Crime Ontology Documentation

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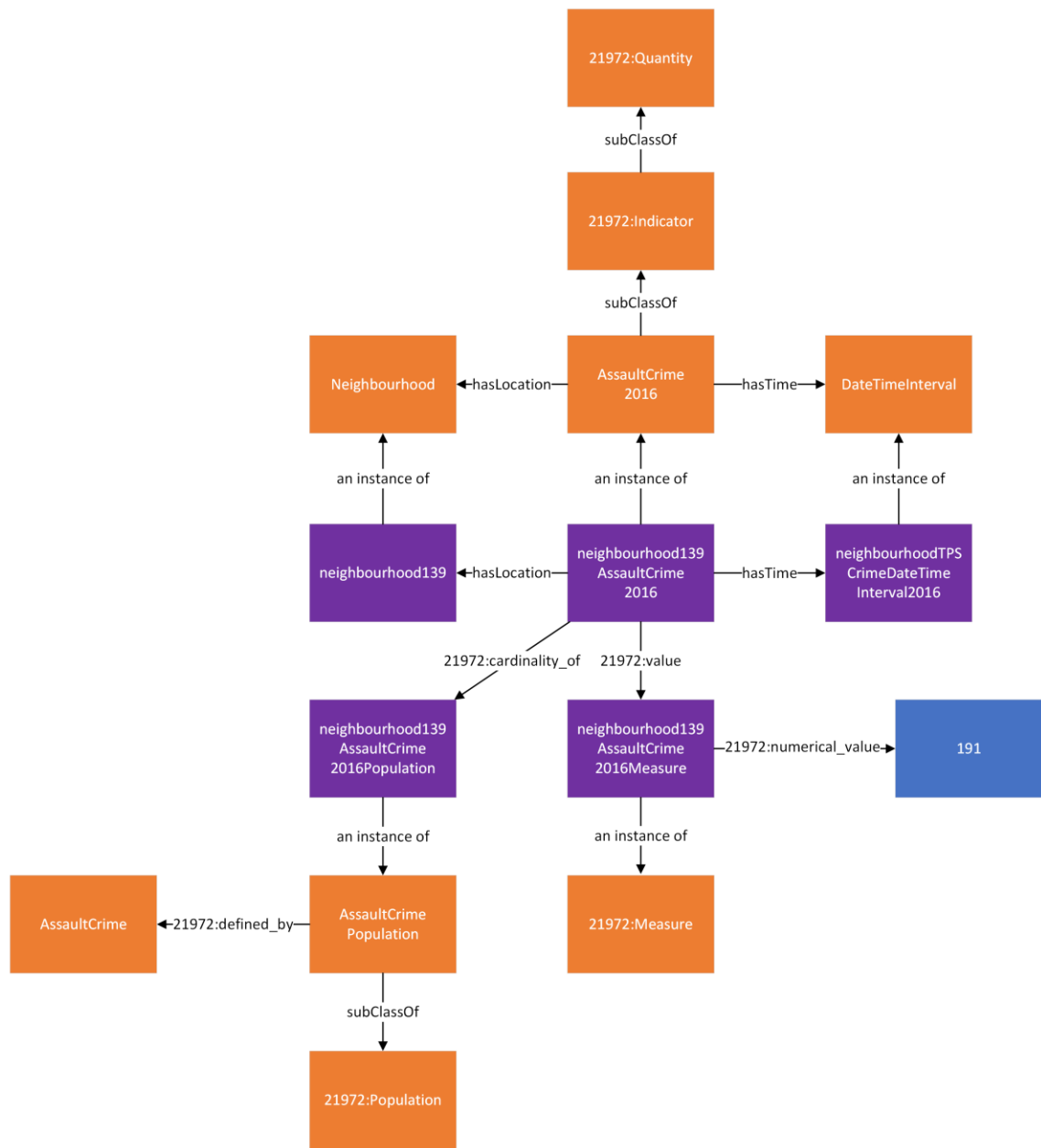University of Toronto

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Introduction

This is a basic ontology for representing crime indicators using the Indicator pattern from ISO/IEC 21972. An instance of a crime indicator (e.g. AssualtCrime2016 which measures the number of assault crimes that occurred during the year 2016 in a given location) is defined as a subclass of the Indicator class from ISO/IEC 21972. Crime indicators can be linked to their location using the hasLocation property and its corresponding time period using the hasTime property. The value of a crime indicator is defined as an instance of the Measure class from ISO/IEC 21972 and can be linked to its numerical value using the numerical_value property. Additionally, crime indicators can be linked to its population instance using the cardinality_of property from ISO/IEC 21972. A list of the key properties is shown below:

- **hasTime**: Identifies the DateTimeInterval for the crime indicator
- **hasLocation**: Identifies the City or CityAdministrativeArea for the crime indicator
- **21972:value**: Identifies the Measure instance that represents the value of the crime indicator
- **21972:numerical_value**: Indicates the numerical value of the crime indicator
- **21972:cardinality_of**: Identifies the Population instance of the crime indicator

A diagram of the ontology using AssaultCrime2016 as an example can be found below. Orange boxes represent classes, purple boxes represent instances, and blue boxes represent literals.

21972:Quantity

subClassOf

21972:Indicator

subClassOf

Neighbourhood ←hasLocation— AssaultCrime2016 —hasTime→ DateTimeInterval

an instance of

neighbourhood139 ←hasLocation— neighbourhood139AssaultCrime2016 —hasTime→ neighbourhoodTPSCrimeDateTimeInterval2016

21972:cardinality_of   21972:value

neighbourhood139AssaultCrime2016Population

neighbourhood139AssaultCrime2016Measure —21972:numerical_value→ 191

an instance of

AssaultCrime ←21972:defined_by— AssaultCrimePopulation

21972:Measure

subClassOf

21972:Population

Namespace prefixes used:

- 21972: http://ontology.eil.utoronto.ca/ISO21972/iso21972/

The following table shows the key classes and properties:

Class	Property	Value Restriction
Indicator	rdfs:subClassOf	21972:Quantity
	hasTime	only DateTimeInterval
	hasLocation	only City or CityAdministrativeArea

	21972:value	only Measure
	21972:cardinality_of	only 21972:Population
Measure	numerical_value	only xsd:integer or xsd:decimal