PROTOCOL

Pre-intervention qualitative component of proposed evaluation of public health impacts of Graduated Driver Licensing in Northern Ireland

Short title: GDL Baseline Study

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Team: Judith Green (LSHTM), Nicola Christie (UCL), Lindsay Prior (QUB) and Rebecca Steinbach (LSHTM)

1. Scientific abstract

Background: Young adults are at disproportionate risk of injury as drivers and passengers. A systematic review identified that Graduated Driver Licensing (GDL) schemes have the potential to reduce injury risks for novice drivers, but concluded that there was insufficient robust evidence to demonstrate whether this was due to reducing the number of drivers. There are therefore potentially also negative impacts on the public health, if changes to licensing reduce access to transport, and implications for equity if these impacts disproportionately affect those in rural or more deprived areas. The proposed implementation GDL in Northern Ireland provides a timely opportunity to evaluate the public health impacts of one GDL scheme, to assess transferability to other jurisdictions and develop methodologies for evaluating natural experiments which maximise validity and transferability. To undertake a rigorous and policy-relevant evaluation will require a substantial qualitative component, and a full description of how driving initiation and training impact on the public health before the implementation of GDL.

Aims: This project will conduct a pre-intervention qualitative case study of young adults and parents in NI and comparator settings in England and Wales to map the pathways through which changes to licensing are theoretically related to public health and health equality outcomes. This will inform the theory of change for a proposed mixed-method evaluation of GDL in NI, and provide data for future comparisons of change over time between the intervention and non-intervention settings, needed to ensure that the evaluation can plausibly identify both causal effects and the necessary and sufficient conditions for those effects.

Methods: Analysis of data from: 16 group interviews with drivers and non-drivers aged 16-21; 4 group interviews with parents; and fieldnotes in NI and comparator areas. Areas and groups will be purposively selected to generate a maximum variation sample in NI, and areas of England and Wales with comparably high young adult casualty rates, to include a range of factors known to be associated with driving behaviour (including area deprivation, gender and rurality). Groups will include 4-6 participants, invited to discuss the role of car transport in their everyday lives. Analysis will use deductive and inductive methods to: identify the full range of potential public health impacts of GDL; explore the current role of private car transport across a range of settings; describe the context in which GDL is being implemented. Comparison of the cases of NI (the intervention area) and England and Wales (non-intervention) will identify specific contextual factors relating to driving initiation in NI. Data will be archived for comparison with qualitative cases in NI and England and Wales three year post-GDL implementation, in order to compare change over time in NI and the non-intervention setting.

Analysis: Data from group interviews will be analysed using qualitative comparative content analysis.

Outcomes: This project will inform a robust evaluation of GDL as a 'natural experiment', using a combination of best practice in epidemiological design and a proposed comparative qualitative case analysis. We will also produce one peer reviewed paper on driving and public health for young adults and archive a data set of 20 transcripts for the future evaluation, and for secondary analysis by future researchers.

2. Plain English Summary

Young adults are at higher risk of serious injury and death as car occupants than older adults. Those in rural areas are at particularly high risk, as are young drivers in Northern Ireland. To address this problem, Northern Ireland is expected to introduce a Graduated Driver Licensing (GDL) scheme, which will change how training and testing of novice drivers happens. Changes include a minimum one year learner period and restrictions on passengers aged 14 to 20 during the first six months of driving. In other countries, these schemes have succeeded in reducing casualty rates for young drivers. However, it is not known whether this is because they simply reduce the number of young adults who choose to learn to drive. In many areas, private cars are essential for accessing education, work, training and social opportunities. It is not known how GDL might impact on young drivers and their passengers. Restrictions on passengers might, for instance, increase the number of

people who drive to a particular social activity, because they cannot give lifts. Or restrictions may mean that some choose alternative modes of transport, such as motorcycles, or public transport. These changes have potential impacts on the public health, if they change the risk of road injury, or affect the ability of young adults to access important determinants of health such as education or training. They also have potential impacts on inequalities in health, if changes are more likely for some areas of the country, or some social groups.

