THE UNIVERSITY of EDINBURGH

E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL

How changing patterns of victimisation vary by place

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Types of victim

Identifying types of victim

- Used 9 sweeps of the Scottish Crime and Justice Survey (SCJS)
- Different respondents selected at every sweep: not a panel survey
- Number of respondents ranges from 3034 in 2004 to 16036 in 2009-2010
- Fitted a latent class model (in Mplus) with number of incidents experienced in each of 4 crime groups as the outcome
- Number of incidents capped at 4 (so the model would run!) so the outcomes are treated as ordinal

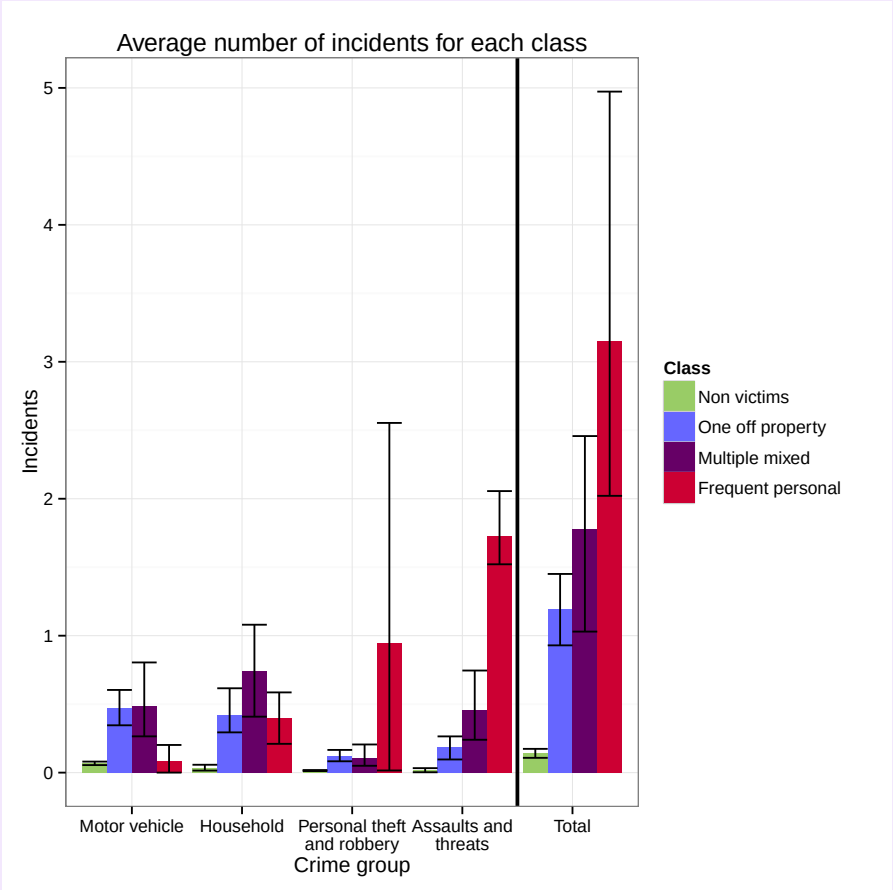
Crime groups

We used the following crime groups in our model:

mvcri	Thefts and attempted thefts of/from motor vehicles, motor vehicle vandalism
house	Housebreakings and attempted housebreakings (to dwellings or to outhouses), theft inside and outside dwellings, vandalism not to motor vehicles (and not including fire raising)
assthe	Assaults and attempted assaults, threats
persrob	Theft from the person, other personal theft, robbery

Four types of victim

The four group solution was best:



Class	Approx % of population	Share (%) of all crime
Non-victims	80	29.8
One-off property	15	39.0
Multiple mixed	5	26.4
Frequent personal	0.5	4.7

Characteristics of each type of victim

Methodology

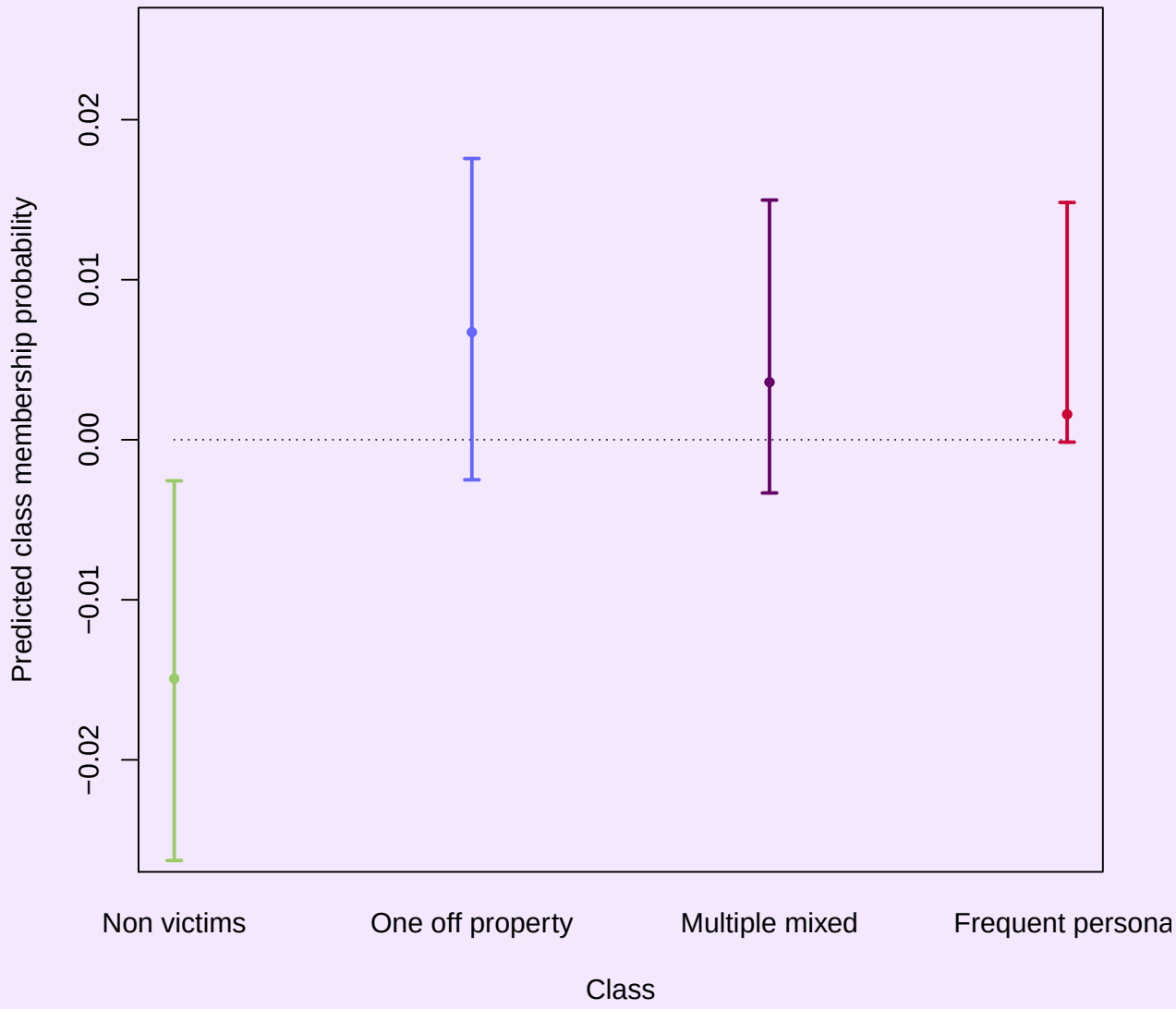
- After fitting the latent class model, used the results to generate 1000 group memberships for each individual (in R)
- Fitted an unordered multinomial for group membership (also in R), predicted by
  - gender
  - age
  - household composition
  - number of people in household
  - tenure
  - length of residence
  - equivalised income
  - number of vehicles (as a categorical variable: 0, 1 or multiple vehicles)
- Bootstrapped: fitted the model 1000 times, each time drawing a different sample (with replacement) from the data, each time of the same length as the original dataset

Results

- Men are less likely to be Non-victims than women (c. 1.5 percentage points difference)
- As age increases, the probability of being a Non-victim increases and the probability of being a One-off property, Multiple mixed, or Frequent personal victim decreases
- Single parents have less chance of being Non-victims than those in households with one over 60, two over 60s, households with two or more parents, or households with two or more adults (and no children)
- One younger person living alone has less chance of being a Non-victim than someone in a household with two over 60s.
- Social renters are less likely than anyone else to be Non-victims and more likely than owners or private renters to be One-off property victims.
- Those with vehicles are more likely they are to be One-off property victims and less likely to be Non-victims than those without.

