1 Country Setting

1.1 Country population

Variable 1.1: ***Country population*** describes the size of the population in a country. It is measurable on a ratio scale, operationally defined as.

Population.

Source: http://devdata.worldbank.org .

1.2 Country economic freedom

Variable 1.2: ***Country Economic Freedom*** describes the prevailing freedom to make economic decisions in a country. It is measurable on a ratio scale operationally defined as.

The Heritage Foundation's Index of Economic Freedom.

Source: http://www.heritage.org .

1.3 Country income

Variable 1.3: ***Country Income*** describes the per capita income of a country. It is measurable on a ratio scale, operationally defined as:

Gross National Income per capita, Atlas method (current US$).

Source: http://devdata.worldbank.org .

1.4 Income inequality

Variable 1.4: ***Income Inequality*** describes the income equality among the population of a country. It is measurable on a ratio scale operationally defined as:

Gini coefficient.

Zero represents perfect equality, and 100 represents perfect inequality.

Source: http://en.wikipedia.org .

1.5 Climate-change position

Variable 1.5: ***Climate-change Position*** describes a country's response to the Kyoto Protocol to the United Nations Framework Convention on Climate Change. It is measurable on an interval scale, operationally defined, in terms of response to the Protocol, as follows:

Signed and ratified (Level 3).

Signed but not ratified (Level 2).

Signed but not intending to ratify (Level 1).

Not signed and not ratified (Level 0).

Source: http://en.wikipedia.org .

1.6 Country track gauge

Variable 1.6: ***Country Track Gauge*** describes the width of the track gauge in which a city is located. It is measurable on a ratio scale, operationally defined as:

> Track gauge, millimeters

Source: *Railway Directory*.

Where more than one gauge is present, the dominant gauge is used.

1.7 Motor vehicles

Variable 1.7: *Motor Vehicles* describes the number and type of road vehicles that potentially compete against urban railways. It is measured as Variable 1.7.1, Variable 1.7.2, and Variable 1.7.3.

Variable 1.7.1: ***Cars*** describes the number of motor cars in a country. It is measurable on a ratio scale, operationally defined as follows:

> Number of cars.

Variable 1.7.2: ***Buses*** describes the number of buses in a country. It is measurable on a ratio scale, operationally defined as follows:

> Number of buses.

Variable 1.7.3: ***Motorcycles*** describes the number of motorcycles in a country. It is measurable on a ratio scale, operationally defined as follows:

> Number of motorcycles.

Source for Variable 1.7.1, Variable 1.7.2, and Variable 1.7.3: International Road Federation *World Road Statistics* [CD-ROM].

2 Local Setting

2.1 City population

Variable 2.1: ***City Population*** describes the size of the population in a city. It is measurable on a ratio scale, operationally defined as.

> Population, number.

Source: http://esa.un.org/unup/p2k0data.asp on 2007-03-17.

2.2 Population growth rate

Variable 2.2: ***Population Growth Rate*** describes the growth rate of a city population. It is measurable on a ratio scale operationally defined as:

> Year-on-year growth rate of the population mentioned in §2.1, percent.

Source: http://esa.un.org/unup/p2k0data.asp on 2007-03-17.

2.3 City area

Variable 2.3: ***City Area*** measures the physical extent of a city. It is measurable on a ratio scale, operationally defined as:

Area of agglomeration, city, or conurbation, square kilometers.

Source: Web site(s) http://www.citymayors.com/statistics/largest-cities-2007.html, http://globaledge.msu/countryinsights/country.asp, http://en.wikipedia.org/wiki/city, Microsoft Encarta.

2.4 City status

Variable 2.4: ***City Status*** describes the status of a city relative to other cities in the same country. It is measurable on an interval scale, operationally defined as follows:

National capital (Level 4).

State, provincial, or other first level capital (Level 3).

County or second-level political capital (Level 2).

Other agglomerations, cities or conurbations (Level 1).

Source: *Microsoft Encarta Premium Suite 2005*.

2.5 Coordination level

Variable 2.5: ***Coordination Level*** describes the level of authority at which urban railways are owned and/or integrated with other urban railways. It is measurable on an interval scale, operationally defined as follows:

National (Level 3).

State, provincial or county (Level 2).

Local (Level 1).

Source: *Railway Directory*.

2.6 Risk locus

Variable 2.6: ***Risk Locus*** describes the type of entity that bears the risk of ownership. It is measurable on an interval scale, operationally defined as follows:

Private only (Level 3).

Public-private partnership (Level 2).

Public only (Level 1).

Source: *Railway Directory*.

2.7 Train operator diversity

Variable 2.7: ***Train Operator Diversity*** describes the number of independent train operator entities participating within a city. It is measurable on a ratio scale, operationally defined as:

Number of individual operators.

Source: *Railway Directory*.

2.8 Alignment with standard solutions

Variable 2.8: ***Alignment with Standard Solutions*** describes alignment with industry standard solutions within a city. It is measurable on an interval scale, operationally defined as:

Standard gauge track present (Level 1).

Standard gauge track absent (Level 0).

