



POPGROUP_{v.4}

User Guide 5

How to Create Population Projections led by an Economic Plan for Jobs

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Contents

1	Introduction	1
1.1.	How much time do I need?	1
1.2.	What else will I need to know?	1
1.3.	About this Guide.....	2
2	Find Appropriate Data to Convert the Labour Force to the Number of Jobs	3
2.1.	Where do I find data for unemployment and commuting?	4
2.2.	How do I enter data in POPGROUP to convert between labour force and jobs?	5
3	Run a Projection of Population and Labour Force with the Conversion to Jobs.....	8
4	Create a Constraints file with a Plan for Jobs, and find its Impact on the Population.....	11
5	Alternative Scenarios	15
5.1.	No change in the number of jobs.....	16
5.2.	Which migration flow will fill jobs?	18
6	Compare Scenarios.....	22
7	Your Answers.....	24
8	Common Problems.....	25
9	Next Steps	26
9.1.	Other guides in this series	26
9.2.	Service demand as a consequence of a jobs plan	26
9.3.	Small areas	27
9.4.	Jobs and housing	27
9.5.	What if a plan changes the unemployment rate, or economic activity rates, or migration profiles?	27

I Introduction

This Guide shows how to find and enter data about the relationship between the labour force and jobs, and then to project the impact of a plan for jobs on the local population. These are known as ‘jobs-led projections’, which are often used in the development of Local Plans. This approach usually combines projections of whole local authority districts with a forecast of future numbers of jobs, as in the example in this Guide. The approach is also used with projections for smaller areas to assess the impact of a proposed economic development on population.

POPGROUP is used for many other aspects of assessing the need for services according to the projected future age-composition of the population. This Guide focuses on one specific application in planning, to estimate the impact on population of planned numbers of jobs.

1.1. How much time do I need?

An experienced POPGROUP user will create the relationship between the labour force and jobs, and run a population projection led by a plan for jobs in less than an hour. Projections with alternative plans are then a quick revision achieved in a few minutes. A novice will want to put aside a full half day to work through the Guide and become comfortable with the data entry and interpretation of the results. Finding alternative data and preparing for likely challenges to results will take longer and depend on the local context.

1.2. What else will I need to know?

This Guide is intended for those new to jobs-led projections, by providing step-by-step support for this specific task. It is assumed that the reader has prepared a population projection in POPGROUP and labour force projection using the Derived Forecast model for one local authority district (or more). For example, from following the instructions in User Guide 1 *How to get started with population projections* (up to section 3), and User Guide 3 *How to get started with*

labour force projections (up to section 3). These guides are available from popgroup@edgeanalytics.co.uk.

The structure of this guide is similar to Guide 4 *How to create population projections led by a plan for housing*. You will find many of the tasks are familiar, and indeed much of the argument and wording of this Guide follows the previous.

In the example used in this Guide, both of the population and the labour force projections start in 2001. The population projection is the government 2012-based sub-national projection, updated with government population estimates to mid-2014. In Wales, the equivalent projections are from 2011 at the time of writing. During 2016, the sub-national population projections for England, Wales, and Scotland will be updated to be 2014-based. However, this Guide's instructions may be used with any pair of population and labour force projections. You can, for example, use 2012-based projections, starting in 2012 and not updated with mid-year estimates, so long as:

- The population and labour force projections name the same district(s) and
- The labour force projection starts in the same year as the population projection, or in an earlier year.

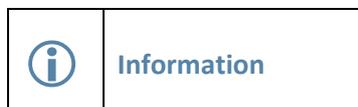
The POPGROUP v.4 reference manual remains the comprehensive guide that should also be consulted to learn how the software operates and its full range of functionality. Its section 11.8 on constraints in POPGROUP includes the mathematics of how jobs-led projections are calculated in POPGROUP.

1.3. About this Guide

In this document, the names of Excel workbooks are written in bold grey font (e.g. **POPGROUP_Scenario.xls**). Sheets within workbooks are written in bold grey italics surrounded by single quotation marks (e.g. '*Sched*').

References to cells within worksheets, or to buttons/options within the workbooks are in blue italics surrounded by single quotations, for example, '*Validate*'.

Two types of text box are used in this document:



2 Find Appropriate Data to Convert the Labour Force to the Number of Jobs

The first step in generating a jobs-led projection recognises that the labour force and the number of jobs in an area are not the same. Traditionally in the UK, two elements of this difference have been recognised:

- The labour force consists of all those economically active, i.e. all those available for work, excluding children, those who are retired and all others not available for work. Some in the labour force are not working, but are unemployed. The *unemployment rate* is the proportion of the total labour force that is unemployed.
- Those people who are in work and are resident in the area may not work in the area because some people commute over the boundary. The *commuting ratio* is the number of employed residents in the area divided by the number of people with jobs in the area. If it is more than one, more people commute out of the area than commute into it.

The information is entered in a POPGROUP file called **DFSsupply.xls**, because it refers to the supply of jobs. You may enter a rate for each of the two elements above, or a single conversion factor, the ratio (labour force) / (jobs).

Best practice demands that each of the two elements is specified separately, so that separate assumptions can be made about the future of unemployment and the future of commuting. Sometimes those data are not available and an overall ratio of (labour force) / (jobs) is used.

2.1. Where do I find data for unemployment and commuting?

The labour force does not refer to full-time equivalent workers or the number of jobs, but the number of people working or available for work. Some people in the labour force will have no job, others will have more than one job, and some jobs will be shared by more than one person. The usual definition for jobs is all filled jobs, excluding vacancies. It is important to be clear whether trainees and armed forces are included, how many hours worked counts as a filled job, whether the measure is full-time equivalents, and whether it excludes vacant jobs. Wherever you get the statistics from, be sure to find out the definitions used, and who is included (and excluded).

It does not matter which definition is used, so much as that it is as closely consistent as possible when describing the labour force and the plan or target for jobs. The target for jobs often comes from a separate economic model or report – it is important to know what kinds of jobs are included, and whether it is an estimate of filled jobs. Look for data to make adjustments that will bring the labour force and jobs as close to the same definition as possible. This Guide focuses on using the software but can give the following tips on where to find relevant data.

The latest 2011 Census is a source for both unemployment and commuting for local authority and smaller areas. From the 2011 Census:

- Table KS601 on economic activity gives the total economically active (the labour force), and unemployment. The unemployment rate is:
$$100 * (\text{unemployment}) / (\text{total economically active})$$
- Using the same figures, the economically active minus the unemployed gives the number of employed residents. The number of people with jobs in the area is in the 2011 Census Workplace Statistics, named 'Workplace population' on Table [WP101EW](#) in England and Wales (or [WP102SCca](#) in Scotland). The commuting ratio from the Census is (employed residents) / (people with jobs).

