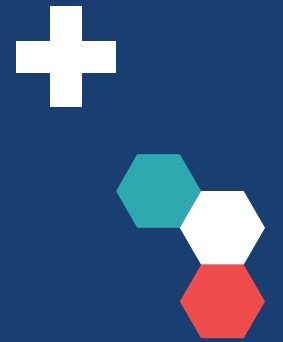


# Modelling financial incentives to motivate pregnant smokers to quit - using Evolutionary Game Theory



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# Project brief

- To design a mathematical model to inform commissioners and providers about the best ways to introduce and use financial incentives to support pregnant women to stop smoking in pregnancy.
- Potential benefits: reduce experimental costs in real-time, can test them in the model and have a higher potential of choosing the best option to implement.
- Evidence based intervention but ... highly contentious ... evidence it works but for who, in what circumstances?

# Project aims

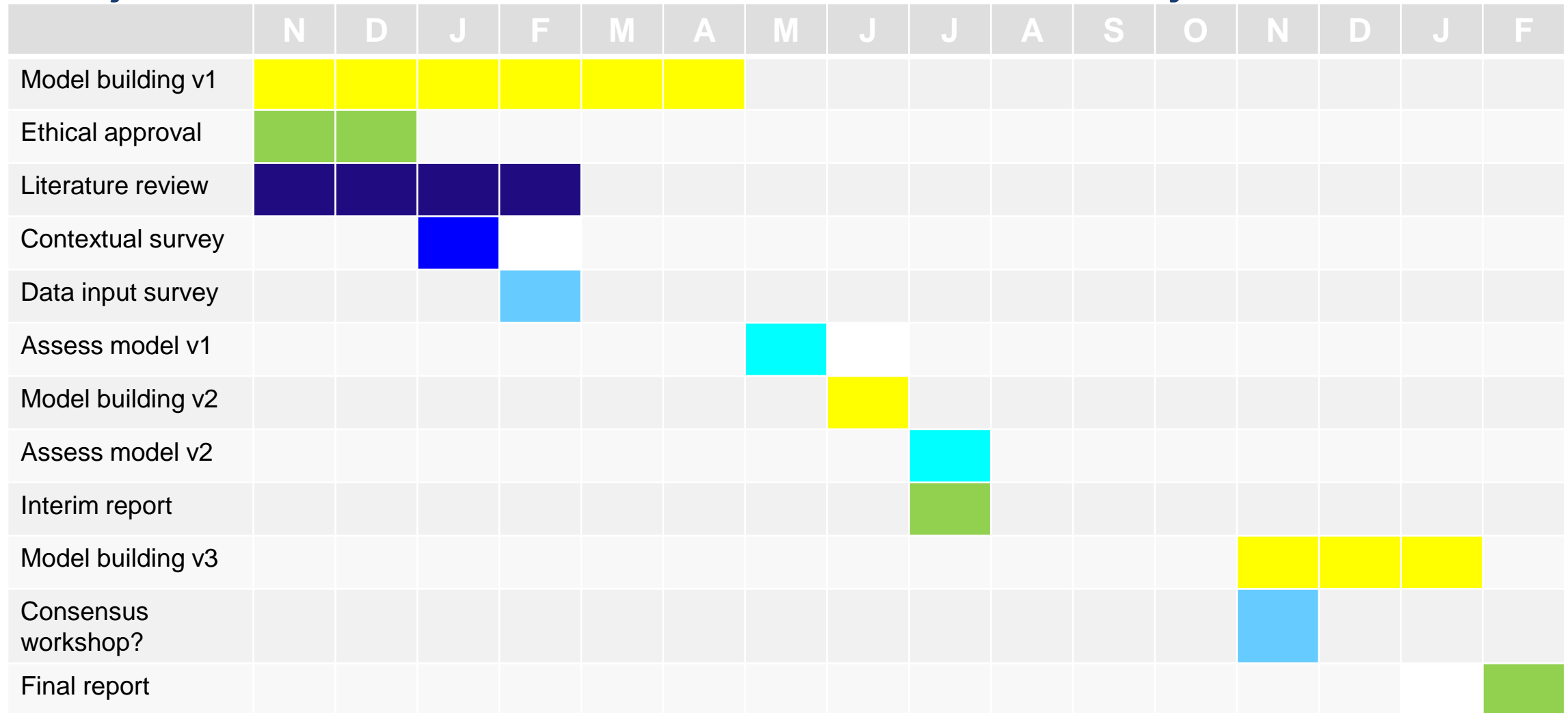
To use Evolutionary Game Theory to model:

- the conditions by which pregnant women are motivated to quit smoking when offered financial incentives, and
- alterations to service design required to deliver optimum outcomes.

Evolutionary Game Theory - payoff (result of the actors' actions) -> fitness (greater or lesser) -> social success (greater or lesser)

Genetic evolution: Individuals with higher success will reproduce more OR  
Social/cultural evolution: their behaviour will be imitated more often.

# Project timeline – November 2020 – February 2022



# Planned deliverables/outcomes

A mathematical model

- Useable by lay people
- Able to:
- Predict multiple scenarios
  
- Allow input of variables including:
- Financial incentives with a variety of features
- Healthcare services with multiple designs
- Pregnant smokers with multiple characteristics

# Project team

<b>Academics</b> Dr Susan Jones (Teesside University) – Lead Dr Emma Giles (Teesside University) – Co-lead/mentor Prof Falko Sniehotta (Newcastle University/ Utwente University) – Co-lead	Dr The Anh Han (Teesside University) - Lead modeller Theodor Cimpeanu (Teesside University) - Computer Modeller Dr Jean Adams (Cambridge University) - Advisor
<b>Advisory Group</b> Jane Coyne (NHS England & NHS Improvement) Professor Eugene Milne (Director of Public Health, Newcastle Council) Graeme Greig (Senior Public Health Practitioner, South Tyneside Council)	Rebecca Scott (Regional Local Maternity Systems Prevention Lead) Abi Witherden (South Tees Maternity Voices Partnership)
<b>Expert Panel</b> Clare Adams-Graham (Public Health Midwife, City Hospitals Sunderland NHS Foundation Trust) Joanna Feeney (Smokefree NHS Strategic Programme Manager, Fresh) Fran Frankland (Plane Sailing Consultancy)	Louise Hand (Public Health Midwife, South Tees Hospitals NHS Foundation Trust) Abi Witherden (South Tees Maternity Voices Partnership) South Tees Maternity Voices Partnership member to be recruited