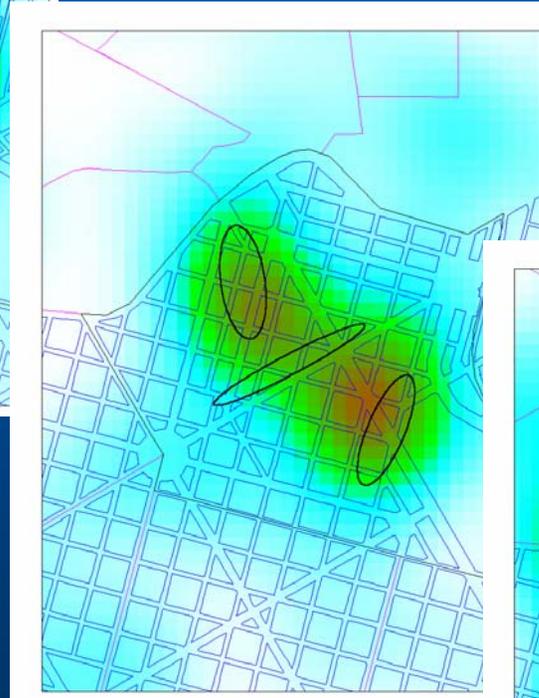
Kernel Density by hour in downtown



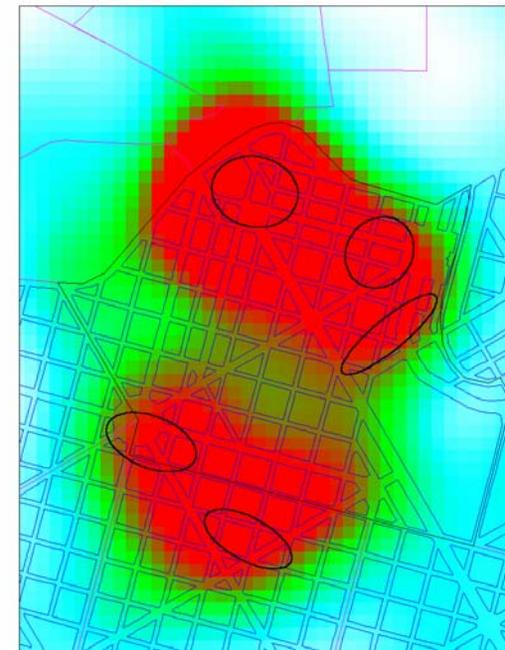
6 AM