Gender

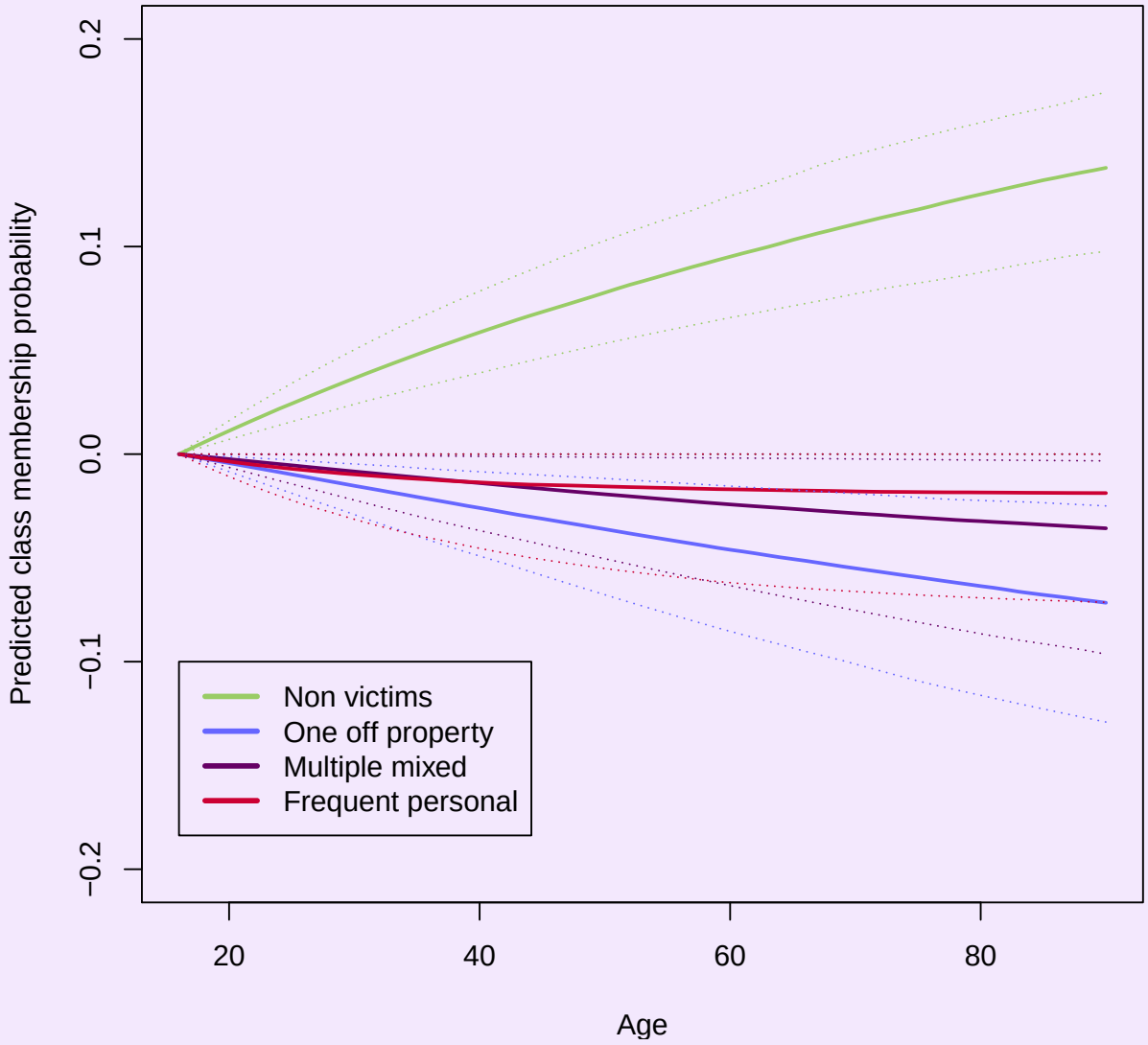
Male difference from female



For 50 year olds living alone without any children, in a house they own and have lived in for at least 10 years, with average equivalised income and no vehicles

Age

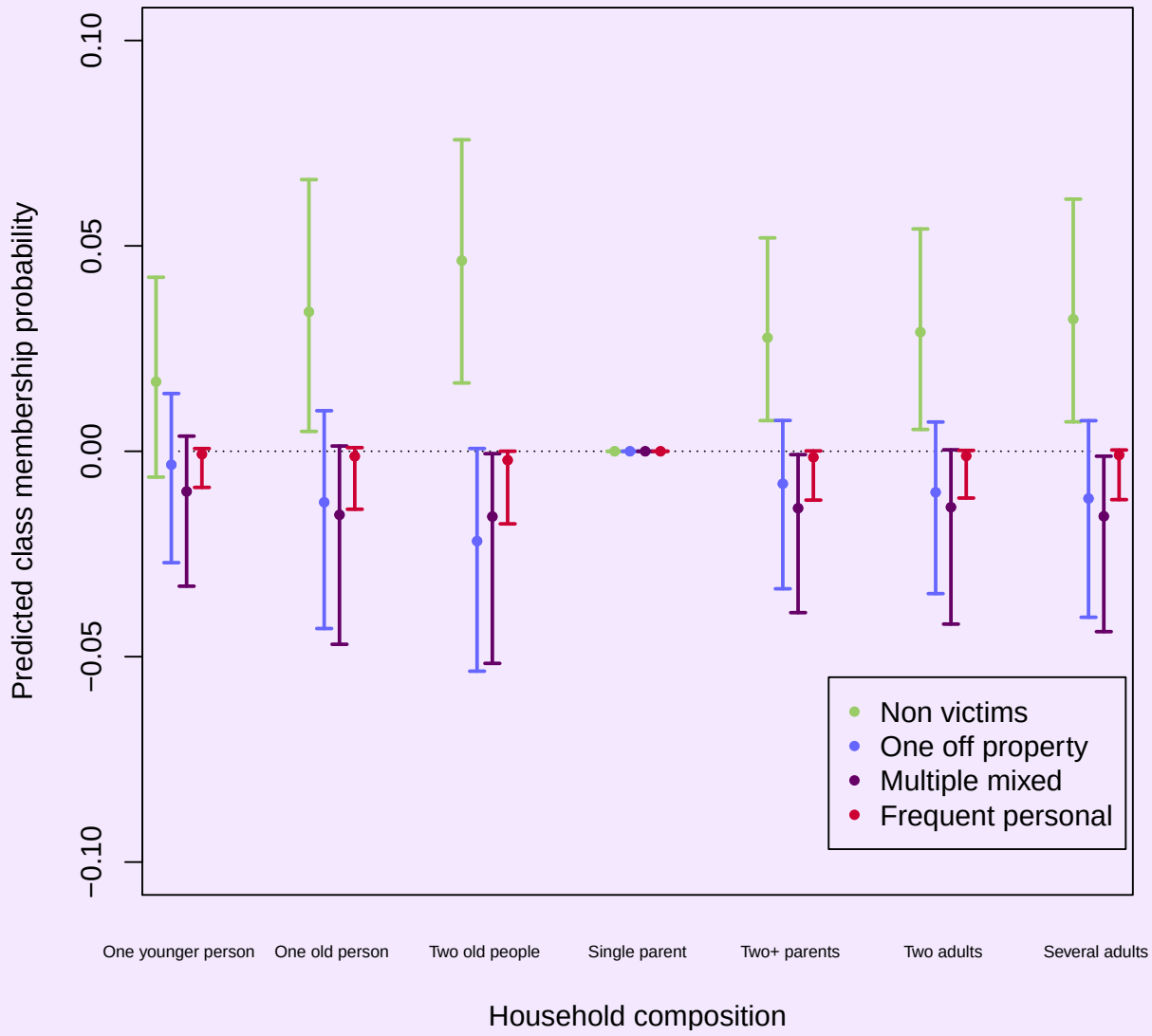
Differences from age 16



For women living alone without any children, in a house they own and have lived in for at least 10 years, with average equivalised income and no vehicles

Household composition (1)

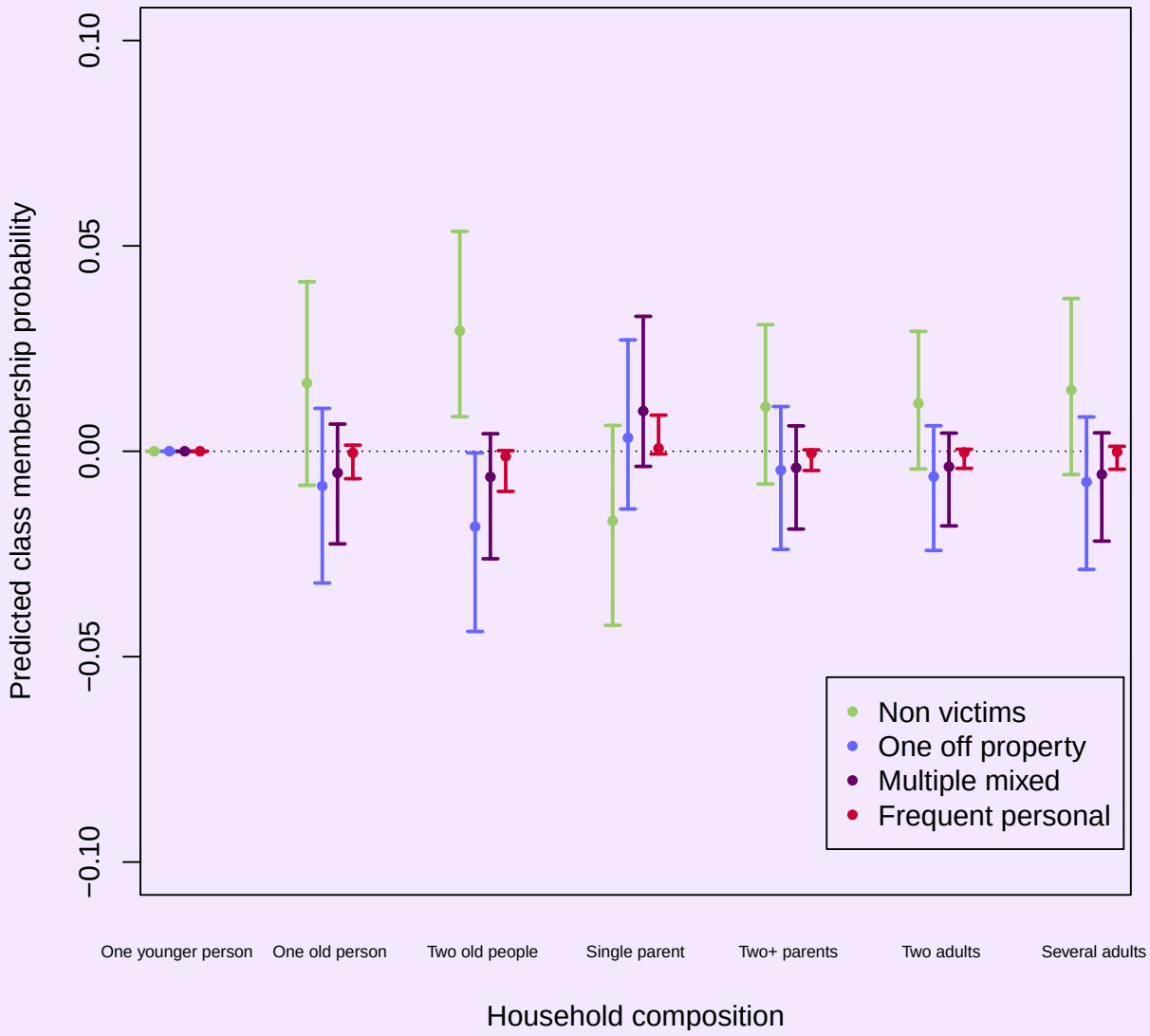
Differences from single parents



For 59 or 60 year old women, living in a house they own and have lived in for at least 10 years, with average equivalised income and no vehicles

