Databases Autumn 2019

Data Analysis Project
P1: Schema integration

The relation between event headlines, tourism and wealth in Europe.

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Nikolai Rutz, Luc Kury

1 Introduction

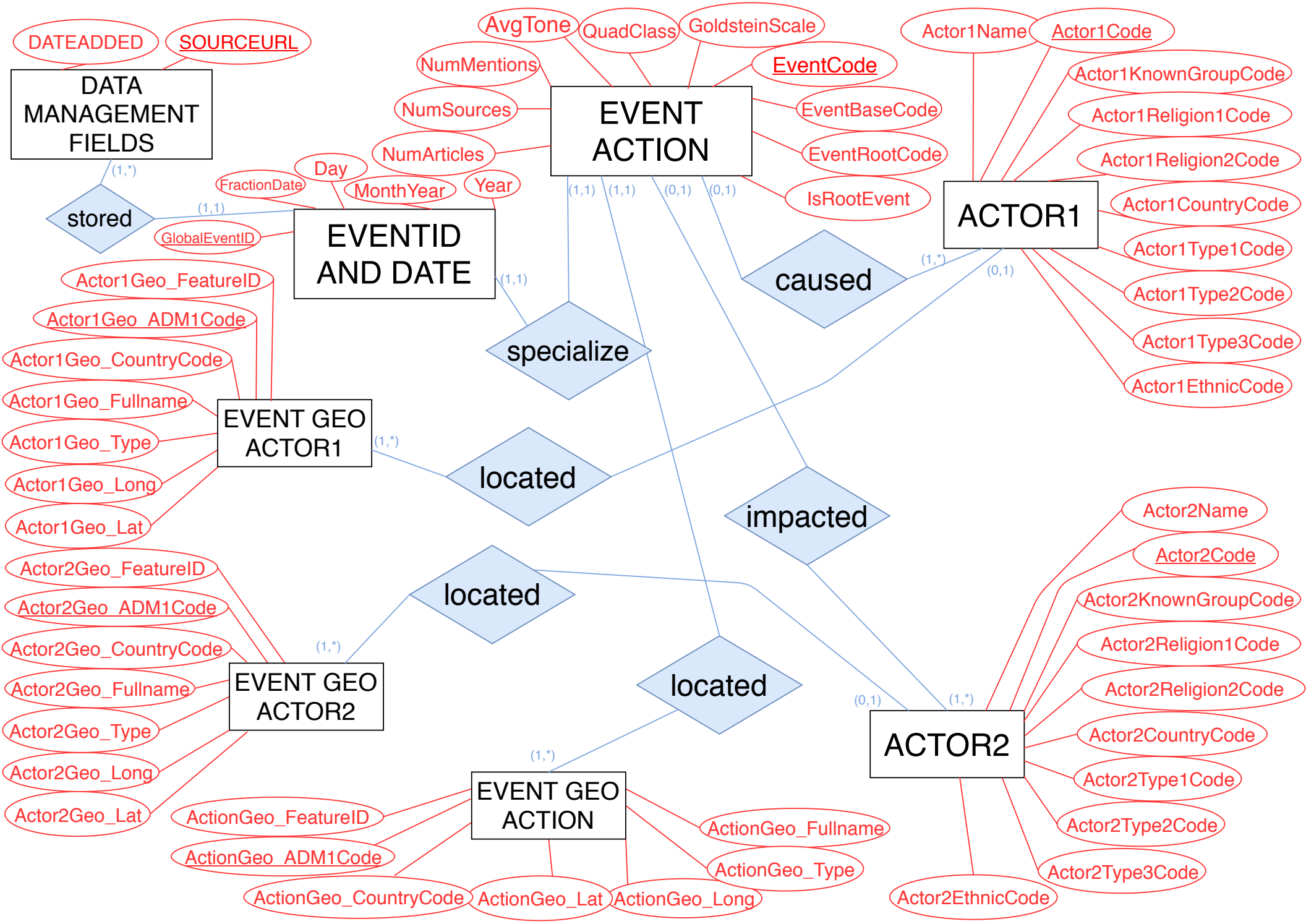
In this part of the project, we analyse the structure of the data and identify the relevant entities and their relations. Further we combine the ER diagrams and connect them with the alleged relations for which we want to find a correlation. Lastly we deduct a relational schema for the data.