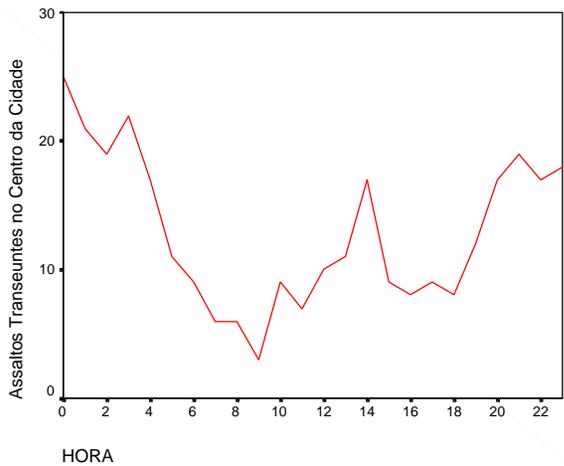
12 PM

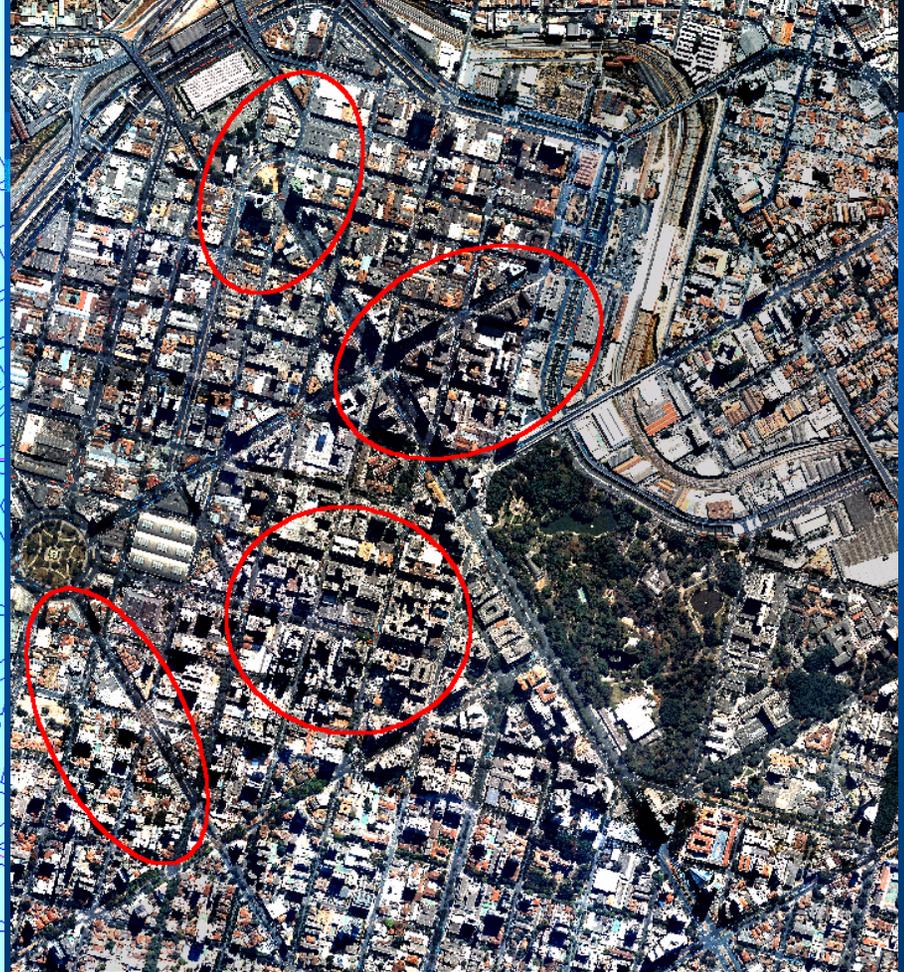
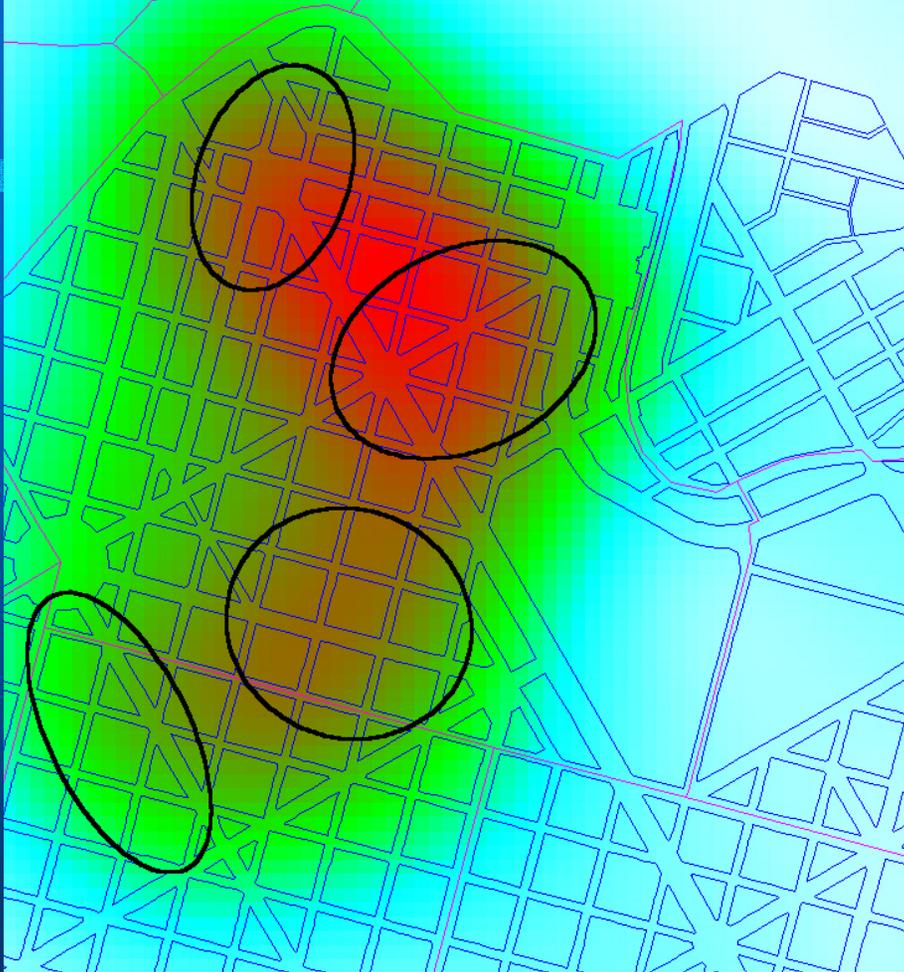