[NOMIS](#) provides the statistics from the 2011 Census and several other relevant data sources:

- *Previous censuses*, 1981, 1991, 2001.
- *Model-based unemployment rates* for each local authority updated each quarter.
- *Jobs density* statistics include the number of jobs, estimated each year in NOMIS local authority profiles. Partly based on the [Business Register and Employment Survey](#), it includes all jobs without distinguishing those that may be done by the

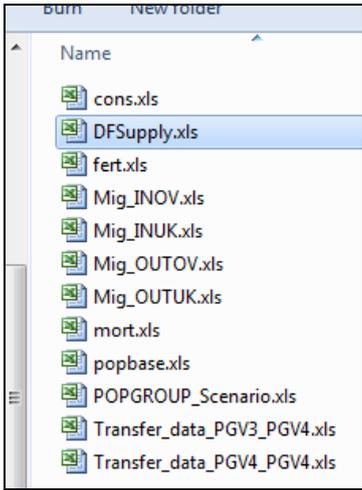
same person. The number of jobs includes government supported trainees and armed forces. It excludes vacant jobs but includes each filled job, although more than one may be done by the same person, and some jobs are shared by more than one person. Estimates of double-jobbing and job-sharing are sometimes made to account for this.

- *Survey-based statistics*, from the Labour Force Survey and Annual Population Survey. However, these tend to have sufficient sample to reliably measure only the larger local authorities' change since the last population Census.

2.2. How do I enter data in POPGROUP to convert between labour force and jobs?

The Guide assumes you already have a population projection prepared with input, output and skeleton folders.

Once values have been found for converting between labour force and jobs as described above, they are entered into POPGROUP as follows.

Action: Fill DFSupply with evidence to convert labour force to jobs	POPGROUP View
<p>From your POPGROUP model's skeleton folder, open the DFSupply file, e.g. C:\Forecast\POPGROUP V4.0\<modelid>_skel\dfsupply.xls< p=""> <ul style="list-style-type: none"> • Save as... in your POPGROUP input folder with a new name e.g. DFSupply_Jobs1.xls (to indicate it refers to jobs. Other files may refer to dwellings). </modelid>_skel\dfsupply.xls<></p>	

Action: Fill DFSupply with evidence to convert labour force to jobs	POPGROUP View																		
<p>Complete the information on the 'Notes' worksheet:</p> <ul style="list-style-type: none"> Choose the data that you will enter (see discussion in the text above. If you have data for unemployment and commuting, click that option as indicated in the image). Document the sources of the data. Enter the title for the supply units, in our case 'Jobs'. 	<div data-bbox="715 322 1347 349"> <p>Documentation of the information contained in this workbook</p> </div> <p>This workbook allows POPGROUP to convert between a derived forecast (e.g. housing supply forecast (e.g. dwellings, jobs). A single conversion ratio (derived units)/(supply units) separate components may be provided by the user, by selecting from the following:</p> <ul style="list-style-type: none"> Single conversion ratio derived units/supply units Households to dwellings: separate rates for vacancy, holiday home and sharing Labour force to jobs: separate rates for unemployment and commuting <div data-bbox="715 611 1337 667"> <p>Unemployment from NOMIS Jan 2016. Commuting ratio from 2011 Census. Both held constant for future.</p> </div> <p>Last Updated: 22-Mar-16</p> <p>Enter a title for the supply units</p> <div data-bbox="715 913 874 954"> <p>Jobs</p> </div>																		
<p>On the area worksheet, enter the data.</p> <ul style="list-style-type: none"> As on many POPGROUP files, a red triangle indicates a comment or note with helpful information. The data may be entered for future years to indicate expected changes. If left blank, the last value is taken to apply to all subsequent years. 	<div data-bbox="703 1025 1369 1379"> <p>Derived/Supply units conversion information Cheshire East UA</p> <p><input type="button" value="Validate"/></p> <table border="1"> <thead> <tr> <th></th> <th>2001</th> <th>2002</th> <th>2003</th> <th>2004</th> <th>2005</th> </tr> </thead> <tbody> <tr> <td>Unemployment rate</td> <td>5.6%</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Commuting rate</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Rules</p> <ul style="list-style-type: none"> A value is required in the first year either on the default sheet or on a group sheet. If subsequent years are blank the previous year's value is used. The unemployment rate must be greater than or equal to 0% and less than 100%. The commuting ratio must be between 0 and 100. The value of commuting ratio / (1-unemployment rate) must be greater than 0 and less than 200. If used for a particular year, each rate must have a non-blank entry. </div>		2001	2002	2003	2004	2005	Unemployment rate	5.6%					Commuting rate					
	2001	2002	2003	2004	2005														
Unemployment rate	5.6%																		
Commuting rate																			
<ul style="list-style-type: none"> Validate the file by clicking on <input type="button" value="Validate"/> and correct any errors found. Save the file. 																			
<ul style="list-style-type: none"> Record the values that will apply in 2012, in the section 'Your Answers' on page 24. 																			

In the example above, the conversion data were entered only for the first year, implying that they will remain constant in the future. This is a reasonable starting point, but may be amended if alternative assumptions are found, for example if the unemployment rate can be convincingly shown to be temporarily high or low.

These assumptions about the future are important, because they affect who will take up available jobs, and therefore the population implied by an economic plan for future jobs.

3 Run a Projection of Population and Labour Force with the Conversion to Jobs

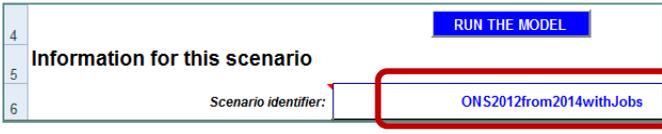
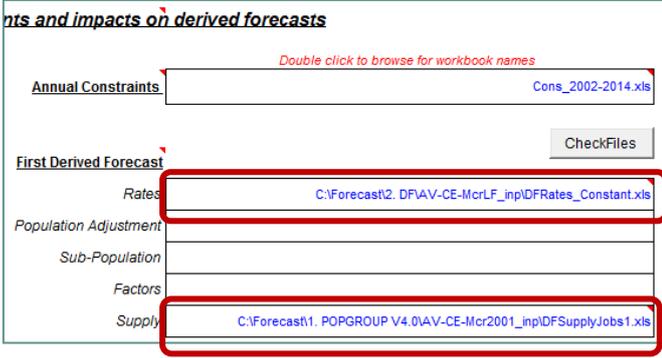
This is an intermediate step before the plan for jobs is included. It is not necessary, but if this is the first time that you have run population and labour force projections together, it is worth checking that you have all the necessary files and that the conversion to jobs is operating as expected. You should already have run a population projection in POPGROUP and a labour force projection in the Derived Forecast model.