Household composition (2)

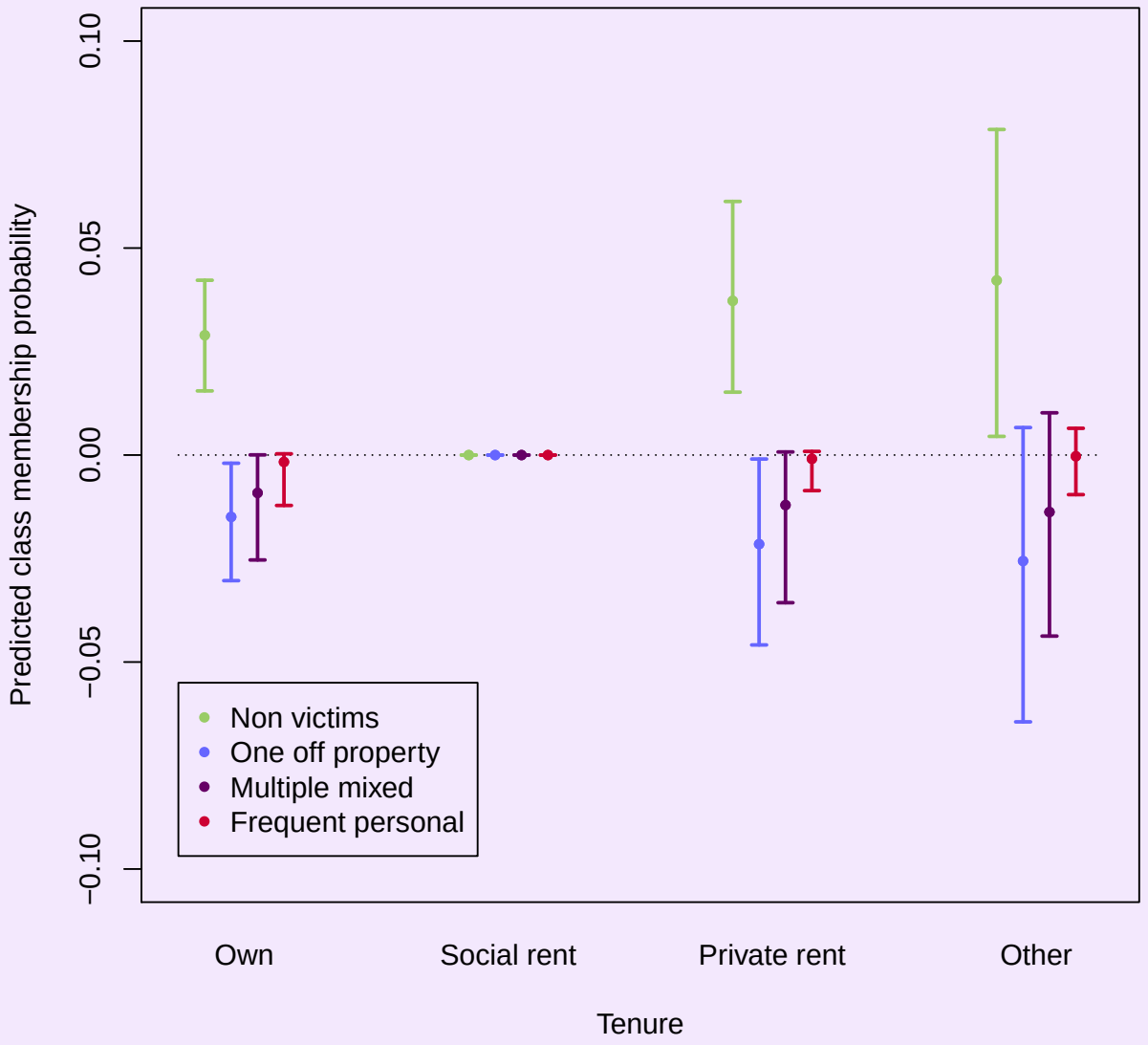
Differences from one younger person



For 59 or 60 year old women, in a house they own and have lived in for at least 10 years, with average equivalised income and no vehicles

Tenure

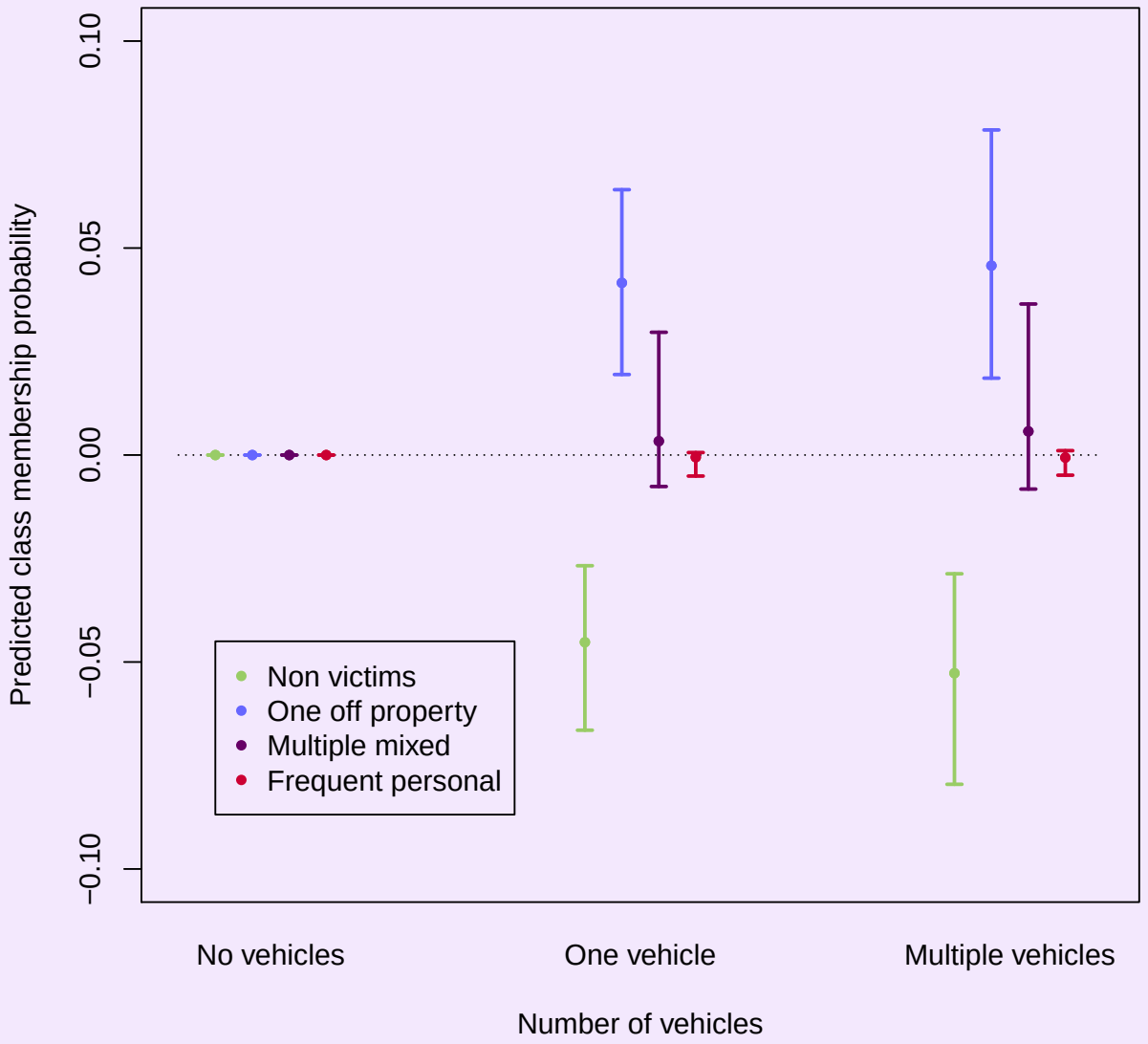
Difference from social renters



For 50 year old women living alone without any children, in a house they have lived in for at least 10 years, with average equivalised income and no vehicles

Vehicle ownership

Difference from those with no vehicles



For 50 year old women living alone without any children, in a house they own and have lived in for at least 10 years, with average equivalised income

Geography of victim types

Methodology

Current methodology

- Ran an unordered multilevel multinomial model using MCMC for 300000 iterations (in MLwiN)
- Used class membership probabilities for each individual rather than assigning them a class (denominator set to 1000 for each person)
- No explanatory variables included in the model
- Intermediate geography (IG) is the second level in the model $\rightarrow$ residual for each IG and each victim type except Non-victims, the reference category

Future methodological plans

- Bootstrap as above, to incorporate uncertainty in latent class model estimates and to include weights
- Investigate further the validity of this and the methods already being used!