To inform policy choices about GDL schemes, more research is therefore needed on their effects. We propose to evaluate the impact of GDL in Northern Ireland on the public health. To contribute to this evaluation, this project will carry out essential qualitative research before GDL is introduced. We will talk to 16 groups of drivers and non-drivers aged 16-21 and four groups of parents. Half of these will be in Northern Ireland and half in areas of England and Wales with comparable rates of road collisions and transport availability. Analysis of these group interviews will enable us to identify the role of car driving and being a passenger in everyday life in a range of contexts, and what effect likely restrictions on licensing will have. This has two aims. First, it will provide a detailed picture of the relationship between car transport and health outcomes for young adults and their parents in a range of different rural and urban settings. This will help us make sure that our future evaluation includes all the health outcomes that are important to those likely to be affected by the scheme. Second, we will be able to compare the findings from these group interviews before implementation, with future ones conducted some years after GDL has been implemented. This will help us understand whether changes that have happened in Northern Ireland are because of GDL, or because there are changes everywhere in how young adults travel, or the transport choices available to them. It will also provide valuable information on the context of GDL, such as describing how insurance companies are affecting choices, or how new in car telematics are being used or promoted in Northern Ireland and other countries. This context is important to make sure the evaluation of GDL can identify what changed as a result of the policy, and what would have changed anyway, such as young adults everywhere learning to drive later.

3. Background

The problem being addressed, and the gap in research

A Cochrane review (1) concluded that Graduated Driver Licensing (GDL) schemes were associated with reductions in collisions, but could not identify whether this reflected reduced crash rates in licensed drivers, or reductions in the population of drivers. Potential gains in injury reduction may, then, be offset by negative impacts of GDL schemes on the wider

public health (through reducing transport access), and on inequalities in health, given the relative importance of driving for lower income and rural young adults(2). A proposed GDL scheme in Northern Ireland (NI), provides a timely opportunity to conduct a robust evaluation of the public health impact of one such scheme to address this gap in knowledge.

Importance for health of the public, and inequalities

Young drivers are disproportionately at risk of road injury. In 2008-10, drivers aged 17-19 in Great Britain were involved in 10.9% of all crashes, resulting in 77,470 (13.9%) casualties and 11.4% (n=678) of fatalities (3). Rates in NI are higher: in the same period, young drivers were involved in 17.5% of crashes resulting in 20.4% of casualties and 22.7% of fatalities (4). These injuries place a significant burden on the NHS, and many casualties suffer life changing injuries, requiring long term care or follow up. GDL will potentially reduce this burden, but with potentially complex implications for inequalities. For car occupants aged 16-24, the risk of hospital admission for non-urban areas of England and Wales (E&W) is around double that of urban areas, but there is no area deprivation gradient (5). GDL might be expected to mitigate geographic inequalities. But, given that those from the most deprived areas in GB are most likely to have been involved in fatal crash where the driver does not have a licence, tax or insurance (6,7) it is plausible that inequalities in risk may arise if GDL results in 'driving outside the system'. Implications for inequalities in social inclusion arise from the relatively higher reliance on cars in areas with limited public transport.

Summary of evidence why needed now, and why proposal is urgent

GDL is part of the RTA Bill currently under scrutiny with the NI Environment Committee, due now to report in March 2015 (10) with a further 2-6 months before Royal Assent (10). Once implemented, several years post-intervention data will be needed to assess its impact on the public health. However, to ensure a robust evaluation is then possible, there is an urgent need to collect pre-intervention qualitative data now. Once passed committee stage, a publicity campaign is likely to engender significant changes in, for instance, decision making about driving initiation, and in insurance company encouragement/requirement to use telematics. We need to begin data collection before publicity around proposed legislation begins to engender anticipatory change in NI. There is no certainty that GDL legislation will be passed in NI, or when. However, the risk of gathering data that may not be needed is minimal: there is support for the proposed Bill; and the data will be archived for future evaluations, and as an invaluable resource for addressing other public health questions (e.g. on the 'peak car' thesis).