6 PM



10 PM





Belo Horizonte in a nutshell

- Belo Horizonte has 2.4 million inhabitants and about 700 thousand households.
- It ranks among the 5 largest Brazilian cities
- Its labor force is concentrated in services and industrial jobs
- Starting in 1960, population increased quickly due to rural migration but it stabilized in 1990

Policing With Results

- Increase in violent crime pressed Police for improvement.
- Starting in 1999, a new program, Policing with Results, was introduced.
- Help from CRISP, an academic center affiliated with the Universidade Federal de Minas Gerais.
- Main objective: Results matter, and area commanders are evaluated accordingly

Peculiarities of Belo Horizonte

- **Unique experience in Latin America: collaboration between university and police!**
- **CRISP received an initial grant from FORD Foundation which was crucial.**
- **We took policemen to New York to watch the COMPSTAT in NY**
- **We gave several training courses in crime mapping and statistics to police force**

CRISP: training and policy studies

- **More than 400 police officers trained on CRIMESTAT, SPSS, and GIS software**
- **Academic studies: victimization surveys, school violence, etc.**
- **Design of public safety policies for the state-level government**

Two successful experiences

- **FICA VIVO Program: “Stay alive program”**
 - Reduce homicides in high risk areas
 - Data-based diagnostic (maps, graphs, stats, etc)
 - Prevention: identify community leaders; activities involving sports, recreation (music, dance, arts, etc) for children under 14 years old.
 - GEPAR: special police force to deal with drug sellers, and other criminals from these areas.