Source: *Railway Directory*.

3 Contribution group

3.1 Transport task

Variable 3.1.1: ***Transport Task*** (Light Rail) describes the quantity of passenger traffic moved. It is measurable on a ratio scale, operationally defined as:

Passengers conveyed (million journeys per year).

Source: *Railway Directory*.

Variable 3.1.2: ***Transport Task*** (Metro Rail) describes the quantity of passenger traffic moved. It is measurable on a ratio scale, operationally defined as:

Passengers conveyed (million journeys per year).

Source: *Railway Directory*.

3.2 Network configuration

Variable 3.2: ***Network Configuration*** describes the complexity of the coverage provided. It is measurable on an interval scale, operationally defined as follows:

One or more complete or partial orbital routes (Level 3).

Two or more intersecting radial routes (Level 2).

Single route (Level 1).

Source: *Railway Directory*.

3.3 Network growth

Variable 3.3: Network Growth describes the year-on-year growth of the railway network in a city. It is measurable on a ratio scale, operationally defined as follows:

> Sum of Network Coverage (light rail plus metro) for year n, minus sum of Network Coverage (light rail plus metro) for year n–1, in kilometers.

Source: By computation from Variables 4.2 and 5.2.

3.4 Interchangeability

Variable 3.4: ***Interchangeability*** describes the ability of an urban railway to interchange passengers with other railways. It is measurable on an interval scale, operationally defined as follows:

> Interchange with national railway (Level 3).
>
> Interchange with regional railway (Level 2).
>
> No interchange with other railways, or isolated (Level 1).

Source: *Railway Directory*.

3.5 Value-added service potential

Variable 3.5: ***Value-added Service Potential*** describes the potential of a railway to offer value-added services on its own or in association with other service providers. It is measurable on a dichotomous interval scale, operationally defined as follows:

> Smart cards in use (Level 1).
>
> Smart cards not in use (Level 0).

Source http://en.wikipedia.org/wiki/list_of_smart_cards.

3.6 Employment created

Variable 3.6: ***Employee Count*** describes the total number of employees in a city, for both urban railway infrastructure- and train operators. It is measurable on a ratio scale, operationally defined as:

> Employees in service (number).

Source: Railway Directory.

4 Light-rail Resources

4.1 Inaugural year

Variable 4.1: ***Inaugural Year*** describes the year in which the rail system was inaugurated. It is measurable on a ratio scale, operationally defined as:

> The serial number of the year AD. A default value of 9999 was used for cities that have no light rail system.

Source: *Railway Directory* and Website http://en.wikipedia.org/wiki/list of-town-tramway.

4.2 Network coverage

Variable 4.2: ***Network Coverage*** describes the coverage of the rail network. It is measurable on a ratio scale, operationally defined as follows:

> Route kilometers of network (number).

Source: *Railway Directory*.

4.3 Rolling stock fleet

Variable 4.3: ***Rolling Stock Fleet*** describes the size of the vehicle fleet deployed. It is measurable on a ratio scale, operationally defined as:

> Number of vehicles in fleet.

Source: *Railway Directory*.

4.4 Track gauge

Variable 4.4: ***City Track Gauge*** describes the width of the track gauge of railways in a city. It is measurable on a ratio scale, operationally defined as:

> Track gauge, millimeters.

Source: *Railway Directory*.

Where more than one gauge is present, the dominant gauge is used.

5 Metro Resources

5.1 Inaugural year

Variable 5.1: ***Inaugural Year*** describes the year in which the rail system was inaugurated. It is measurable on a ratio scale, operationally defined as:

> The serial number of the year AD. A default value of 9999 was used for cities that have no metro system.

Source: *Railway Directory* and website http://en.wikipedia.org/wiki/list of-town-tramway.

5.2 Network coverage

Variable 5.1.1 ***Network Coverage*** describes the coverage of the rail network. It is measurable on a ratio scale, operationally defined as follows:

> Route kilometers of network (number).

Source: *Railway Directory*.

5.3 Rolling stock fleet

Variable 5.2: ***Rolling Stock Fleet*** describes the size of the vehicle fleet deployed. It is measurable on a ratio scale, operationally defined as:

Number of vehicles in fleet.

Source: *Railway Directory*.

5.4 Track gauge

Variable 5.3: ***City Track Gauge*** describes the width of the track gauge of railways in a city. It is measurable on a ratio scale, operationally defined as:

Track gauge, millimeters.

Source: *Railway Directory*.

Where more than one gauge is present, the dominant gauge is used.

6 Time group

6.1 Calendar year

Variable 6.1: ***Calendar Year*** defines the year in which data originated. It is measurable on a ratio scale, operationally defined as the serial number of the year AD.

Notes

Urban railway population

Only urban railways, as listed in the *City Railways* section of *Railway Directory*, are included. Line haul railways are excluded from this database, but are included in the Railway Corporate Strategy CC Global Line-haul Railway Corporate Citizenship Database at www.railcorpstrat.com .

Precedence

Where more than one level of a particular variable is present in a country, for example a public sector railway operator coexists with open access operators, the highest level took precedence.