You can record the population, labour force and jobs outcomes before adding a plan for jobs. Later, you can evaluate the impact of the plan for jobs. You should record this information in the section of 'Your Answers' on page 24.

When the 'base forecast' is mentioned in this Guide, it simply refers to your preferred assumptions for fertility, mortality, migration and economic activity, that you have already collated, and which are the starting point for the forecast run in this section. They may be from the government's latest projections or they may be your own. In this guide, they are the assumptions from the 2012-based population and household projections for districts in England, updated with Mid-Year Estimates from ONS up to mid-2014, and a constant projection of economic activity. The following rules apply:

- The population and labour force projections must name the same district(s);
- The labour force projection must start in the same year as the population projection, or in an earlier year.

In this Section, you will run your base population scenario, adding information about economic activity, and about the relationship between the labour force and jobs. POPGROUP will not only calculate the population forecast, but also the labour force and the number of jobs implied by that population forecast.

Action: Run a population, labour force and jobs forecast	POPGROUP View
<p>From your POPGROUP model's input folder, open the your Scenario file for the population projection that has already been run, e.g.</p> <p>C:\Forecast\POPGROUP V4.0\<modelid>_inp\scenario_<scenarioid>.xls< p=""> <p>Change the '<i>Scenario identifier</i>' to something relevant, e.g. add 'withJobs' to indicate the jobs that will be forecast.</p> </modelid>_inp\scenario_<scenarioid>.xls<></p>	 <p>NB. If you do not change the '<i>Scenario identifier</i>', the previous output files will be overwritten. (In this section that may not matter much, because we are only <i>adding</i> information on the labour force and jobs, not changing the population projection itself)</p> <p>Remember (from Guide 1) that you do not have to save the Scenario file. It is automatically saved in your input folder. The '<i>Scenario ID</i>' is used to name the Scenario file and all the output files.</p>
<p>Change to the '<i>Constraints_and_impacts</i>' sheet.</p> <p>Leave the constraints file as it is, if you have one.</p> <ul style="list-style-type: none"> • Add the economic activity file by double clicking and navigating to your input folder of your DF labour force projection. • Add the DFSsupply file, the one you made in Section 2 above, by double clicking and navigating to the input folder of your POPGROUP projection. 	
<ul style="list-style-type: none"> • Click  <p>The nature of each file will be shown alongside its name.</p>	

Action: Run a population, labour force and jobs forecast		POPGROUP View																																	
<p>Return to the '<i>Run_Details</i>' sheet:</p> <ul style="list-style-type: none"> • Add to the documentation • Click RUN THE MODEL <p>Once run, on the Comp output file, at the bottom of each sheet will be the impact of the population on the labour force and jobs.</p>		<table border="1"> <tr> <td>94</td> <td>Labour Force</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>95</td> <td>Number of Labour Force</td> <td>176,505</td> <td>178,203</td> <td>180,176</td> <td>181,441</td> </tr> <tr> <td>96</td> <td>Change in Labour Force over previous year</td> <td></td> <td>+1,698</td> <td>+1,973</td> <td>+1,265</td> </tr> <tr> <td>97</td> <td>Number of Jobs</td> <td>164,971</td> <td>166,558</td> <td>168,402</td> <td>169,584</td> </tr> <tr> <td>98</td> <td>Change in Jobs over previous year</td> <td></td> <td>+1,587</td> <td>+1,844</td> <td>+1,182</td> </tr> </table> <p>Note that the number and the change in jobs is not the same as the labour force. In the example above, the combination of unemployment and out-commuting makes the number of jobs considerably less than the labour force.</p> <p>Record the population, labour force and jobs for 2012 and 2037 in Your Answers, page 24, and calculate the change over the period. Later in this Guide, you will compare the results with a projection led by a plan.</p>				94	Labour Force					95	Number of Labour Force	176,505	178,203	180,176	181,441	96	Change in Labour Force over previous year		+1,698	+1,973	+1,265	97	Number of Jobs	164,971	166,558	168,402	169,584	98	Change in Jobs over previous year		+1,587	+1,844	+1,182
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In this Section, you have repeated a population projection, but asked POPGROUP to run a labour force projection in the background (i.e. evaluating the jobs and labour force growth impacts of the population projection). The labour force and jobs growth outcomes are summarised at the bottom of the **Comp** output file.

Running the labour force projection in the background of POPGROUP only provides the total labour force implied by that level of population change. When you run the same projection in the Derived Forecast module, it gives you details of the age composition of the labour force and other analyses (see User Guide 3). You would have to run the labour force projection in the Derived Forecast software to get those other analyses.

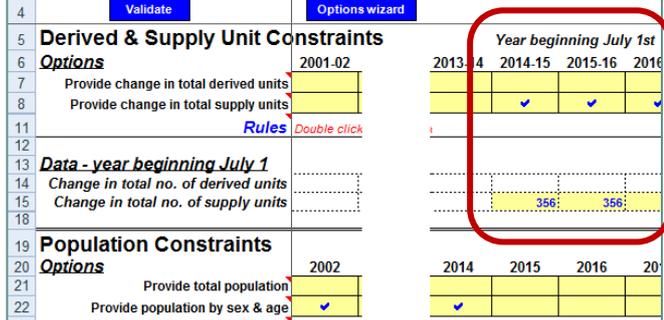
4 Create a Constraints file with a Plan for Jobs, and find its Impact on the Population

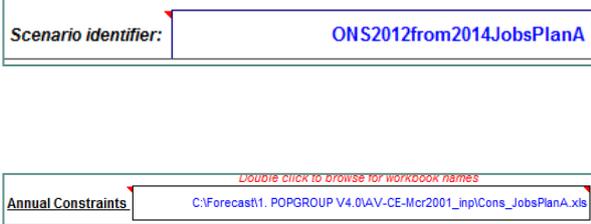
A plan for jobs is entered on a POPGROUP constraints file (**cons**) e.g. a net increase of 789 jobs each year from 2014/15 to 2034/35. When a projection is run with a jobs constraint, POPGROUP will indicate the population implied by the defined jobs targets. It alters the migration to balance between population and jobs, attracting the number of people who will fill the jobs. The migration will include children, older people and others who are not working, as well as those working, according to the area's migration profile and economic activity profiles already contained in your POPGROUP files. Further detail is provided on the migration flows used to meet a jobs constraint in Section 5.2.

