

NTEM and TEMPro Plans for the Future

Department for Transport – Roger Witte



Department
for Transport

The National Trip End Model

NTEM/TEMPPro History and Plans

Roger Joseph Witte
SATURN User Group 2024

DRAFT

What is NTEM?

- **Trip Generation Model forecasting personal domestic demand for surface travel in Great Britain**
- No freight, No Maritime, No Aviation, No International, No communal residents (Barracks, Hotels, Student Halls, Monasteries)
- **Reads exogenous forecasts for population, jobs and housing**
- **Reads NTEM forecast for five years previous**
- **Does not know anything about transport networks**
- That's what your variable demand model (eg SATURN/Diadem) is for
- **Forecasts households, car ownership, potential travel demand**
- **Nominal geographical resolution is MSOA but 'sample noise' is a problem much below Local Authority District level**

Getting NTEM

- **TEMPro is a Microsoft Windows app that is freely downloadable**
 - TEMPro can be used to extract NTEM results (and some input forecasts) and to export them to Microsoft Excel
 - TEMPro can also perform first order approximations of common modelling tasks such as interpolating between model years, refining land use assumptions, and combining NTEM results with Road Traffic Projections
 - While the software is well established and familiar to practitioners, the user interface is dated and does not lend itself to automation. Furthermore, it is difficult to install in many corporate environments
- **TAG modelling advice requires that strategic transport models agree with NTEM over a sufficiently geographic large area**
- **Full NTEM licenses are also available on application**
 - Requires separate licenses to the Business Register and Employment Survey (from Office for National Statistics)
 - Includes all the NTEM input and output data as well as the modelling software