4. Research Plan

Aims

The research question of the future full evaluation of GDL will be:‘ What are the public health impacts of introducing Graduated Driver Licensing?’ This project aims to:

1) inform the design of this evaluation; and

2) collect essential pre-intervention qualitative data.

Objectives

There are 4 inter-related objectives:

1) To map pathways linking driving or being a passenger to public health for young adults across a range of settings.

2) To describe the context of pre-GDL implementation in NI, and how components of the proposed GDL might hypothetically change pathways identified in (1).

3) To refine the logic model and outcomes for the full evaluation using outputs of (1) and (2), in the light of existing literature and discussions with policy partners.

4) To ensure a rigorous future evaluation is possible by: archiving a qualitative baseline dataset; securing data access to individual level data; identifying partners for PPI involvement.

Design

In the proposed future evaluation, the impact of GDL on injury outcomes and travel mode will be evaluated in a ‘natural experiment’ design. However, such quasi-experimental designs have known weaknesses in both internal validity and transferability (7, 16). To offset these weaknesses, we will propose a substantial qualitative component. This current proposal is for a comparative qualitative case study (11) for the pre-intervention phase. This will inform the logic model of the full evaluation and ensure that any future evaluation can include a qualitative comparative case analysis to: 1) strengthen the credibility of causal inferences drawn from quantitative analysis (16); 2) enable comparisons of change over time between NI and non-intervention settings to help identify how context (e.g. telematics awareness; insurance company behaviour; public transport provision) have enabled or constrained effects; and 3) address the question: ‘what are the necessary and sufficient conditions for the intervention to impact on the public health?'.

Setting and target population

Young drivers and non-drivers (aged 16–21) and their parents in rural and urban NI. Settings will include: Belfast, urban and rural (Limavady) Derry; selected non-London areas of E&W in regions with high young adult car injury rates (e.g. Dyfed-Powys, Gwent or Cumbria) and moderately high injury rates in combination with high populations (e.g. Essex) (data: DfT and (2)).

Intervention

Graduated Driver Licensing

Comparator

The main comparator for the future evaluation is 'change over time' between intervention and non-intervention settings. In this pre-intervention phase, we will utilise a series of analytical comparisons to provide the groundwork for this comparative case analysis, and conduct a case comparison of NI and E&W, to identify contextual factors specific to NI.

Data collection methods and analysis

We will analyse data from brief field visits (including details of transport infrastructure) and group interviews in contrasting areas of NI and regions of E&W with relatively high young adult casualties. Young adults and parents (the 'gatekeepers' of young adults' driving) will be invited to discuss driving in the context of everyday life.

Our experience with FGs, particularly natural groups, is that they are the most productive way of generating data on social norms, and on knowledge in social context, and the most practical way of producing data on social practice. The primary interest of this study is 'driving behaviour' relating to such issues such as lift giving, or driving outside the system. Interaction within group interviews is most likely to generate good quality data on this. One to one interviews are likely to generate more 'public accounts', and detailed participatory ethnographic work would be almost impossible within the time frame, given the substantial practical and ethical challenges. There are a number of other possibilities for generating data, including for instance asking young adults to keep diaries of driving, or inviting account through social media. Whilst these might well be very productive, they are as yet less tested, and for this study, where getting baseline data before the intervention is implemented is crucial, we felt that 'tried and tested' methods were preferable to higher risk ones. On diverse topics, we have found that: collaborative 'stories' are more likely to be told in groups (12, 13); there is more likely to be access to 'practice' as participants challenge each other and interact within the group (14); and that young adults are more likely to discuss issues

such as rule breaking in a group setting (12). These kinds of data are the most useful for identifying tacit knowledge, and for identifying how what people say is likely to relate to what they do: groups (or even pair interviews) are an excellent way of off-setting some of the methodological shortcomings of individual interviews when the topic of analysis is practice as well as accounts (14, 15) . This is not to say that other information may be elicited in individual interviews, such as the accounts of more marginalised individuals, or private concerns. Whilst these topics are important, they are less crucial to the analysis required for our research questions, which are focused on changes in the role of driving in social life over time, and contributing to the logic model for a full evaluation. We will complement group interviews with documentary sources and more informal observational work, including private informal conversations in the field (recorded in field dairies): this is essential for framing what gets missed in group interviews, and alerting us to analytical directions we may miss by reliance on groups.