A plan for jobs is entered as a *change* in the number of jobs each year, and is therefore the *net* change in jobs expected in the area by the plan (i.e. the net change includes jobs lost as well as new jobs). The change is entered for each year of the plan. If a total for jobs creation is planned over a number of years, an annual schedule of implementing the plan must be entered. If there is no official schedule, it is normal to calculate and enter the annual average change each year.

If the model is for several areas, a constraint must be entered for every area.

You will normally have a constraints file already filled, used for your previous POPGROUP scenarios for the same areas, for example the one used by the scenario in Section 3. It makes sense to amend that one, rather than start from scratch, and save it using a new name.

Action: Complete a constraints file with a plan for jobs	POPGROUP View																																																																																																	
<p>From your POPGROUP model's input folder, open the base Cons file that was already used in the scenario of Section 3, e.g.</p> <pre>C:\Forecast\POPGROUP V4.0\<modelid>_inp\cons_20 02-14.xls<="" pre=""> <p>If you do not have a Cons file, you may open a new one from the skel folder of skeleton files.</p> </modelid>_inp\cons_20></pre>																																																																																																		
<p><i>Save as...</i> in the input folder, with a name that reflects the plan, e.g. Cons_JobsPlanA.xls</p> <p>On the '<i>Notes</i>' sheet Remember to add documentation.</p>	 <table border="1"> <tr> <td>1</td> <td>Documentation of the set of constraints defined in this workbook</td> </tr> <tr> <td>2</td> <td>Mid-year population estimate by single year of age and sex</td> </tr> <tr> <td>3</td> <td>from CNS MVE outputs added by Data Module 2002 to 2014</td> </tr> <tr style="border: 2px solid red;"> <td>4</td> <td>Plans for 356 jobs per year in from 2014-15 to 2036-37.</td> </tr> </table>	1	Documentation of the set of constraints defined in this workbook	2	Mid-year population estimate by single year of age and sex	3	from CNS MVE outputs added by Data Module 2002 to 2014	4	Plans for 356 jobs per year in from 2014-15 to 2036-37.																																																																																									
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<p>On the area sheet(s):</p> <ul style="list-style-type: none"> You may have '<i>Population Constraints</i>' ticked for past years. Keep them. If you have '<i>Population Constraints</i>' ticked for future years, delete them. You will want future years to be led by the jobs constraints you will now enter. On row 8 double click each year of the planned jobs. POPGROUP will enter a tick to show the option has been chosen. On row 15 enter the net number of extra jobs in the plan, for each year. 	 <table border="1"> <thead> <tr> <th colspan="2"></th> <th colspan="4">Options wizard</th> </tr> <tr> <th colspan="2"></th> <th>2001-02</th> <th>2013-14</th> <th>2014-15</th> <th>2015-16</th> <th>2016-17</th> </tr> </thead> <tbody> <tr> <td colspan="7">Derived & Supply Unit Constraints</td> </tr> <tr> <td colspan="2">Options</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>7</td> <td>Provide change in total derived units</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>8</td> <td>Provide change in total supply units</td> <td></td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td colspan="2">Rules Double click</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="2">Data - year beginning July 1</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>14</td> <td>Change in total no. of derived units</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>15</td> <td>Change in total no. of supply units</td> <td></td> <td>356</td> <td>356</td> <td></td> <td></td> </tr> <tr> <td colspan="7">Population Constraints</td> </tr> <tr> <td colspan="2">Options</td> <td>2002</td> <td>2014</td> <td>2015</td> <td>2016</td> <td>2017</td> </tr> <tr> <td>21</td> <td>Provide total population</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>22</td> <td>Provide population by sex & age</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>			Options wizard						2001-02	2013-14	2014-15	2015-16	2016-17	Derived & Supply Unit Constraints							Options							7	Provide change in total derived units						8	Provide change in total supply units		✓	✓	✓	✓	Rules Double click							Data - year beginning July 1							14	Change in total no. of derived units						15	Change in total no. of supply units		356	356			Population Constraints							Options		2002	2014	2015	2016	2017	21	Provide total population						22	Provide population by sex & age	✓	✓			
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<p>Click:</p> <ul style="list-style-type: none"> <i>'Validate'</i> Save the file 																																																																																																		

Action: Run the jobs-led projection	POPGROUP View
<p>From your POPGROUP model’s input folder, open the scenario you used in Section 3, e.g.</p> <pre>C:\Forecast\POPGROUP V4.0\<ModelID>_inp\Scenario_.. .WithJobs</pre> <ul style="list-style-type: none"> Amend the ‘<i>Scenario ID</i>’ to remind you of the plan used On the sheet ‘<i>Constraints_and_impacts</i>’, double click the constraints file (Cons) and find the file you made earlier in this Section. 	 <p>The screenshot shows two input fields in the POPGROUP interface. The first field, labeled 'Scenario identifier:', contains the text 'ONS2012from2014.JobsPlanA'. The second field, labeled 'Annual Constraints', contains the file path 'C:\Forecast1. POPGROUP V4.0\AV-CE-Mcr2001_inplCons_JobsPlanA.xls'. A red arrow points to the second field with the text 'Double click to browse for workbook names'.</p>
<p>Return to the ‘<i>Run_Details</i>’ sheet:</p> <ul style="list-style-type: none"> Amend the documentation Click  <p>Once run, on the Comp output file, at the bottom of each sheet the number of jobs and the labour force will be reported.</p> <p>Write the results for 2037 on page 24, and calculate the new change over the period.</p> <p>The figures for 2012 will not have changed, because the plan started after that year.</p>	<p>The change in number of jobs from 2014 in your Comp file should be what you wrote in the Constraints file: this projection replicates what you have specified there.</p> <p>The population will have changed to match the plan of jobs. You can see how much the population has been altered; on the row of the Comp file headed ‘<i>Population impact of constraint</i>’, above the rows of labour force and jobs.</p>

Plans sometimes cater for more change than expected based on past trends. The population change you record will then be more than the base projection. POPGROUP has calculated the number of migrants needed to fill the jobs in the plan, using the economic activity rates and the profile of migration to the district that is in the input files.

If the plan was for *fewer* jobs than the base projection indicated were needed (with the economic activity rate and migration assumptions applied), in Section 3, then POPGROUP would reduce the migration accordingly. In the next Section you will implement alternative jobs plans and other assumptions.

5 Alternative Scenarios

The amendment of a **Cons** file to specify a jobs plan in Section 4 was straightforward. It takes only a few minutes to replace one plan with another, document it and save the **Cons** file with a new name, and then run an alternative scenario to find the impact of the jobs plan on population.

POPGROUP uses your assumptions to compute the extra (or fewer) people required in a projection led by the jobs plan. It compares the planned jobs to those projected in the base projection, applies the migration profiles with the economic activity rates to calculate the number of people needed to fill the jobs, and outputs the new population projection with adjusted number of migrants.