Population density

For context, here's the population density of Scotland:

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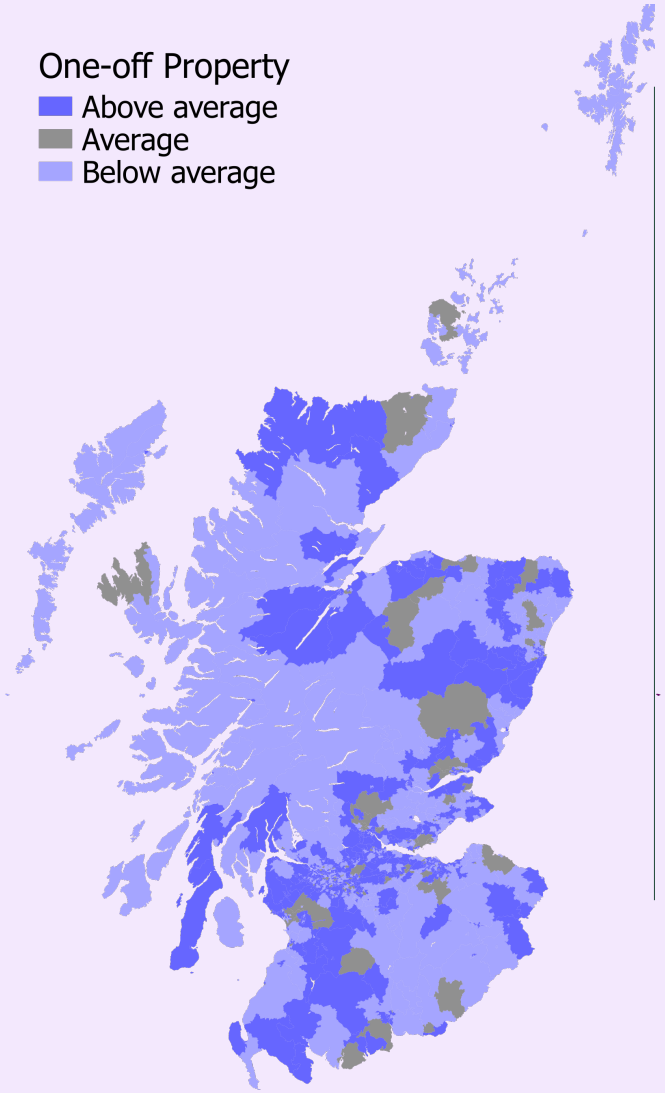
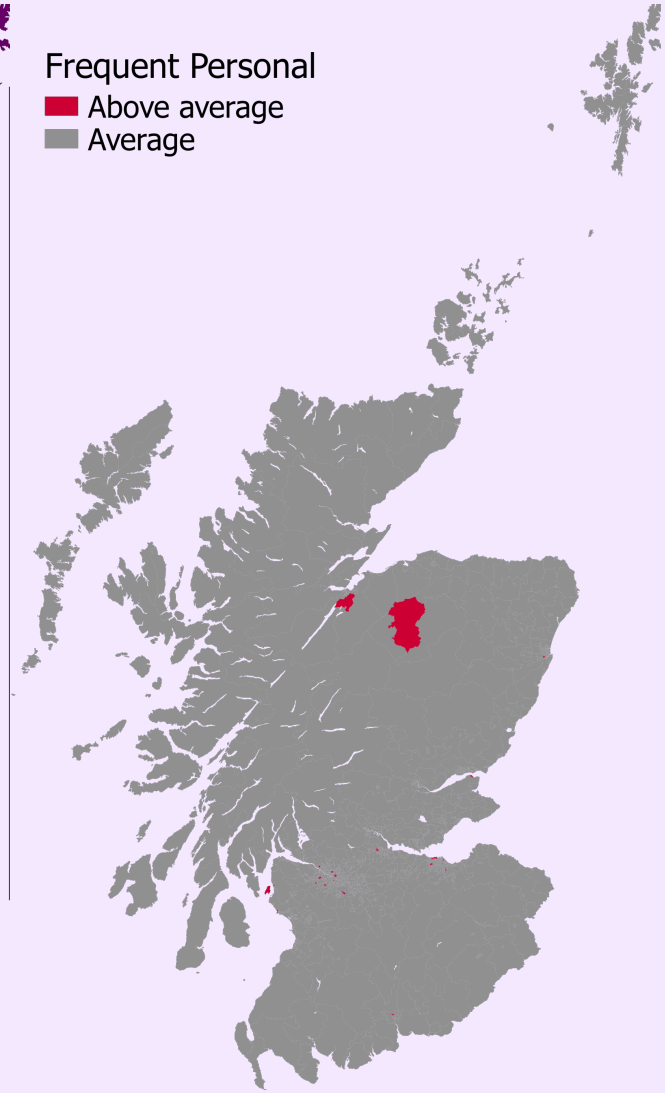
(Preliminary) results: compared to average





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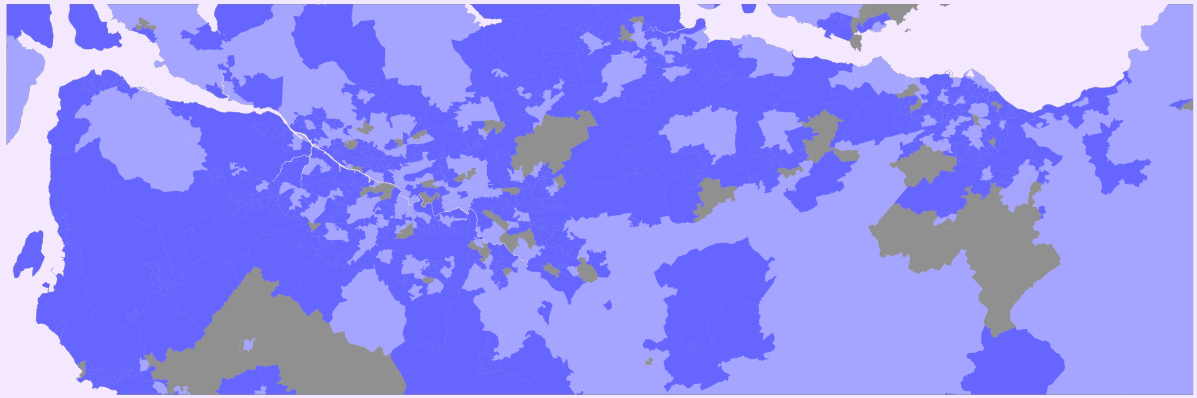
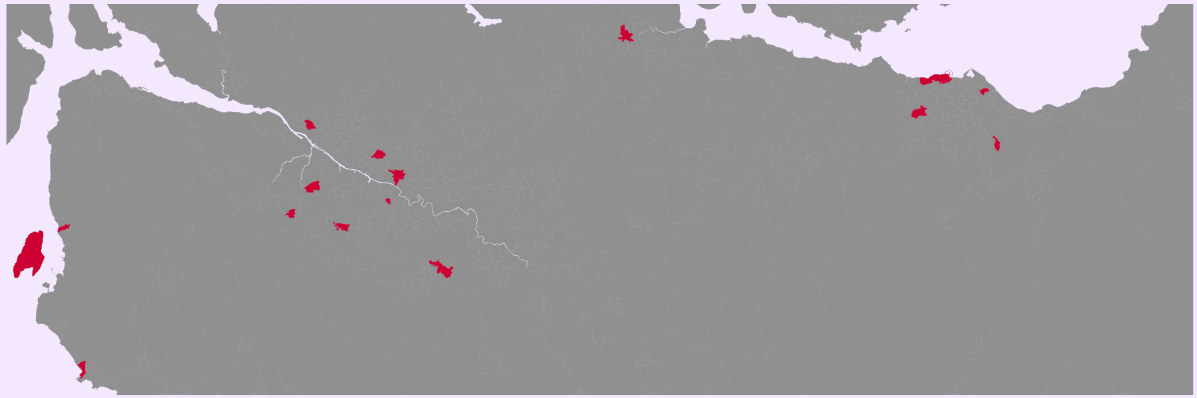


One-off Property
- Above average
- Average
- Below average

Multiple Mixed
- Above average
- Average
- Below average



Frequent Personal
- Above average
- Average

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Conclusions

Individual and household characteristics

- You're more likely to be a Non-victim if you
  - are female
  - are older
  - live in most kinds of household other than single parent
  - are not a social renter
  - have no vehicles
- You're more likely to be a One-off property victim if you
  - are younger
  - are a social renter
  - have vehicles
- You're more likely to be a Multiple mixed victim if you
  - are male
  - are younger
- You're more likely to be a Frequent personal victim if you
  - are younger