A deductive thematic content analysis will focus on: how motivations for and patterns of learning to drive and driving vary in different contexts; travel mode alternatives and rationales for choice; who takes what passengers and why, and what effect restrictions might have; driving in the context of issues likely to impact on GDL implementation, such as insurance costs, awareness and use of telematics- based insurance products, and variation by gender/deprivation/area; barriers to compliance and 'driving out of the system'. A more inductive analysis will address the questions 'what are the implications of driving for young people's mobility and the public health?' and 'what might change as a result of components of GDL?'. This analysis will utilise a number of comparisons of cases including NI, England, Wales, rural areas, low income adults. These 'cases' are derived from different combinations of the data generated by a purposive (maximum variation) sample. We will also consider quantitative analysis of the transcript data to explore issue webs (17, 18). The analysis will inform a refined logic model of the pathways by which proposed changes to licensing might impact on public health, and identify all primary and secondary outcomes (in addition to injury, transport exclusion) which will need to be included in the full evaluation.

The main datasets (STATS19, DOENI, and DVLA) needed for the full evaluation are publicly available; for some analyses we will need individual level post-coded data. We will secure access or identify and validate alternative individual level markers such as age/make of car. A meeting in NI with key stakeholders (including DOE, and 3rd sector groups) in Month 6 will finalise the logic model for the full evaluation.

Sample size

We estimate that 16 groups with young drivers and non-drivers aged 16-21, and four with parents will provide sufficient data for analytical saturation (total N=10 in NI, 10 in E&W; each with 4-6 participants). Recruitment (aided by snowballing from preliminary contacts) will purposively identify diverse groups in terms of factors hypothesised as influential on the link between transport use and wellbeing, such as gender, religious/ethnic density, urban/rural residence and deprivation (IMD/NIMDM score). Utilising a 'sampling grid', we will (in each country) select groups across a number of contexts (rural/urban; deprivation level; transport infrastructure) focusing in England and Wales on areas where injury rates are relatively high (in line with the higher rates in NI). Across the data set, we will therefore have identifiable samples of at least 5 per country; at least 10 in more deprived settings; at least 10 from rural areas etc. This will provide just enough within each 'case' for meaningful comparisons in the analysis. Later sampling will be informed by early analysis (following a grounded theory logic) such that early hypotheses can be checked. Ideally, we would like scope for including more groups if need be (if, for instance, there is a suggestion that social factors not considered in the design may be important, or including an analytically important 'deviant case' which might challenge emerging hypotheses).

Summary timetable

Pre-award: Secure ethics approval/finalise data management plan

Month 1:	Recruitment begins
Months 2-4:	Fieldwork
Months 2-5:	Analysis and data preparation (ongoing)
Month 5:	Draft logic model; identify additional datasets needed to measure outcomes for full evaluation
Month 6:	Complete data archiving; draft paper; submit final report; meet with NI stakeholders to agree logic model and design.
Post-award:	Submit peer review paper; finalise design for full evaluation

Team assembled, skills and expertise

Judith Green (Co-PI) is an experienced qualitative researcher, with a track record of delivering and managing research on public health, particularly mixed method evaluations. Co-PI Nicola Christie has 25 years' experience in research on transport, injury and inequalities, and excellent networks with key policy and practice partners. CI Rebecca Steinbach has expertise in transport literature, conducting research with young

adults, managing fieldwork and qualitative analysis. CI Lindsay Prior brings knowledge of the NI context, and expertise in KT and quantitative content analysis of qualitative data.

5. References

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