It is relatively easy to investigate alternative plans in POPGROUP. This section gives instructions for two tasks:

- The first set of instructions show how to specify a plan in which there is no change to the jobs. This is useful to show how population is expected to change even when there is no net change in jobs, due to the changing age structure of the population.
- The other part of this section discusses the migration flows, which are used to balance between jobs and population growth to fill a jobs plan, and shows how to make an alternative assumption about these flows.

5.1. No change in the number of jobs

Action: A plan for no change in the number of jobs	POPGROUP View																																																															
<p>From your POPGROUP model’s input folder, open the Cons constraints file you used in Section 4 (it is usually easier to change an existing input file than start from scratch).</p> <ul style="list-style-type: none"> Save as... with a different name, e.g. <code>'cons_NoJobsChange.xls'</code> Delete the values for the previous plan for jobs, and insert zeros instead. Document changes on the <code>'Notes'</code> sheet. Save the file with these new assumptions. 	<table border="1" data-bbox="703 548 1361 779"> <tr> <td>5</td> <td>Derived & Supply Unit Co</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>6</td> <td>Options</td> <td>2012-13</td> <td>2013-14</td> <td>2014-15</td> <td>2015-16</td> <td>2016-17</td> </tr> <tr> <td>7</td> <td>Provide change in total derived units</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>8</td> <td>Provide change in total supply units</td> <td></td> <td></td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>11</td> <td>Rules</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>12</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>13</td> <td>Data - year beginning July 1</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>14</td> <td>Change in total no. of derived units</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>15</td> <td>Change in total no. of supply units</td> <td></td> <td></td> <td>0:</td> <td>0:</td> <td></td> </tr> </table> <p>The assumption that you are making on this file is that each year there is no <i>net</i> change in the number of jobs. In reality, there may be new jobs and others that are lost, which together add to zero change.</p> <p>The overall impact of zero jobs growth is that the jobs number is fixed at the value estimated by the model in the start year.</p>	5	Derived & Supply Unit Co						6	Options	2012-13	2013-14	2014-15	2015-16	2016-17	7	Provide change in total derived units						8	Provide change in total supply units			✓	✓		11	Rules						12							13	Data - year beginning July 1						14	Change in total no. of derived units						15	Change in total no. of supply units			0:	0:	
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15	Change in total no. of supply units			0:	0:																																																											
<p>Open the previous scenario from Section 4 and make the same changes as in that section:</p> <ul style="list-style-type: none"> Amend the <code>'Scenario ID'</code> On the sheet <code>'Constraints_and_impacts'</code>, double click the Constraints file and find the file you made earlier in this section. 	<div data-bbox="703 1238 1297 1305" style="border: 1px solid black; padding: 2px;"> <p>Scenario identifier: NoJobsChange</p> </div> <div data-bbox="703 1368 1297 1413" style="border: 1px solid black; padding: 2px;"> <p>Annual Constraints: C:\Forecast\1 POPGROUP V4.0\AV-CE-Mcr2001_inplCons_NoJobsChange.xls</p> </div>																																																															

Action: A plan for no change in the number of jobs		POPGROUP View																																																																																																																																																																																																															
<p>Return to the 'Run_Details' sheet:</p> <ul style="list-style-type: none"> Amend the documentation Click RUN THE MODEL <p>Once run, on the Comp output file, at the bottom of each sheet the labour force and jobs outcomes are reported.</p> <p>Note that from the first year of the jobs constraint, the labour force and number of jobs remain constant and the change is zero, as you specified on the Cons file.</p> <p>The output also shows the impact on the population of the constraint.</p>		<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>U</th> <th>P</th> <th>Q</th> <th>R</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td>2007</td> <td>2014</td> <td>2015</td> <td>2016</td> <td>2017</td> </tr> <tr> <td>2</td> <td>0-4</td> <td>19,543</td> <td>20,365</td> <td>20,483</td> <td>20,398</td> <td>20,244</td> </tr> <tr> <td>3</td> <td>5-10</td> <td>26,644</td> <td>25,315</td> <td>25,438</td> <td>25,793</td> <td>26,081</td> </tr> <tr> <td>4</td> <td>11-15</td> <td>22,337</td> <td>20,402</td> <td>20,217</td> <td>20,200</td> <td>20,544</td> </tr> <tr> <td>5</td> <td>16-17</td> <td>8,649</td> <td>8,985</td> <td>8,813</td> <td>8,603</td> <td>8,296</td> </tr> <tr> <td>6</td> <td>18-59Female, 64Male</td> <td>205,546</td> <td>206,729</td> <td>206,682</td> <td>206,740</td> <td>207,019</td> </tr> <tr> <td>7</td> <td>60/65 -74</td> <td>41,482</td> <td>55,617</td> <td>56,520</td> <td>57,547</td> <td>58,308</td> </tr> <tr> <td>8</td> <td>75-84</td> <td>20,691</td> <td>25,820</td> <td>26,314</td> <td>26,679</td> <td>27,381</td> </tr> <tr> <td>9</td> <td>85+</td> <td>7,212</td> <td>10,946</td> <td>11,465</td> <td>12,002</td> <td>12,408</td> </tr> <tr> <td>10</td> <td>Total</td> <td>352,104</td> <td>374,179</td> <td>375,932</td> <td>377,962</td> <td>380,281</td> </tr> <tr> <td>11</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>12</td> <td colspan="6">Dependency ratios, mean age and sex</td> </tr> <tr> <td>13</td> <td>0-15 / 16-65</td> <td>0.31</td> <td>0.29</td> <td>0.29</td> <td>0.29</td> <td>0.29</td> </tr> <tr> <td>14</td> <td>65+ / 16-65</td> <td>0.27</td> <td>0.35</td> <td>0.36</td> <td>0.37</td> <td>0.38</td> </tr> <tr> <td>15</td> <td>0-15 and 65+ / 16-65</td> <td>0.57</td> <td>0.64</td> <td>0.66</td> <td>0.67</td> <td>0.67</td> </tr> <tr> <td>16</td> <td>Median age males</td> <td>39.8</td> <td>44.0</td> <td>44.3</td> <td>44.6</td> <td>44.9</td> </tr> <tr> <td>17</td> <td>Median age females</td> <td>41.5</td> <td>45.8</td> <td>46.1</td> <td>46.5</td> <td>46.8</td> </tr> <tr> <td>18</td> <td>Sex ratio males /100 females</td> <td>95.0</td> <td>96.0</td> <td>96.1</td> <td>96.2</td> <td>96.3</td> </tr> <tr> <td>19</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>20</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>21</td> <td colspan="6">Population impact of constraint</td> </tr> <tr> <td>22</td> <td>Number of persons</td> <td></td> <td>-0</td> <td>+319</td> <td>+489</td> <td>+784</td> </tr> <tr> <td>23</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>24</td> <td colspan="6">Labour Force</td> </tr> <tr> <td>25</td> <td>Number of Labour Force</td> <td>176,505</td> <td>190,398</td> <td>190,398</td> <td>190,398</td> <td>190,398</td> </tr> <tr> <td>26</td> <td>Change in Labour Force over previous year</td> <td></td> <td>-606</td> <td>0</td> <td>-0</td> <td>0</td> </tr> <tr> <td>27</td> <td>Number of Jobs</td> <td>164,971</td> <td>177,956</td> <td>177,956</td> <td>177,956</td> <td>177,956</td> </tr> <tr> <td>28</td> <td>Change in Jobs over previous year</td> <td></td> <td>-566</td> <td>0</td> <td>-0</td> <td>0</td> </tr> </tbody> </table> <p>Record the results for 2037 in Your Answers, page 24.</p> <p>Does the population increase with no change in the number of jobs, as in this example?</p> <p>This would often be due to the ageing population: as more people move out of the working ages and into retirement, the proportion of the population of working age (and therefore taking up the jobs) decreases. Therefore, in-migration occurs to fill the jobs. With increased economic activity rates (which you may have specified), the level of in-migration required may be decreased, as the number of residents available to work is increased.</p> <p>In this example, the number of jobs required by the population was decreasing in the years before the jobs plan. Therefore, with zero jobs growth, the population increases in size, as migration is required to balance between population and jobs.</p>						A	B	U	P	Q	R	1		2007	2014	2015	2016	2017	2	0-4	19,543	20,365	20,483	20,398	20,244	3	5-10	26,644	25,315	25,438	25,793	26,081	4	11-15	22,337	20,402	20,217	20,200	20,544	5	16-17	8,649	8,985	8,813	8,603	8,296	6	18-59Female, 64Male	205,546	206,729	206,682	206,740	207,019	7	60/65 -74	41,482	55,617	56,520	57,547	58,308	8	75-84	20,691	25,820	26,314	26,679	27,381	9	85+	7,212	10,946	11,465	12,002	12,408	10	Total	352,104	374,179	375,932	377,962	380,281	11							12	Dependency ratios, mean age and sex						13	0-15 / 16-65	0.31	0.29	0.29	0.29	0.29	14	65+ / 16-65	0.27	0.35	0.36	0.37	0.38	15	0-15 and 65+ / 16-65	0.57	0.64	0.66	0.67	0.67	16	Median age males	39.8	44.0	44.3	44.6	44.9	17	Median age females	41.5	45.8	46.1	46.5	46.8	18	Sex ratio males /100 females	95.0	96.0	96.1	96.2	96.3	19							20							21	Population impact of constraint						22	Number of persons		-0	+319	+489	+784	23							24	Labour Force						25	Number of Labour Force	176,505	190,398	190,398	190,398	190,398	26	Change in Labour Force over previous year		-606	0	-0	0	27	Number of Jobs	164,971	177,956	177,956	177,956	177,956	28	Change in Jobs over previous year		-566	0	-0	0
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Try a different jobs plan if you have one in mind, evaluating the results in the same way as above.