Geography

Hypotheses

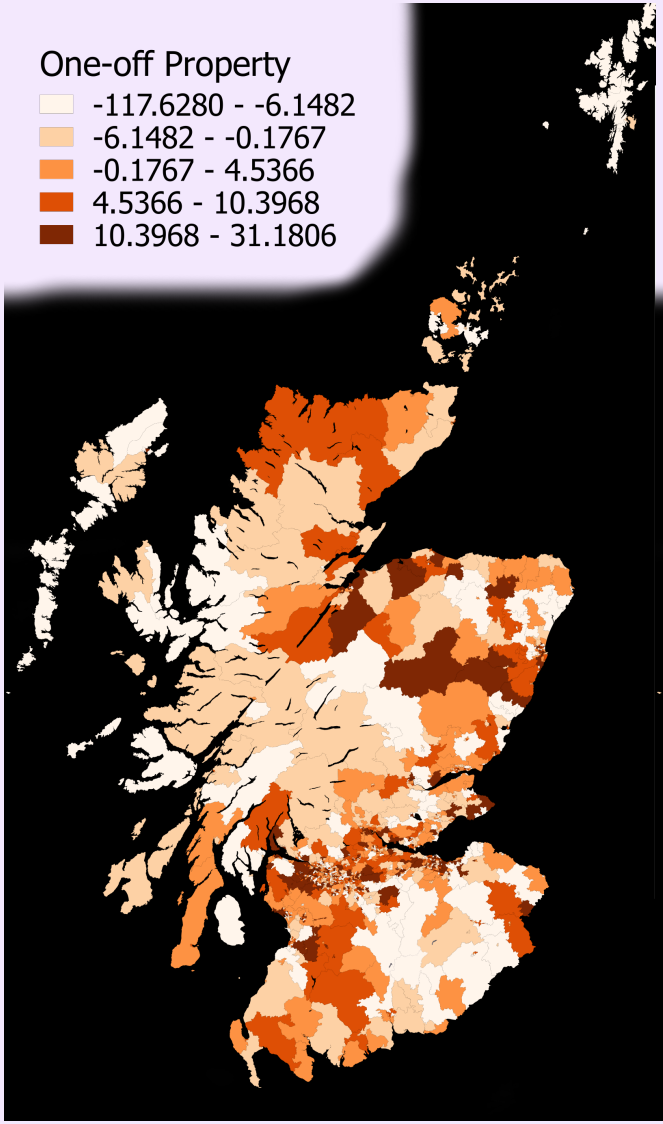
- People living in remoter areas are less likely to be One-off property victims
- People living in remoter areas or in local population centres are more likely to be Multiple mixed victims
- Perhaps crime is drawn to regional population centres
- Or perhaps people are more segregated in more densely populated areas and either those likely to be Multiple mixed victims or those responsible for their victimisation live in certain of those areas (including the city centres and some suburbs)

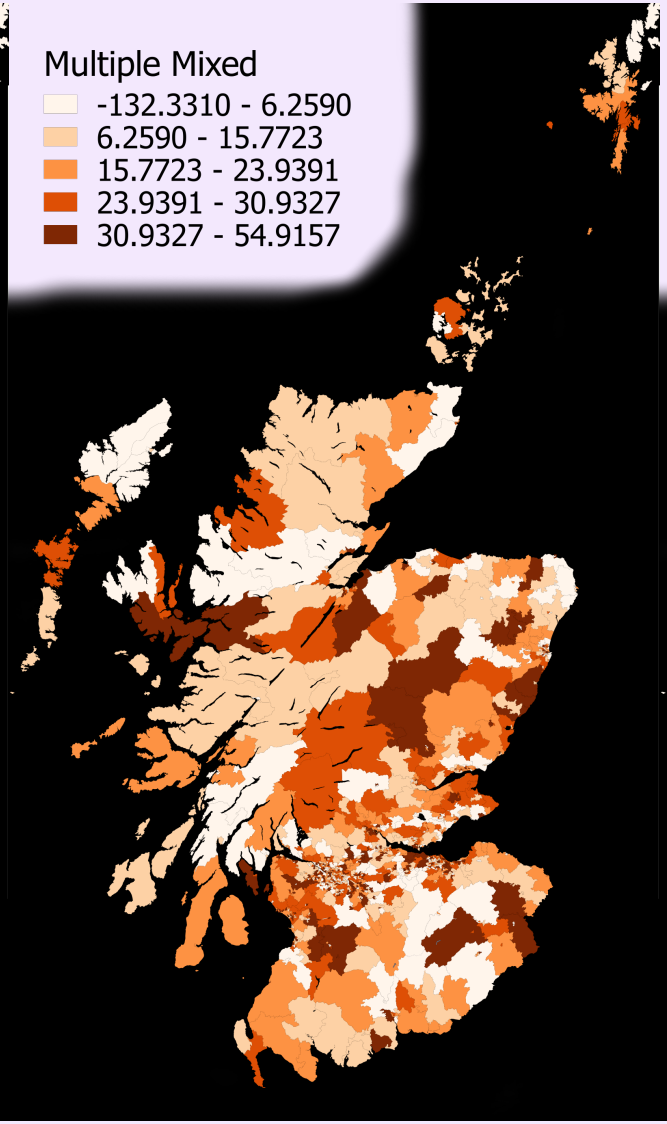
❄❄ End ❄❄

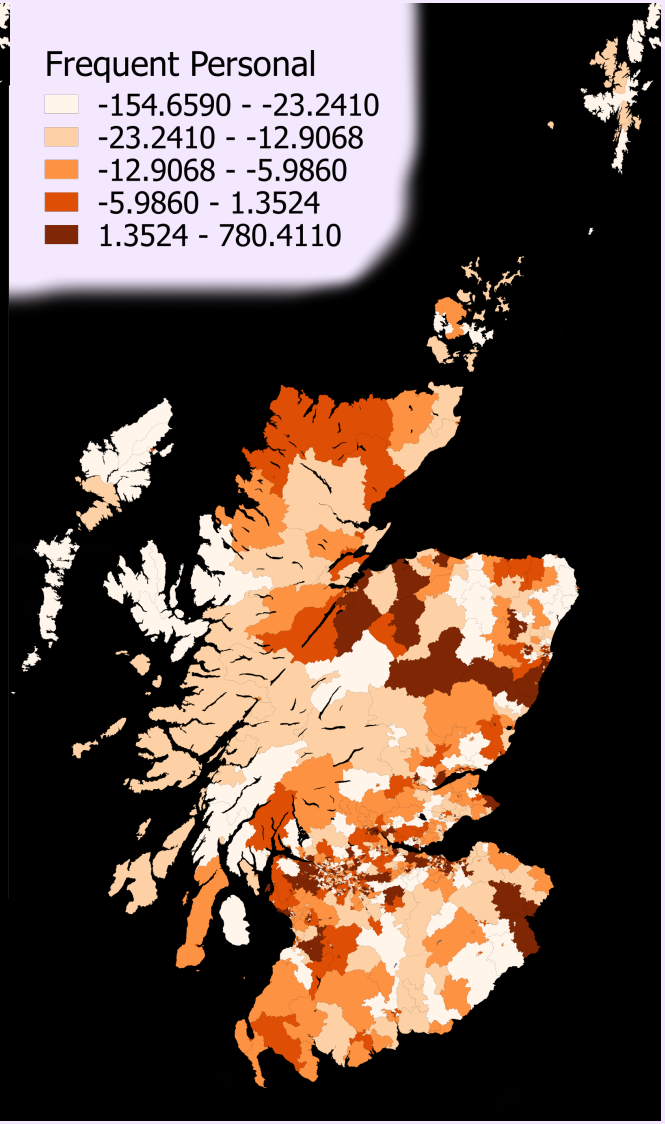
Extra slides

- Quantiles: whole of Scotland
- Quantiles: central belt
- One-off property victims vs. population density
- One-off property victims vs. population density (central belt)
- Multiple mixed victims vs. population density
- Multiple mixed victims vs. population density (central belt)
- Frequent personal victims vs. population density
- Frequent personal victims vs. population density (central belt)

(Preliminary) results: quantiles







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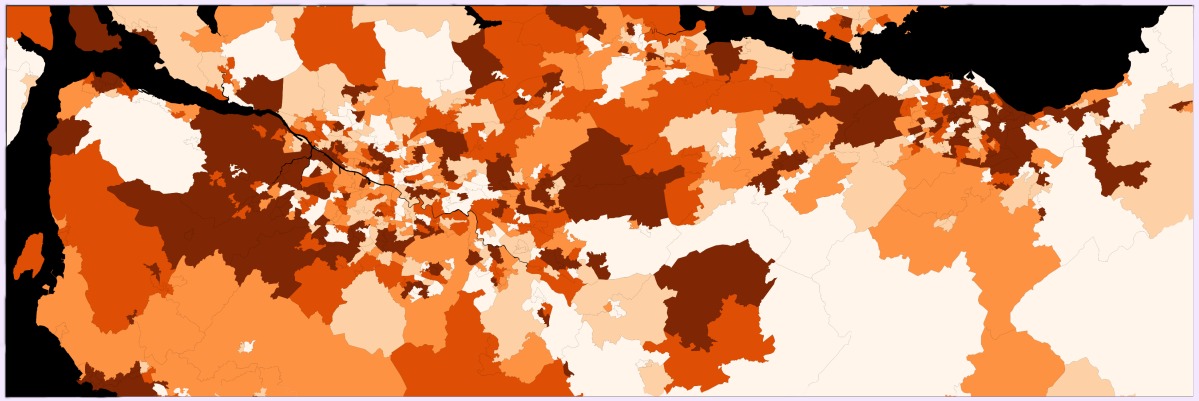
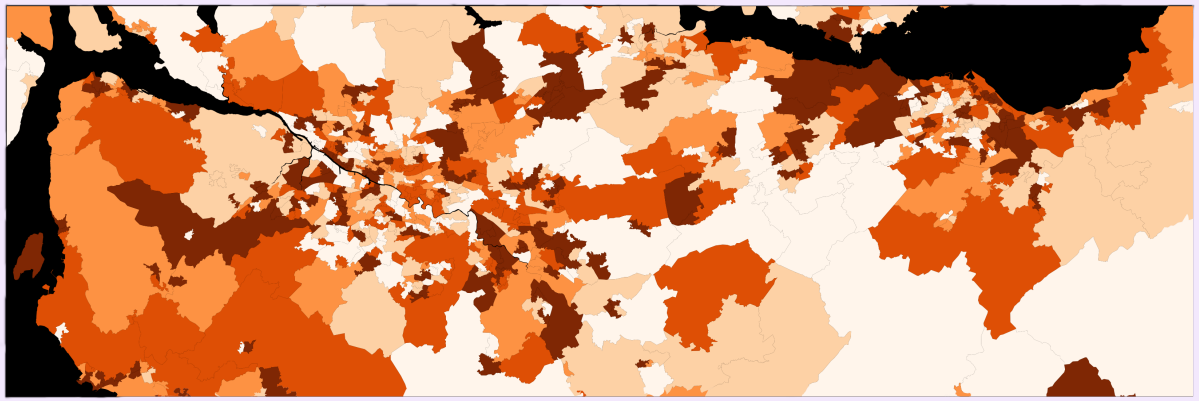
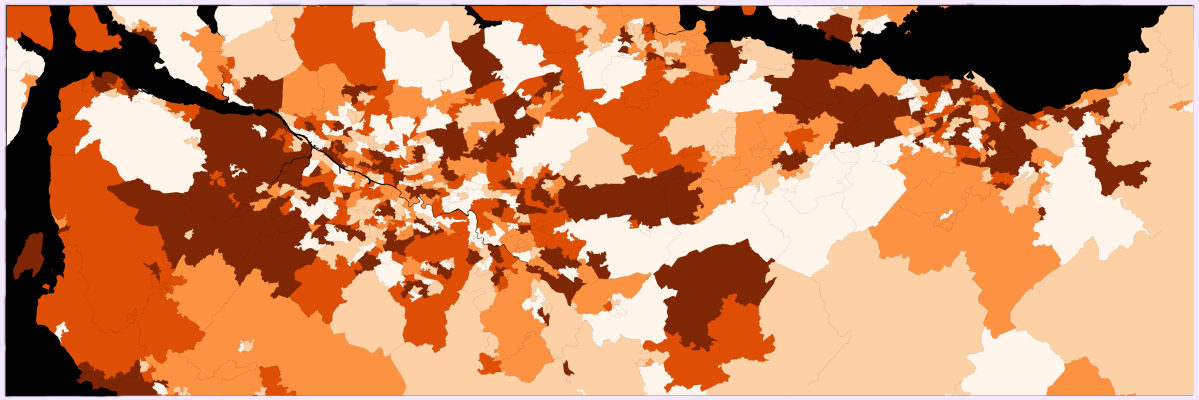