Two successful experiences

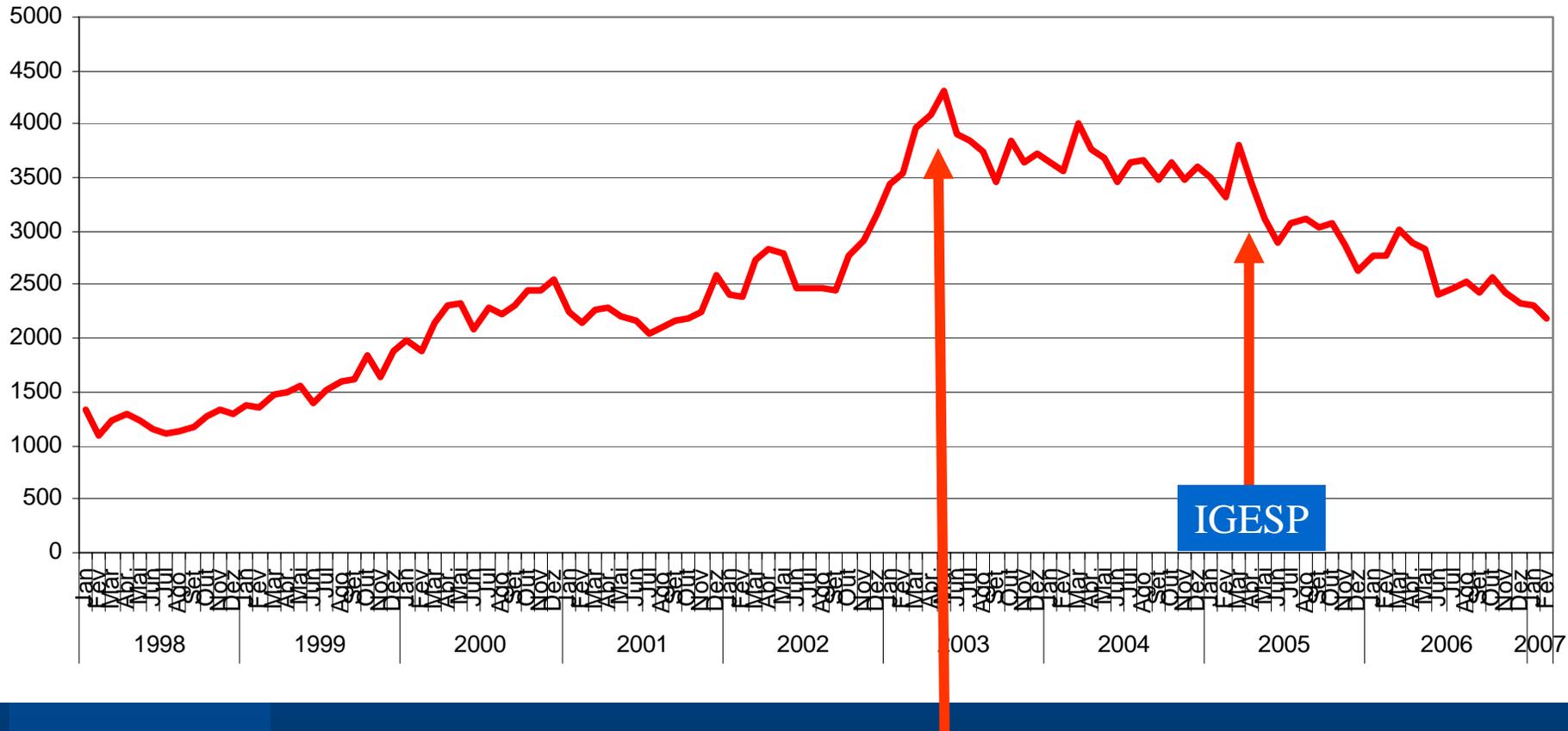
- **IGESP – inspired by COMPSTAT**
- **Divide the city into 24 geographical regions**
- **In each region, monthly meetings**
- **Integrate the several different police agencies and public agencies (municipality, health agency, justice system, etc.)**
- **Evidence-based**
- **Accountability**



5/6/2007



Evolução Mensal dos Crimes Violentos Belo Horizonte - Janeiro de 1998 a Fevereiro de 2007