2 Entity relationship diagrams

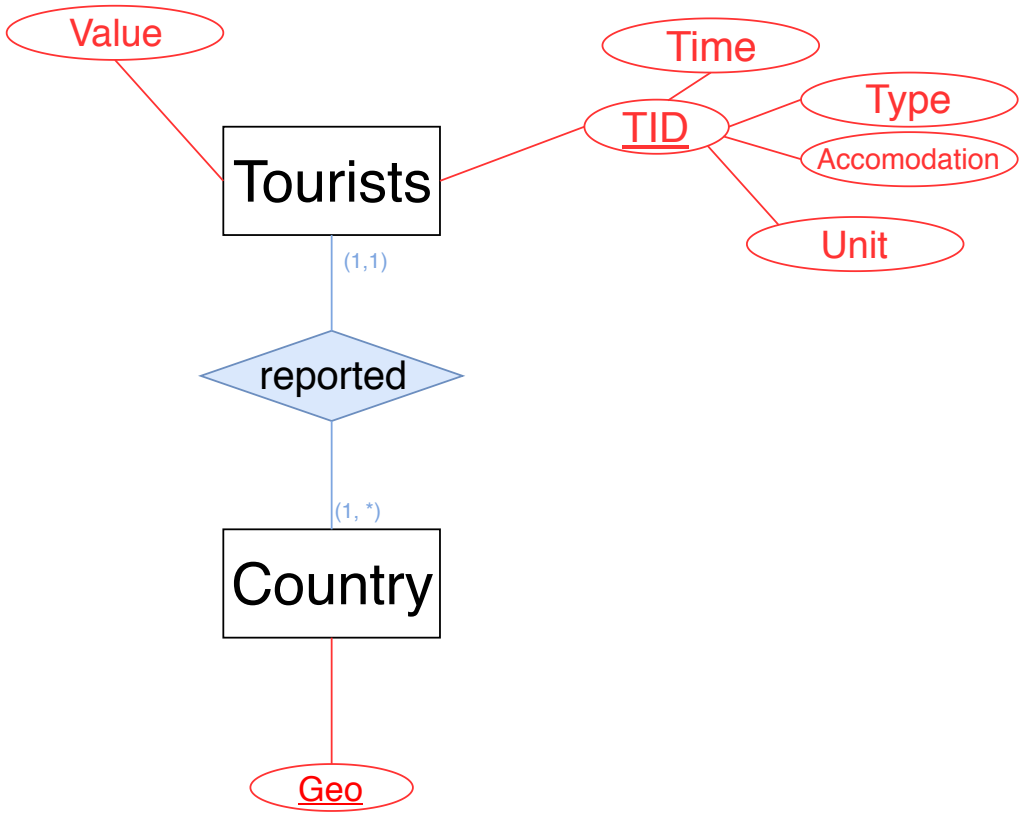
This section contains the ER diagrams of the single data sources representing their as-is state in the following order: GDELT, Tourism and Income. The GDELT dataset has a few functions and specifications which cannot be represented in the ER diagram. These are:

- One of the actors can be empty. For some events the `Actor1` or `Actor2` attribute can be a blank entry for complex or single-actor situations. `Actor1` usually represents the acting party and `Actor2` represents the affected party.
- The `EventGeo` for actors can can be blank, if a headline did not specify the actor country affiliations.