Two Examples Of Using NTEM

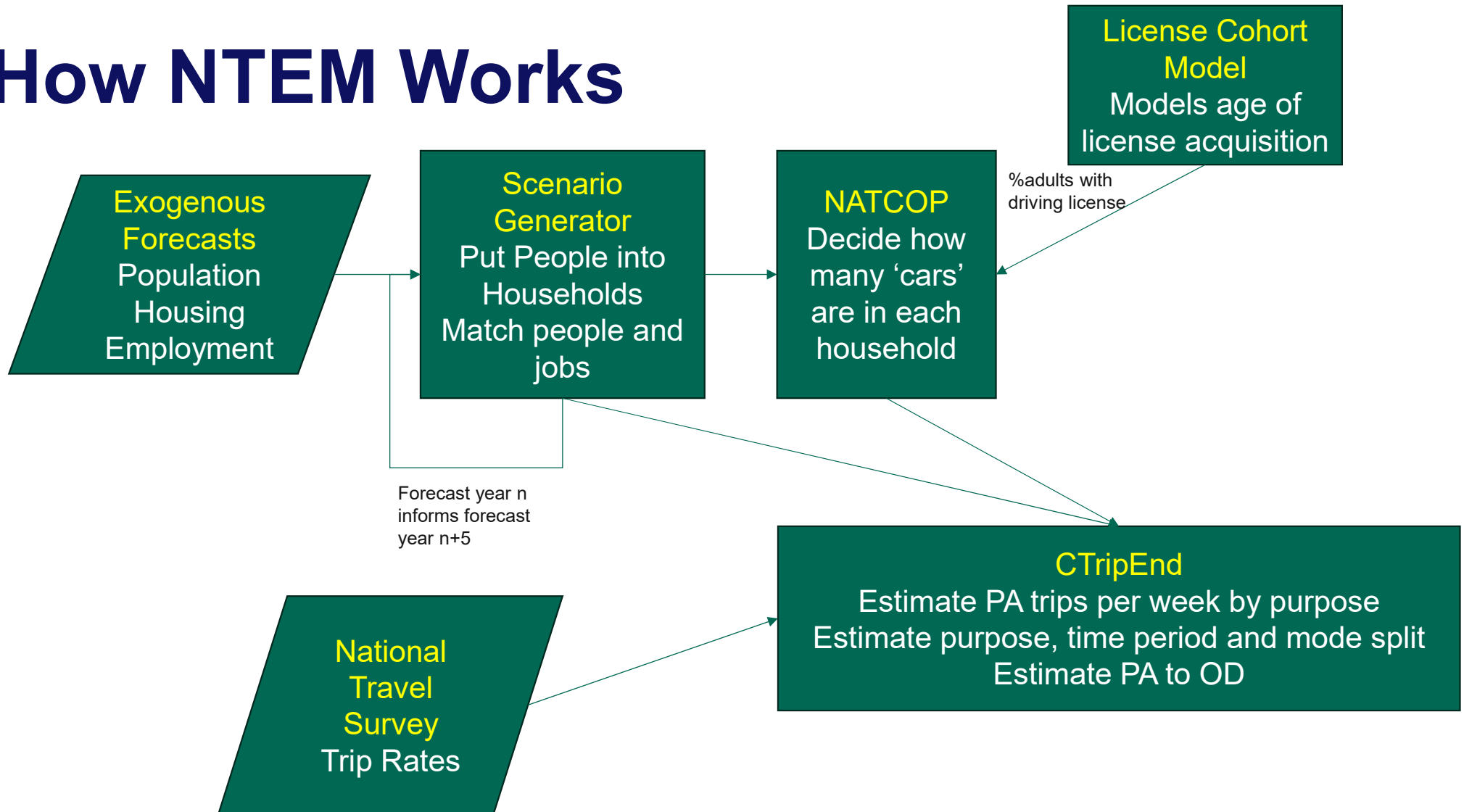
Small Scheme

- A developer wishes to add a driveway to connect their new development to the road
- They need to model the impact of the additional traffic at the site on all road users so that they can design the new intersection and retime nearby traffic signals
- They build a small SATURN model containing the signals and the site
- They observe the current traffic matrix directly using ANPR
- They estimate future year traffic by factoring their base matrix. The factors come from TEMPro 'Growth Factors from NTM' function.

Larger Scheme

- A county council wants to develop a strategic transport model that they can use to test options for inclusion in a local transport plan
- They choose to use DIADEM for variable demand modelling and SATURN for assignment modelling
- They apply trip end growth from NTEM to the demand model production and attraction targets for the do minimum future year matrix
- They use TRICS to adjust trip end targets at new development zones, and normalise so that they match TEMPro over a sufficiently large area
- The variable demand model and assignment model are iterated to bring supply and demand into equilibrium

How NTEM Works



NTEM History

- **NTEM is a long running DfT tool and TEMPro is a long running publication.**
- **Versions at least as far back as 5.0 in DfT's internal archive**
- **Both versions 6.0 and versions 7.0 encountered issues with dwelling data (corrected by 6.2/7.2 respectively)**
- **Version 7.0 marks move from coarse custom zoning system to MSOA**
- **NTEM Discovery Report (2020)**
- NTEM is valued but a regular update timeline would help scheme promoters plan their work
- Users wanted help addressing uncertainty
- User wanted improvements to the user interface and documentation
- **Version 8.0 (2022)**
- Intended to begin 'new major version every three years' policy
- Introduces Common Analytical Scenarios
- Version 8.1 (2023) re-enables new 'traffic growth from NTM' based on new National Road Traffic Projections 2022

NTEM 9

- **Using same software algorithms as versions 7 and 8 to minimize risk from software development**
- **ISSUE: Peoples travel behaviour has changed since the COVID pandemic**
 - Road traffic (from counts) similar in absolute volume but higher proportion of freight and weekly pattern changed
 - Rail (from ticket sales) still a little down but big differences in purpose split (more leisure, less commute) and time of day/week
 - Bus (from ticket sales) still very weak; danger of vicious cycle in bus revenues; £2 bus fare scheme has helped (but not have stabilised completely)
- **ISSUE: Only 12-18 months of post-COVID data available**
 - Calibration for Version 7 took a ten year slice of NTS data
 - A five year slice was insufficient to enable recalibration of V8 – we only managed a revalidation
 - Find method to update existing trip rates with new data to get interim solution
- **REVIEW: The Common Analytical Scenarios are kept under constant review, to ensure that we are addressing current uncertainties**

Future Releases

- **New improved software to replace Scenario Generator and NATCOP**

- Written using more modern programming languages to make maintenance easier
- The new software will create a 'synthetic population' as an intermediate result: instead of producing an aggregate description of people, households and vehicles, it will create individual person records, household records and vehicle records

- **More trip rate calibration**

- We are hoping that by the time that the new software is ready to use for forecasting it will be several years after the COVID pandemic
- This should enable us to confirm that people's travel behaviour has stabilised
- The additional years of National Transport Survey data should help reduce sample error issues

To Infinity and Beyond?

- **The features included in NTEM 8, together with those planned for NTEM 9 and 10, will fulfil some, but not all, of the demands from the NTEM discovery report**
- We will have established a pattern of regular updates
- We will have ensured that NTEM continues to be a robust and reliable source of transport forecasts in an uncertain world
- We will have improved the usability of the documentation
- **But clearly, there will still be more to do**
- We will work towards a better user interface than TEMPro currently provides
 - Make available on more platforms
 - Support for automation
- **And we need to keep engaging with our users so that we are always targeting their current needs, not just those from 2020**

thank you



UNIVERSITY OF LEEDS

FVVB Ltd

 **AtkinsRéalis**