One-off Property
-117.6280 - -6.1482
-6.1482 - -0.1767
-0.1767 - 4.5366
4.5366 - 10.3968
10.3968 - 31.1806



Multiple Mixed
-132.3310 - 6.2590
6.2590 - 15.7723
15.7723 - 23.9391
23.9391 - 30.9327
30.9327 - 54.9157



Frequent Personal
-154.6590 - -23.2410
-23.2410 - -12.9068
-12.9068 - -5.9860
-5.9860 - 1.3524
1.3524 - 780.4110

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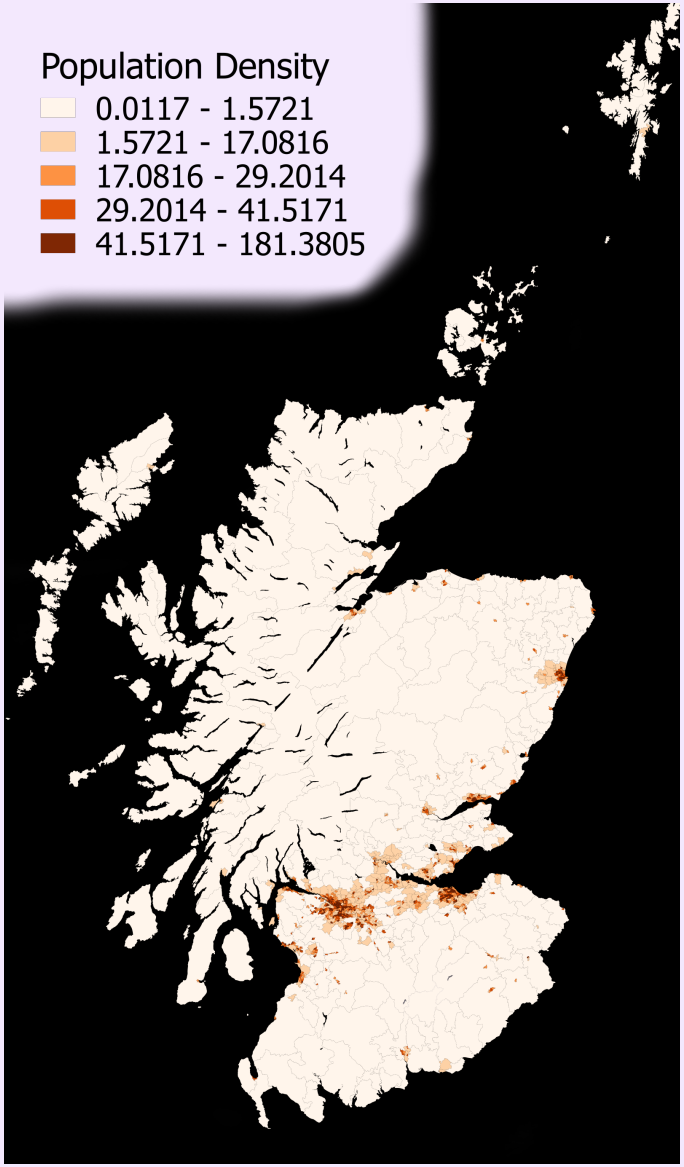
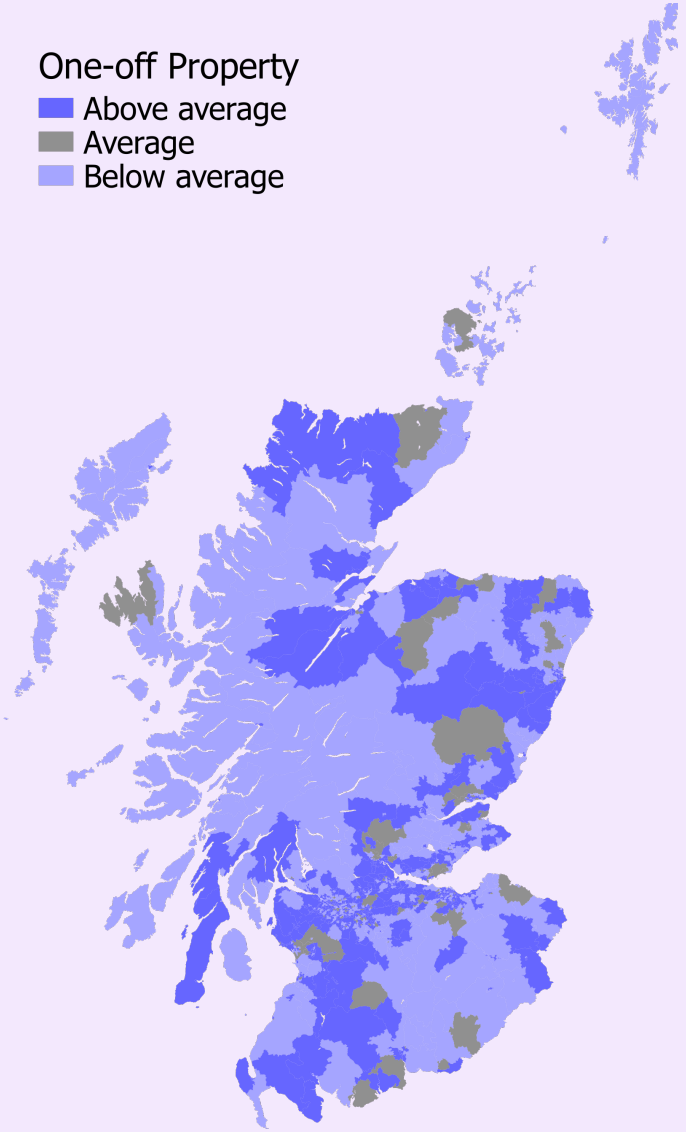
One-off property victims vs. population density





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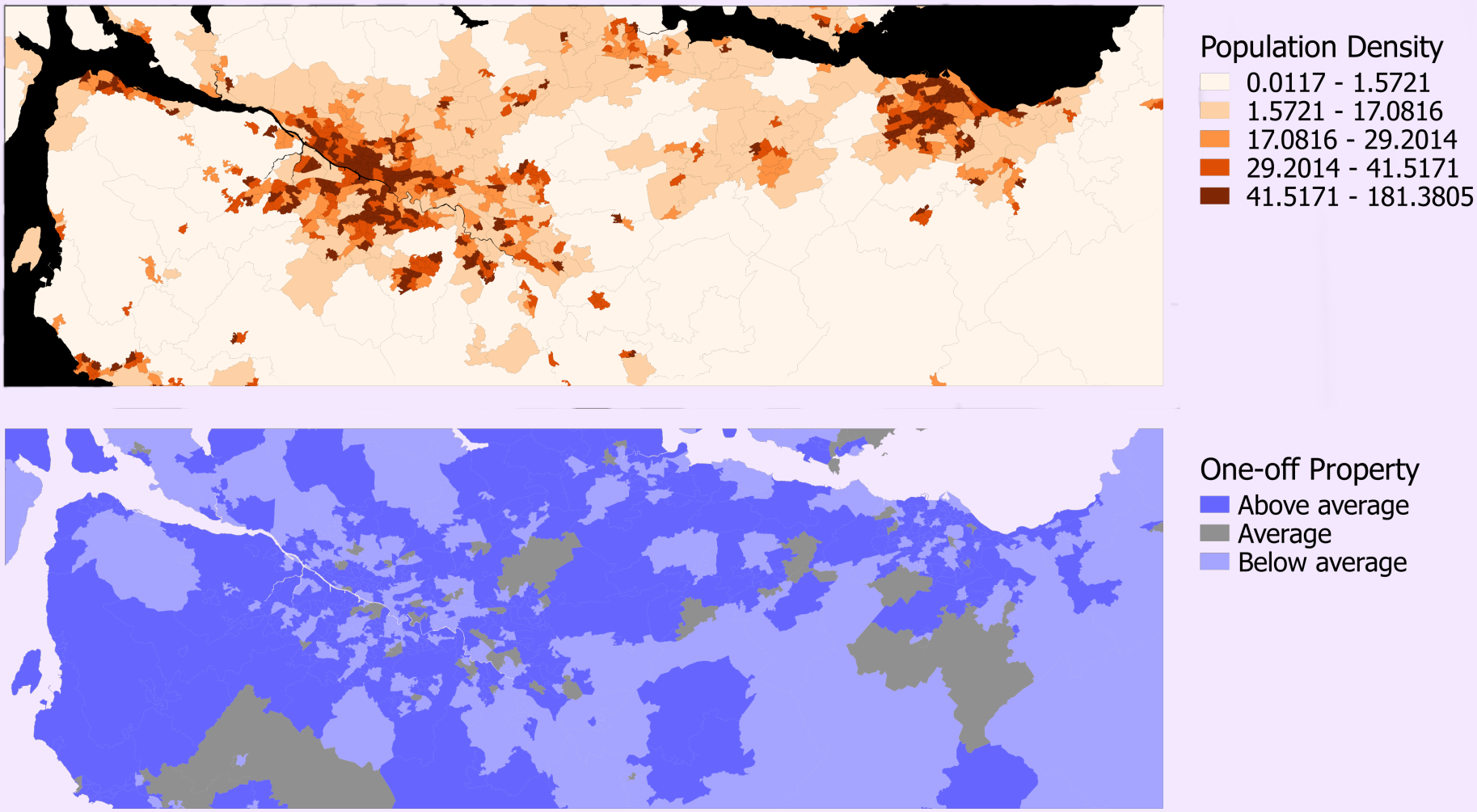