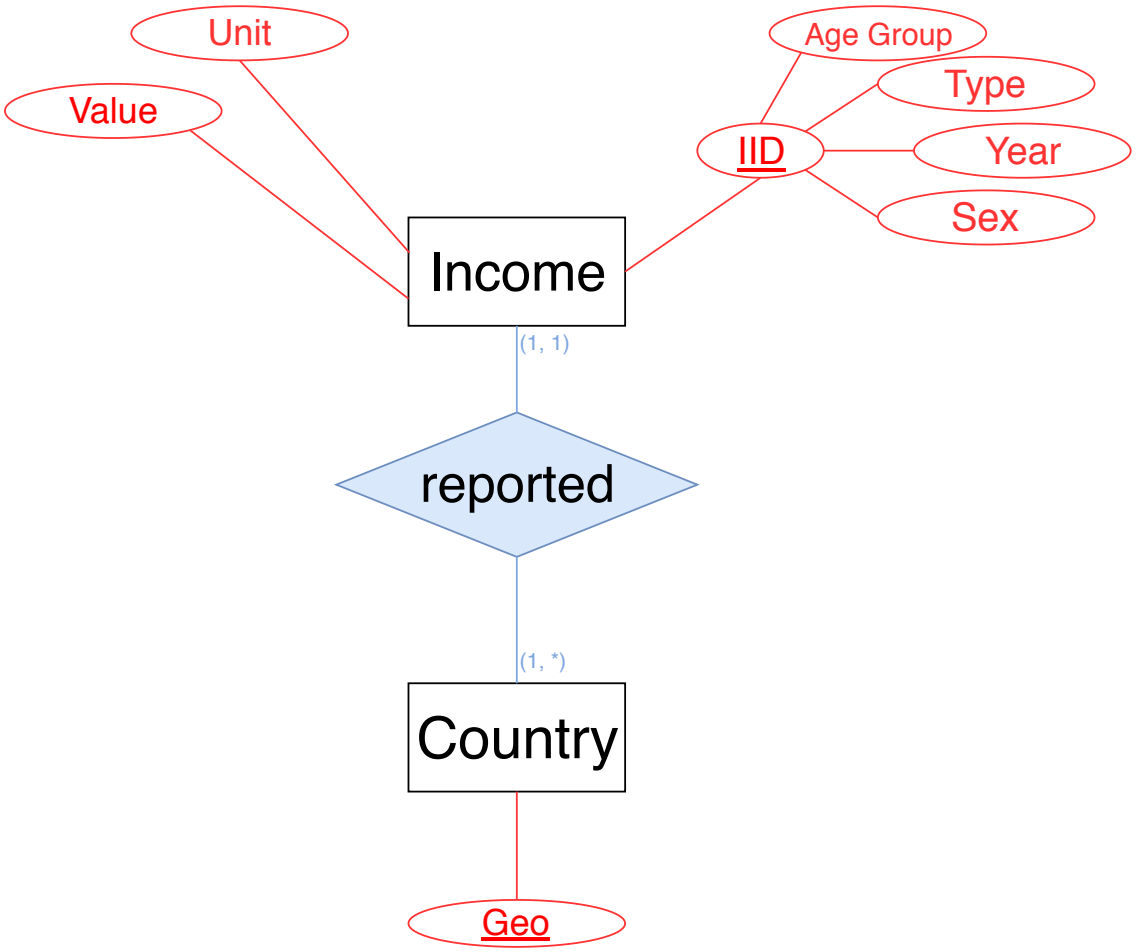
- The `DATEADDED` attribute of the `DATA MANAGEMENT FIELDS` did not exist prior to 2013. This does not affect us, since we do not rely on this attribute to exist.