Look at the results until you are satisfied that you can explain them to others.

5.2. Which migration flow will fill jobs?

In a jobs-led scenario, migration is used to balance between population and jobs growth. If there is insufficient resident population to take up the new jobs, migration flows are used to redress this imbalance. However, there are four flows of migration, so how does POPGROUP know which to use? If there are extra jobs they could be filled from:

- More in-migration from other parts of the UK, or
- Less out-migration to other parts of the UK, or
- More immigration from overseas, or
- Less emigration to overseas.

Some analysts argue that the new jobs should be filled by people of specific ages, as people of a particular age and type are expected to take up jobs of a particular industry or office development. However, those who will fill the jobs are likely to partly, or even mostly, come from within the District for which projections are being produced. The jobs they leave will be filled by others. The extra jobs will result in migrants from outside the area being attracted but not necessarily to those particular new jobs. Because it would not be feasible to model this sequence of job-moves, it is usually better to assume that the overall impact on migration will be to attract the kinds of migrant that the District has attracted in the past. In other words, it is reasonable to use the migration assumptions in the ONS or base projection. Nevertheless, the question remains: which of the four flows of migration will be affected?

In fact, POPGROUP does not know which flow of migration to use – it has to be told. There is a default setting on the **Scenario** file, which the user can change. The setting on the **Scenario** file is next to the list of input files:

Save your input files before running the model.

Input workbook names	
Base population	PopBase_2001.xls
Births & fertility	FerT_ONS2012fom2014.xls
Deaths & Mortality	Mort_ONS2012fom2014.xls
In-migration from the UK (optional)	Mig_INUK_ONS2012fom2014.xls
Out-migration to the UK (optional)	Mig_OUTUK_ONS2012fom2014.xls
In-migration from Overseas (optional)	Mig_INOV_ONS2012fom2014.xls
Out-migration to Overseas (optional)	Mig_OUTOV_ONS2012fom2014.xls
Special Groups (optional)	

Migration Weights	
Pop'n	Derived units
0%	50%
0%	50%
50%	0%
50%	0%

Migration weights - used only to implement constraints

Weights to be given to each of the four migrant flows when adjusting migration to meet a constraint. They are used only if a constraints file is specified, and may only be given for migration flows that have been specified.

The first is 100% minus the sum of the other three, which are the only ones that may be adjusted directly.

Migration weights on the scenario file specify the combination of migration flows that are used to meet a constraint. The default, shown in the illustration above, takes migration needed to meet a *population* constraint according to the overseas migration age-sex profile, and takes

migration needed to meet a constraint of *derived units* (like jobs) according to the UK migration age-sex profile.

The argument to justify this default setting is this. For many population projections, the least certain element is international migration. Therefore, if the historical population is known but the migration is uncertain, POPGROUP by default meets the population figure by adjusting international migration. However, in a jobs-led projection, the availability of jobs is most likely to influence the decisions of migrants or potential migrants from other parts of the UK, so it is those migrants who POPGROUP uses to meet a defined jobs growth target.

- In both cases, the default is set at a value of 50% in each of in- and out-migration (i.e. a surplus of jobs might both attract in-migrants and deter out-migrants).
- To change the settings, the user puts in figures for the last three rows of weights. POPGROUP automatically adjusts the first row so that the weights add to 100%.