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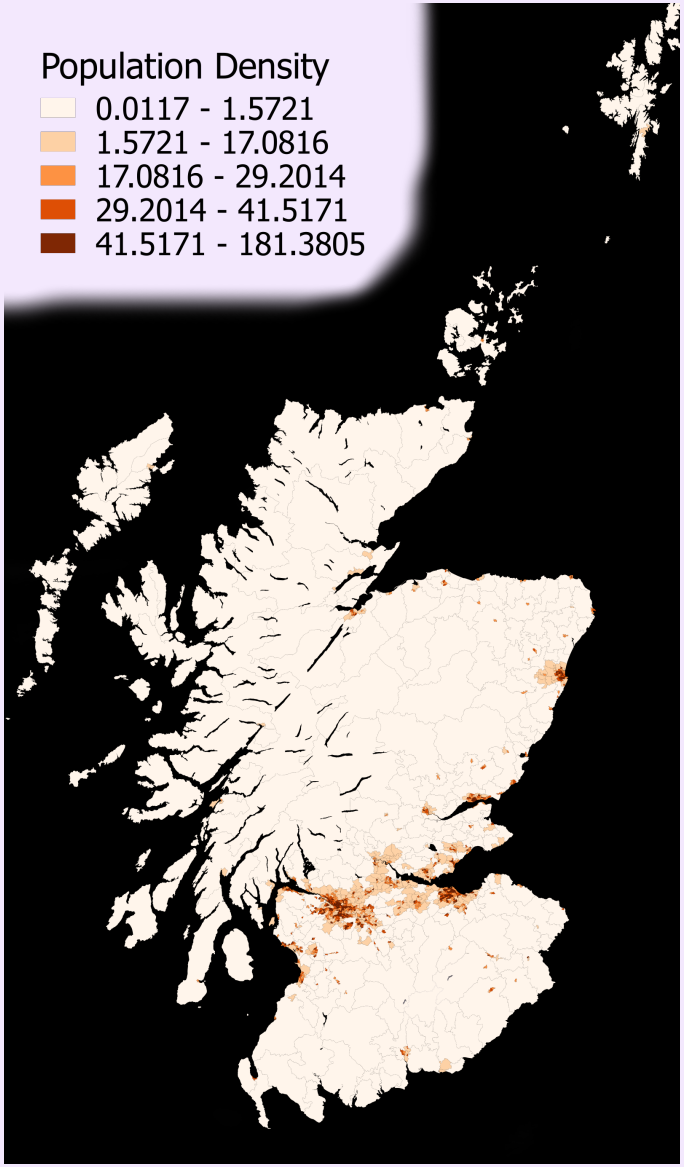
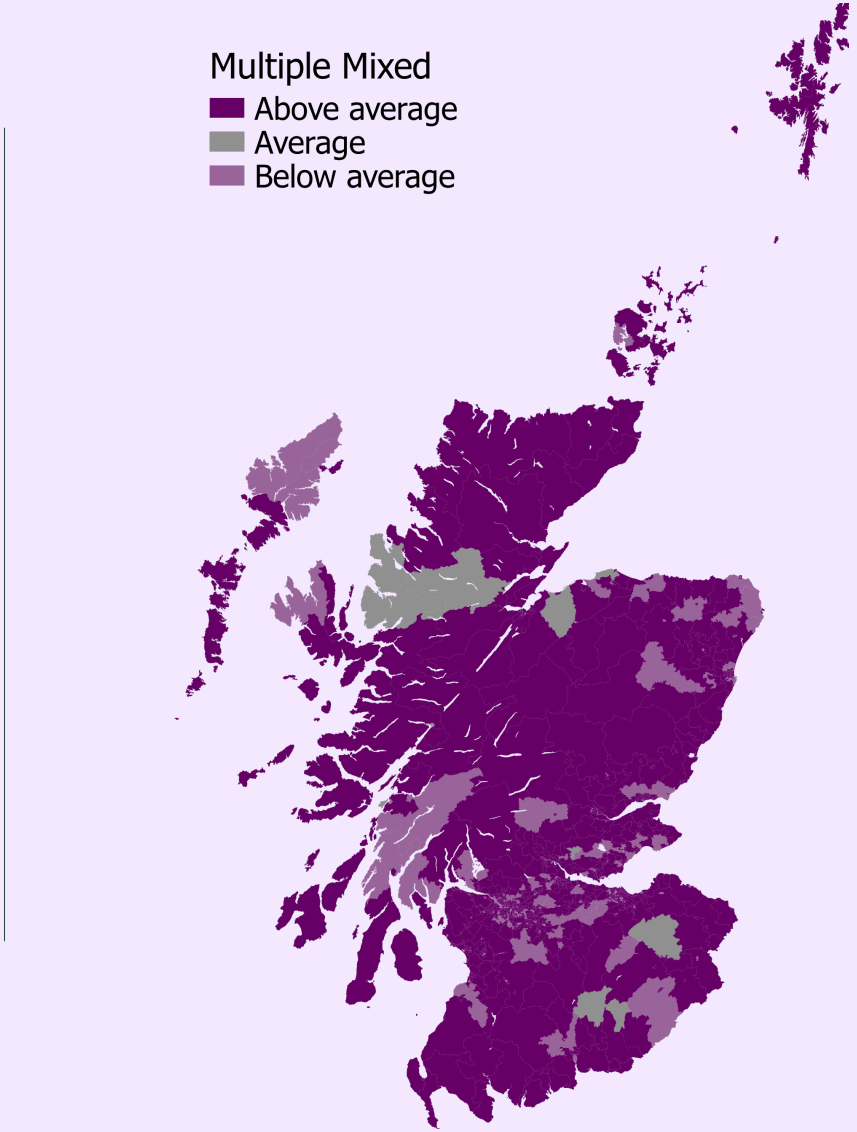
Multiple mixed victims vs. population density





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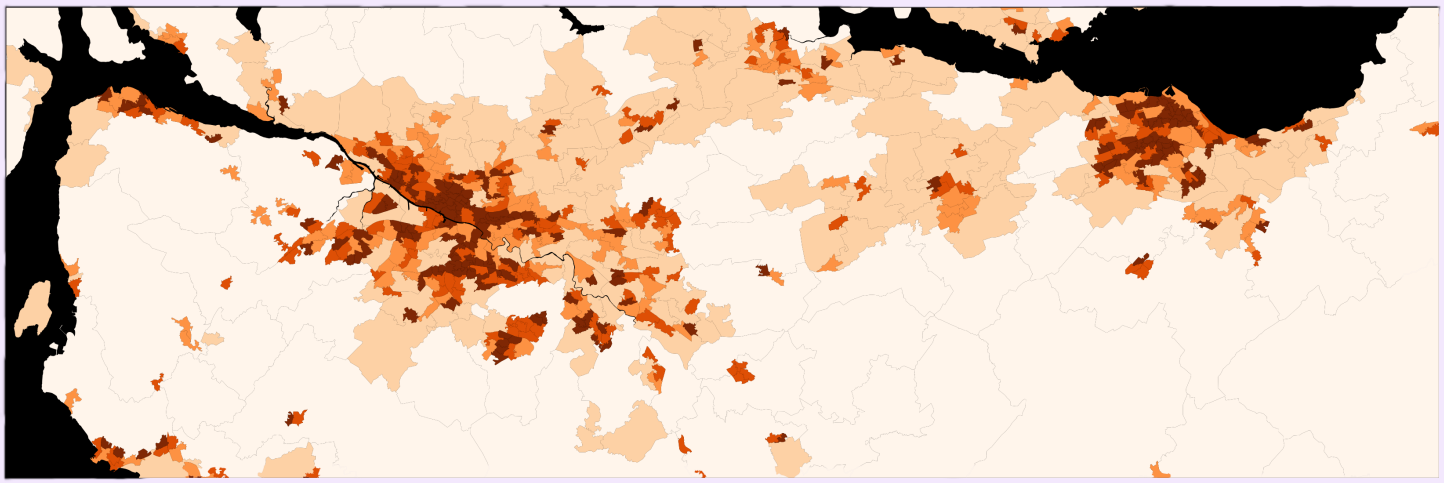
Multiple mixed victims vs. population density