DATEADDED
SOURCEURL
DATA MANAGEMENT FIELDS
(1,*)
stored
(1,1)
GlobalEventID
EVENTID AND DATE
FractionDate
Day
MonthYear
Year
AvgTone
QuadClass
GoldsteinScale
NumMentions
NumSources
NumArticles
EventCode
EventBaseCode
EventRootCode
IsRootEvent
EVENT ACTION
(1,1)
(1,1)
(0,1)
(0,1)
specialize
caused
(1,*)
(0,1)
Actor1Name
Actor1Code
Actor1KnownGroupCode
Actor1Religion1Code
Actor1Religion2Code
Actor1CountryCode
Actor1Type1Code
Actor1Type2Code
Actor1Type3Code
Actor1EthnicCode
ACTOR1
Actor1Geo_FeatureID
Actor1Geo_ADM1Code
Actor1Geo_CountryCode
Actor1Geo_Fullname
Actor1Geo_Type
Actor1Geo_Long
Actor1Geo_Lat
EVENT GEO ACTOR1
(1,*)
located
impacted
Actor2Geo_FeatureID
Actor2Geo_ADM1Code
Actor2Geo_CountryCode
Actor2Geo_Fullname
Actor2Geo_Type
Actor2Geo_Long
Actor2Geo_Lat
EVENT GEO ACTOR2
(1,*)
located
located
(1,*)
(0,1)
(1,*)
ACTOR2
Actor2Name
Actor2Code
Actor2KnownGroupCode
Actor2Religion1Code
Actor2Religion2Code
Actor2CountryCode
Actor2Type1Code
Actor2Type2Code
Actor2Type3Code
Actor2EthnicCode
ActionGeo_FeatureID
ActionGeo_ADM1Code
ActionGeo_CountryCode
EVENT GEO ACTION
ActionGeo_Lat
ActionGeo_Long
ActionGeo_Fullname
ActionGeo_Type