For most districts, the age-sex profile of in- and out-migration are not very different, nor are the age-sex profiles of UK and overseas migration. Migrants are predominantly young adults, with some children accompanying family adults. For this reason, the choice of migration weights for the constraint does not usually make much of a difference to the end result. Of course, the flows are not exactly the same. The box at the end of this section shows how you can examine each year's migration flows used in your projection and for historical years if you have included them in your model.

Although unusual, if it is clear that the impact of a plan will be almost entirely on one flow, and if the age profiles are quite different for each flow, then the user should change the migration weights on the **Scenario** file to more appropriate values. The instructions below show how to change the migration weights. You can investigate the age profiles of each migration flow on the **dump** output file, for example by making charts from the five-year age-group migration held on its sheets.

The exercise below repeats the projection of Section 4, but using only UK in-migration to meet the constraint. You may wish to instead use only international immigration, or some other combination. The idea of the exercise is to compare results with Section 4; if there is a noticeable difference, then you should think carefully which weighting of migration is most appropriate for your local plans.

Action: Change the migration flows used to meet a constraint	POPGROUP View										
<p>From your POPGROUP model’s input folder, open the Scenario file you used in Section 4 for a plan-led projection.</p> <p>Change only the <i>‘Scenario ID’</i> and the migration weights. For example, if you investigate the impact of using only UK in-migration:</p> <ul style="list-style-type: none"> • Change the Scenario ID • In the box headed <i>‘Migration Weights’</i>, write ‘0’ in the <i>‘UK out-migration’</i> cell, under <i>‘Derived units’</i>. • Do not change the weights under <i>‘Pop’n’</i> as this refers to population constraints, not the constraints of the jobs plan. • Amend the documentation, e.g. by adding ‘Constraint met entirely by altering UK in-migration’. • Click RUN THE MODEL 	<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <p>Scenario identifier: Plan1100paAllUKmig</p> </div> <p>The Migration Weights will probably be as in the image on page 17. Change the second entry to 0, so that it looks like this:</p> <div style="display: flex; align-items: center; justify-content: center;"> <table border="1" style="border-collapse: collapse; text-align: center;"> <caption>Migration Weights</caption> <thead> <tr> <th style="font-size: small;">Pop’n</th> <th style="font-size: small;">Derived units</th> </tr> </thead> <tbody> <tr> <td>0%</td> <td>100%</td> </tr> <tr> <td>0%</td> <td>0%</td> </tr> <tr> <td>50%</td> <td>0%</td> </tr> <tr> <td>50%</td> <td>0%</td> </tr> </tbody> </table> <div style="margin-left: 10px;"> <p style="background-color: #0056b3; color: white; padding: 5px; border: 1px solid black;">Change to 0, as shown</p> </div> </div> <div style="margin-top: 10px; text-align: center;"> <p style="background-color: #0056b3; color: white; padding: 5px; border: 1px solid black;">No need to change this column</p> </div>	Pop’n	Derived units	0%	100%	0%	0%	50%	0%	50%	0%
Pop’n	Derived units										
0%	100%										
0%	0%										
50%	0%										
50%	0%										
<p>Once run, on the bottom of each sheet in the Comp output file the labour force and job outcomes are reported.</p> <p>The labour force and jobs at the end of the forecast should not change. These were fixed by your jobs plan and the conversion between labour force and jobs.</p> <p>But the population will be different, because the different age-sex profile of migration will fill the jobs more or less easily, depending on the economic activity rates for the district.</p>	<p>Record the results on Your Answers, page 24. Is the difference in population much smaller than the impact of the plan itself?</p> <p>Does it make a significant difference? This is rare but possible.</p>										

Exact details of how a constraint is met within POPGROUP are contained in the POPGROUP Reference Manual.



Where can I view the age-sex profiles of migration?

The input files have the assumptions about migration used in a projection, and often contain male and female migrants by five-year age-groups in each of the four flows (in and out, UK and overseas). Look at the **Scenario** file; it lists the migration files used. Open them and view the historical number of migrants and the future assumptions.

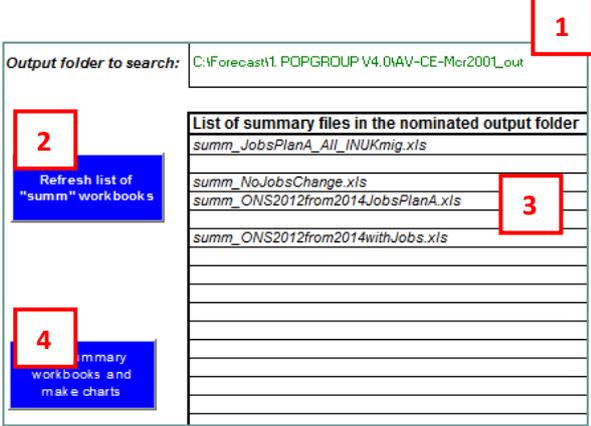
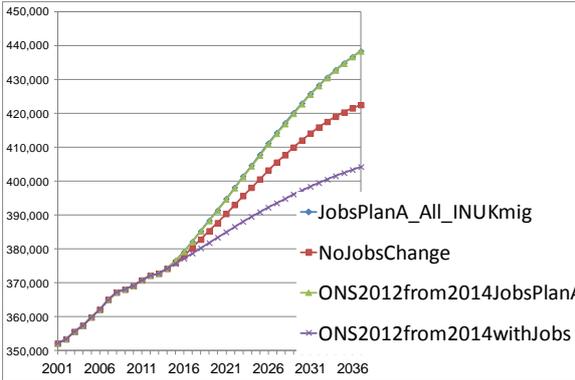
However, the projection may use rates rather than counts for its projection. The best place to see the profile of migration *as projected* is in the **dump** output file of a projection. The **dump** file is an optional output file containing a 'dump' of very detailed results. It is requested on the **Scenario** input file: tick the **Produce dump file** option (on row 34) before running the projection. Many users always produce a dump file in case they need to look at the very detailed output.