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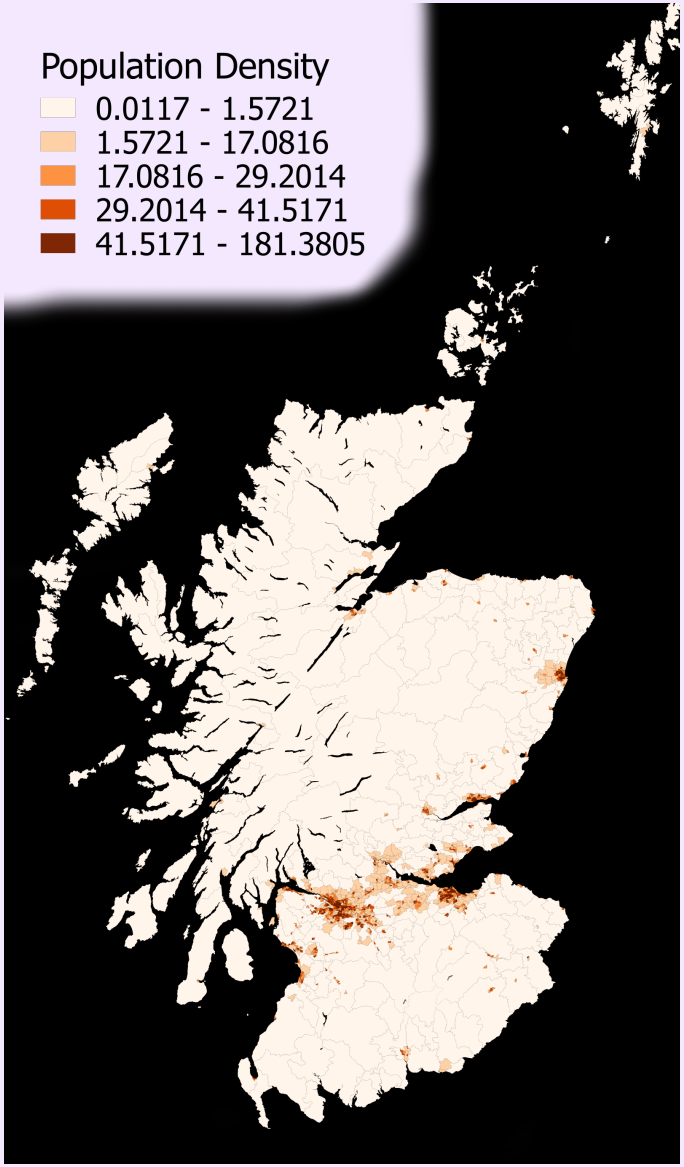
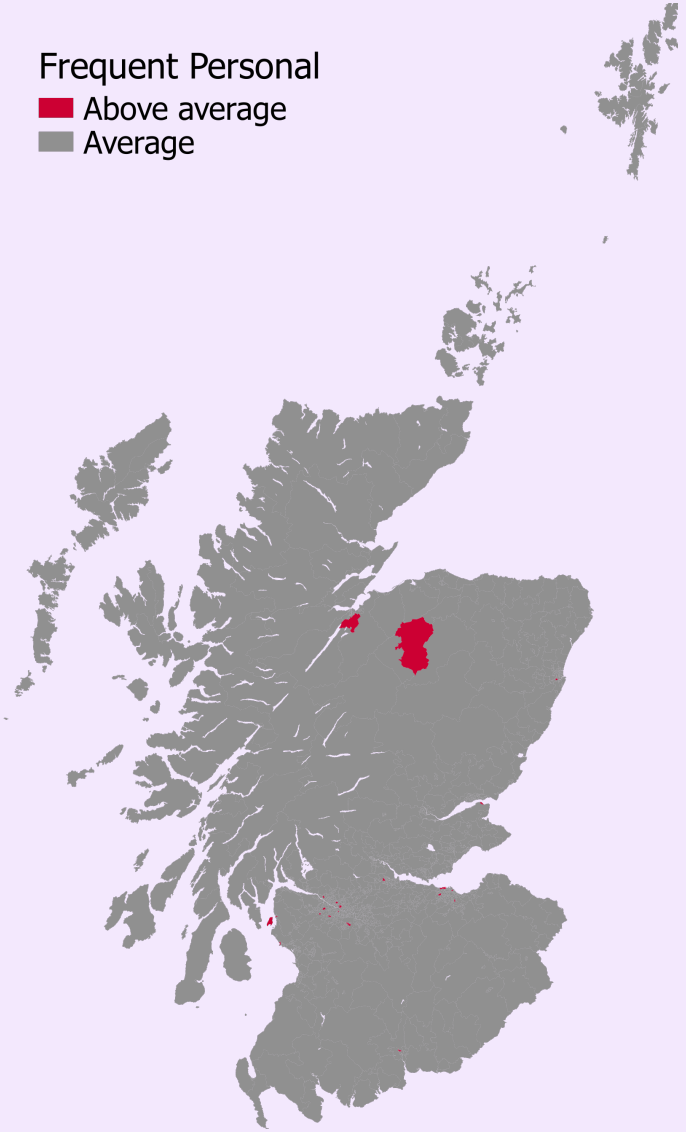
Frequent personal victims vs. population density





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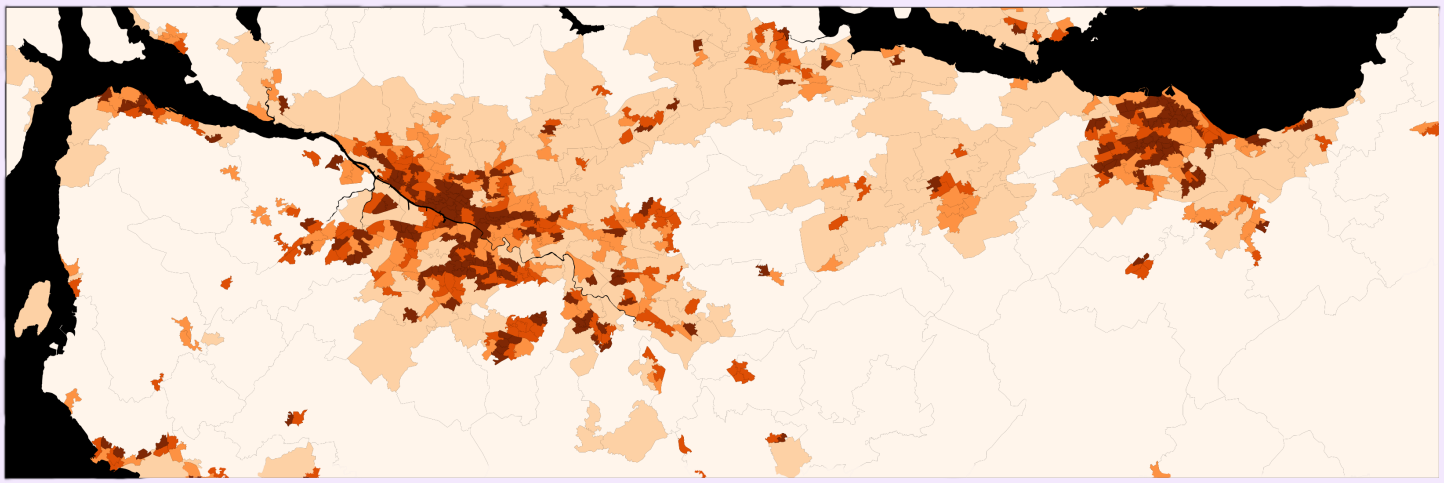
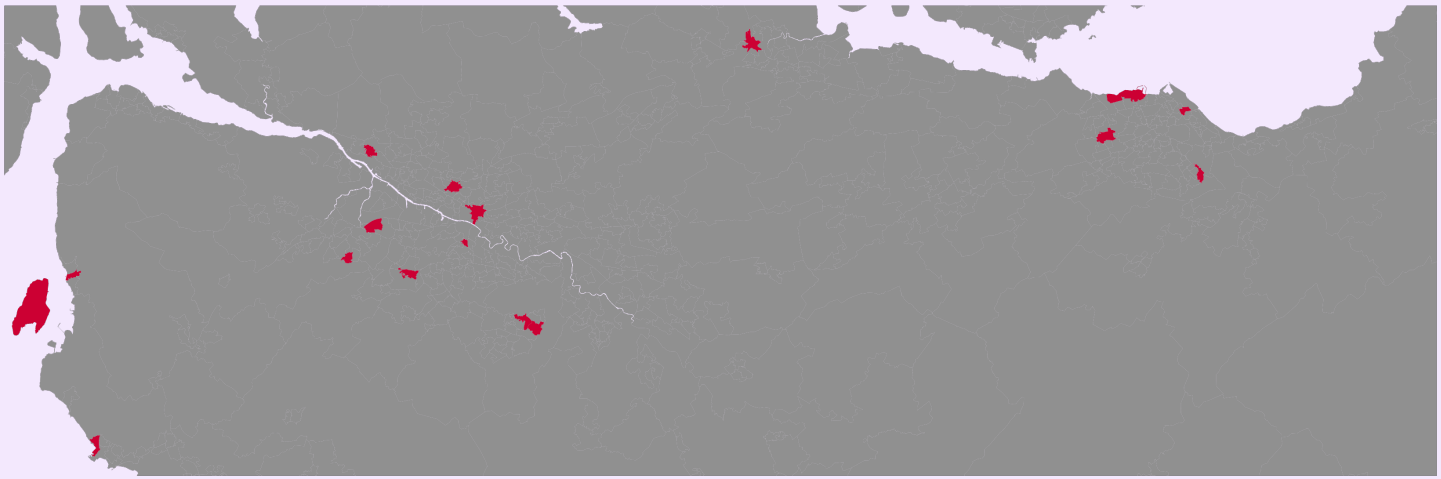
Frequent personal victims vs. population density





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