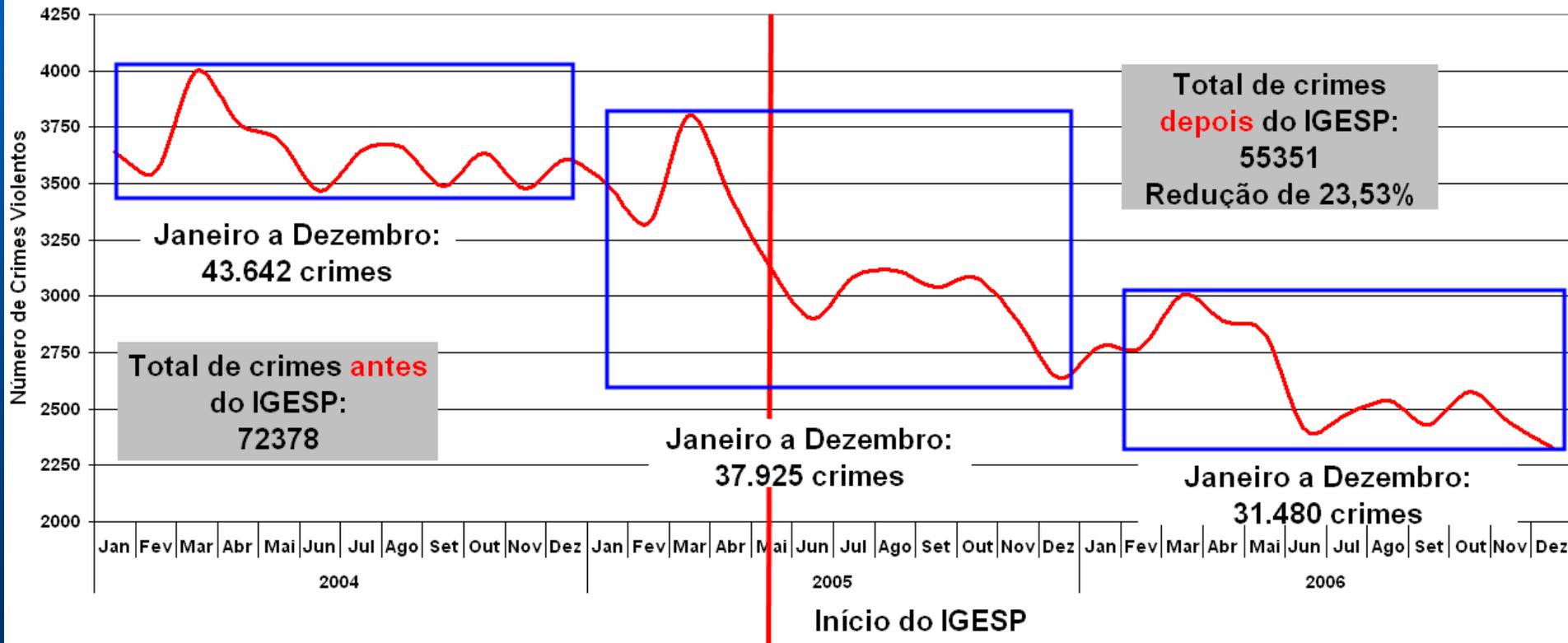


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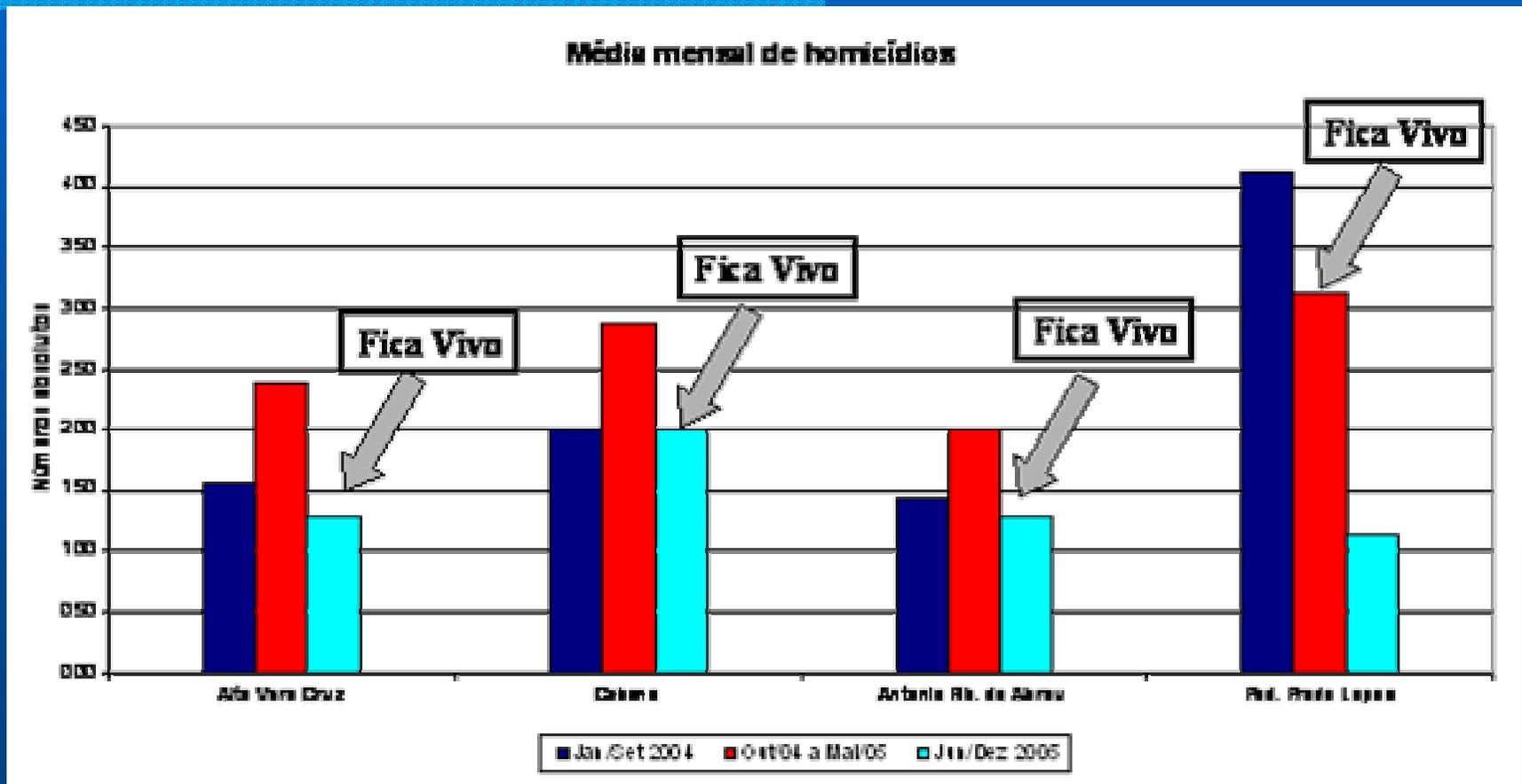
Top Police Officers Change
Beginning of data use by police