EuroStat - Tourism data



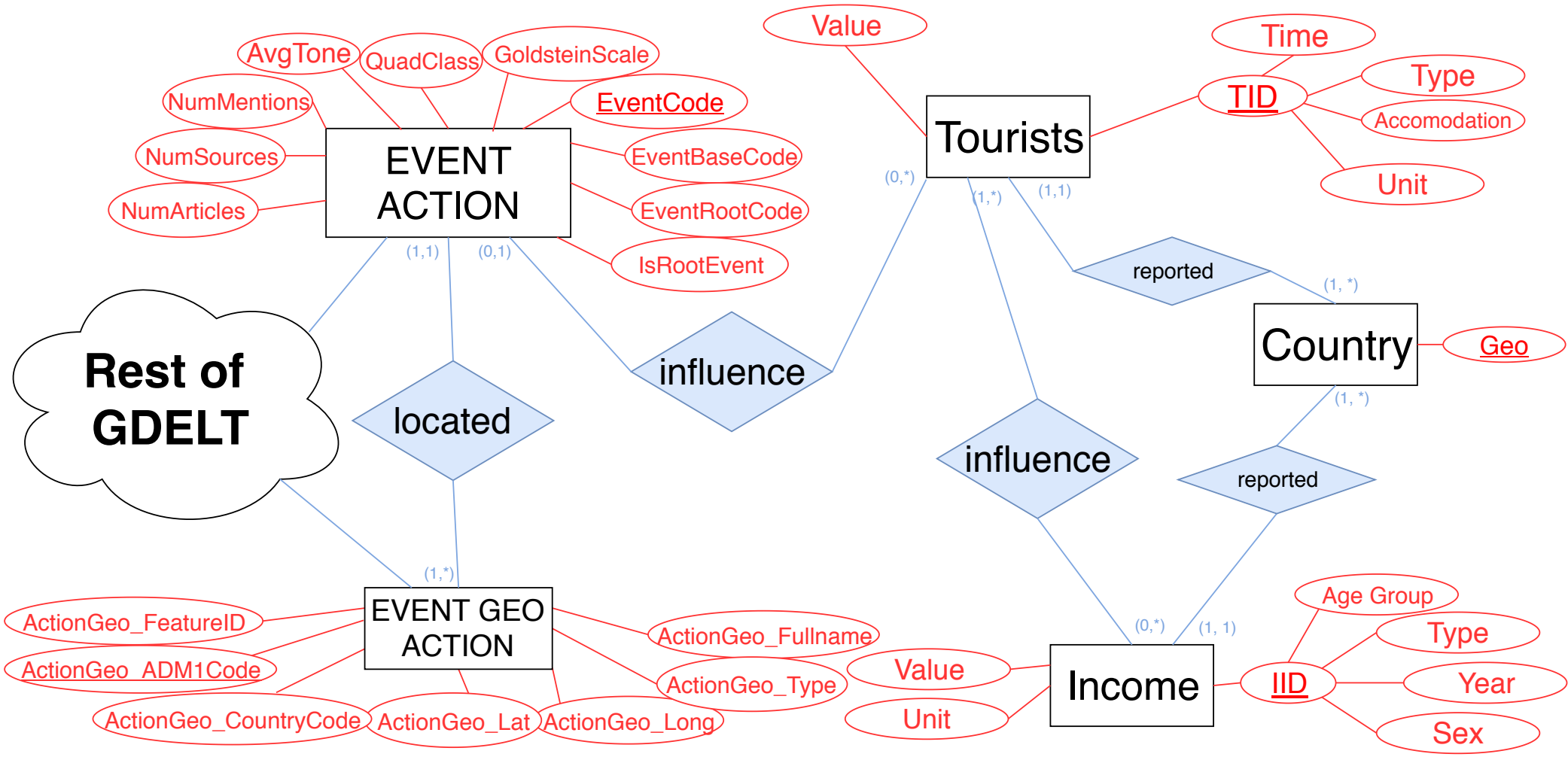
EuroStat - Wealth data



3 Integrated schema

This section is concerned with the ER model of the integrated schema. On the next page you can see the ER diagram of all three data sources combined. From the GDELT data, only the relevant attributes and relations were duplicated, due to space contraints. For the full GDELT schema, please refer to section 2.

Integrated ERM



4 Relational schema

In this section we deduct the relational schema for the integrated model. We merged all the relations where possible and defined the necessary primary and foreign keys.

- `EVENTID AND DATE`(GlobalEventID, SOURCEURL, EventCode, FractionDate, Day, MonthYear, Year)
- `DATA MANAGEMANT FIELDS`(SOURCEURL, DATEADDED)
- `ACTOR1`(Actor1Code, Actor1Geo_ADM1Code, Actor1Name, Actor1KnownGroupCode, Actor1Religion1Code, Actor1Religion2Code, Actor1CountryCode, Actor1Type1Code, Actor1Type2Code, Actor1Type3Code, Actor1EthnicCode)
- `ACTOR2`(Actor2Code, Actor2Geo_ADM1Code, Actor2Name, Actor2KnownGroupCode, Actor2Religion1Code, Actor2Religion2Code, Actor2CountryCode, Actor2Type1Code, Actor2Type2Code, Actor2Type3Code, Actor2EthnicCode)
- `EVENT ACTION`(EventCode, Actor1Code, Actor2Code, ActionGeo_ADM1Code, TID, EventBaseCode, EventRootCode, IsRootEvent, GoldsteinScale, QuadClass, AvgTone, NumMentions, NumSources, NumArticles)
- `EVENT GEO ACTION`(ActionGeo_ADM1Code, ActionGeo_FeatureID, ActionGeo_CountryCode, ActionGeo_Lat, ActionGeo_Long, ActionGeo_Type, ActionGeo_FullName)
- `EVENT GEO ACTOR1`(Actor1Geo_ADM1Code, Actor1Geo_FeatureID, Actor1Geo_CountryCode, Actor1Geo_Lat, Actor1Geo_Long, Actor1Geo_Type, Actor1Geo_FullName)
- `EVENT GEO Actor2`(Actor2Geo_ADM1Code, Actor2Geo_FeatureID, Actor2Geo_CountryCode, Actor2Geo_Lat, Actor2Geo_Long, Actor2Geo_Type, Actor2Geo_FullName)
- `Income`(IID, Geo, Value, Unit, IID.AgeGroup, IID.Type, IID.Year, IID.Sex)
- `Tourist`(TID, Geo, Value, TID.Time, TID.Type, TID.Accomodation, TID.Unit)
- `Country`(Geo)
- `influence`(TID, IID)