31

Evolução Mensal dos Crimes Violentos Belo Horizonte - Janeiro de 2004 a Dezembro de 2006



Monthly Average Number of Homicides



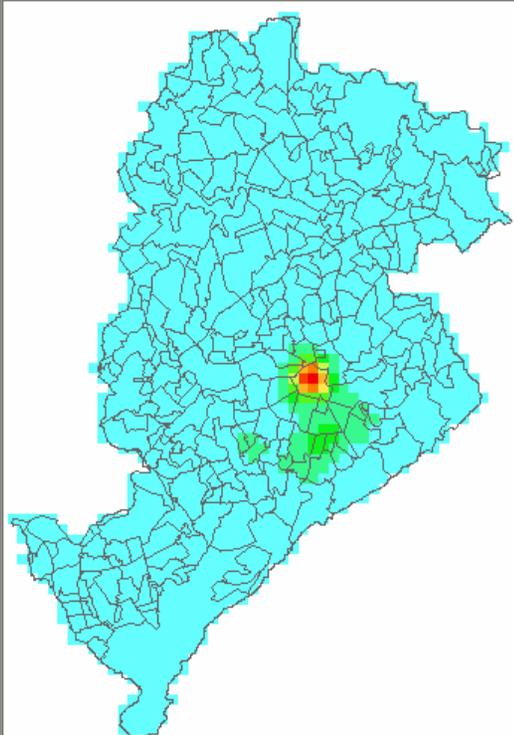
TERRAVIEW

- **A free and open source GIS**
- **Developed in Brazil by INPE in collaboration with several universities.**
- **Several spatial statistics features integrated in a single environment**



- Databases
- Apresentacao.mdb
 - AreasVerdes
 - Bairros
 - Batalhoes
 - Brasil_Estados
 - Brasil_Estados_clip
 - Colecios

- Views/Themes
- CompanhiasPm
 - Favelas
 - Rios
 - Limite
 - Lagoa
 - PostoCombustivel
 - SetoresCensitarios
 - RuasCentrais
 - Dist_Sul
 - Dist_Norte
 - Crimes1995
 - Crimes1996
 - Crimes1997



	NUBAIPOP	NOBAIPOP	TPBAIPOP	POP2000	object_id_1	AREA
1	643	CEU AZUL	BAIRRO	29436	0	3386734.7
2	733	NOVA PAMPULHA	BAIRRO	1179	1	1031715.5
3	618	BELVEDERE	BAIRRO	4651	10	2729252
4	792	SÃO PEDRO	BAIRRO	5690	100	475052
5	637	CARMO	BAIRRO	4285	101	312282.8
6	607	ANCHIETA	BAIRRO	12844	102	713792.7
7	657	CRUZEIRO	BAIRRO	8455	103	523649.8