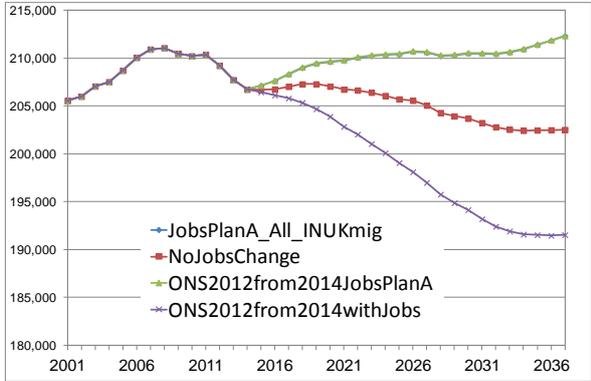
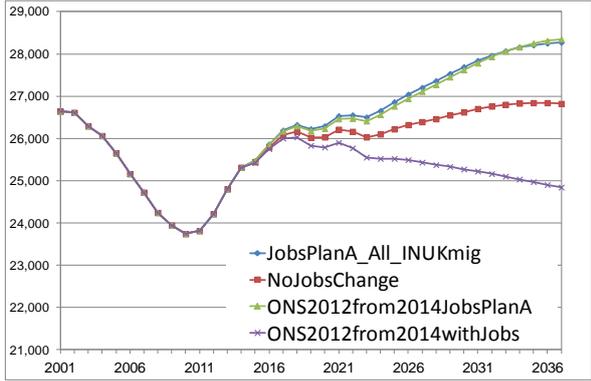
On the **dump** file, each flow of migrants is listed each year by sex and single-year-of-age, and then summarized by five-year age groups. The '*Produce Flat File*' facility on the **dump** file puts all the results on a single sheet so that areas can be more easily compared.

Thus, although there is not at present a package of migration analyses within POPGROUP, all the data are available for the user to examine.

6 Compare Scenarios

You will know how to compare the results of population projections, from User Guide 1. Use the `PGCompare.xls` utility, and check that the results are what you expect.

Action: Compare results of jobs-led and other population projections	POPGROUP View
<p>Open <code>PGCompare.xls</code>, which is usually held in the directory <code>\1. POPGROUP V4.0\</code>.</p> <ol style="list-style-type: none"> 1. Change the folder to your own 2. Refresh the list of projections 3. Delete those you do not want to compare on this occasion 4. Get the output workbooks and make charts. <p>If you have more than one area, then on this sheet also <i>'Select the population group for tables and charts'</i>.</p>	 <p>The screenshot shows the POPGROUP View interface. At the top right, a red box labeled '1' highlights the 'Output folder to search' field, which contains the path <code>C:\Forecast\1. POPGROUP V4.0\AV-CE-Mcr200\Out</code>. Below this is a table titled 'List of summary files in the nominated output folder' with a red box labeled '3' highlighting the file list. The files listed are <code>summ_JobsPlanA_All_INUKmig.xls</code>, <code>summ_NoJobsChange.xls</code>, <code>summ_ONS2012from2014JobsPlanA.xls</code>, and <code>summ_ONS2012from2014withJobs.xls</code>. A blue callout box labeled '2' points to a 'Refresh list of "summ" workbooks' button. Another blue callout box labeled '4' points to a 'Summary workbooks and make charts' button.</p>
<p>View and make sense of the total projected population</p> <p>In the example shown the ONS projection, updated with mid-year populations to 2014, is shown in purple. The population of this District has been growing steadily, but also ageing, so that the number of jobs required has been falling. Various scenarios are shown from this User Guide:</p> <ul style="list-style-type: none"> • If the number of jobs stayed steady after 2014, the population would have to increase to fill them, more than the base projection without a jobs constraint. 	<p>Population scenarios for Cheshire East, total population:</p>  <p>The chart displays population projections for Cheshire East from 2001 to 2036. The Y-axis ranges from 350,000 to 450,000. The X-axis shows years from 2001 to 2036. All scenarios start at approximately 350,000 in 2001 and follow a similar upward trend until 2014. After 2014, the scenarios diverge: <code>JobsPlanA_All_INUKmig</code> (blue) reaches the highest population of approximately 440,000 by 2036; <code>ONS2012from2014JobsPlanA</code> (green) reaches approximately 430,000; <code>NoJobsChange</code> (red) reaches approximately 420,000; and <code>ONS2012from2014withJobs</code> (purple) reaches approximately 405,000.</p> <ul style="list-style-type: none"> • The jobs plan attracts further population. • The use of a specific migration flow made no difference to the impact of the jobs plan.

Action: Compare results of jobs-led and other population projections	POPGROUP View
<p>View and make sense of the projections of the population aged 18-retired. At the time of writing, POPGROUP still uses the ages of 60 (women) and 65 (men) as ‘retirement age’, but the chart is useful in showing the impact on the population of approximately working age.</p> <p>In this example:</p> <ul style="list-style-type: none"> • The growing total population was due to a growing older population. The number at younger ages was declining according to the official projection. • Maintaining the same number of jobs is expected to attract some migrants, who are younger, which would largely stop the decline in working age population. 	<p>Population scenarios for Cheshire East, age 18-retired:</p>  <p>The plan to increase the number of jobs would increase the population of working age.</p>
<p>View and make sense of the projections of the population at other ages.</p> <p>In this example:</p> <ul style="list-style-type: none"> • Whether the primary school-age population declines or increases depends on the future number of jobs... • The difference in the number of children reaching school age is amplified after five years (from 2020 in this example), as the migrants’ children born in the area reach school age. • For this age group the different age and sex composition of the migrant flows makes a visible difference but it is still relatively very small in this example. 	<p>Age 5-10:</p> 

7 Your Answers

Use this section to record answers for each of your area(s). Write the area names in the column headings.

Section	Area 1	Area 2	Area 3	Area 4
2. Conversion between labour force and jobs				
Unemployment, rate				
Commuting ratio (employed residents / jobs)				
Overall labour force/jobs ratio				
3. Population, labour force and jobs from a base projection				
Total population 2012				
Total population 2037				
Total labour force 2012				
Total labour force 2037				
Total jobs 2012				
Total jobs 2037				
Change in population 2012-2037				
Change in labour force 2012-2037				
Change in jobs 2012-2037				
4. Population, labour force and jobs from a plan				
Total population 2037				
Total labour force 2037				
Total jobs 2037				
Change in population 2012-2037				
Change in labour force 2012-2037				
Change in jobs 2012-2037				
5.1 No change in jobs				
Total population 2037				
Total labour force 2037				
Total jobs 2037				
Change in population 2012-2037				
Change in labour force 2012-2037				
Change in jobs 2012-2037				
5.2 Migration weights changed to...				
Total population 2037				
Total labour force 2037				
Total jobs 2037				
Change in population 2012-2037				
Change in labour force 2012-2037				
Change in jobs 2012-2037				

8 Common Problems



Message 'Cannot run the Macro' or similar

POPGROUP works in Excel by using programs known as 'macros'. After installation you must follow the instructions in the manual to enable macros and trust access to Visual Basic. Otherwise, POPGROUP cannot work and you will receive error messages.

If you do not have the manual, contact popgroup@edgeanalytics.co.uk.



I get a Windows error

Occasionally there will be a Windows error. Usually it is unclear why it has happened. Coming out of Excel and starting the task again will usually solve the problem. Occasionally after an error, you will be left with a window with program code. Again, close that window and Excel, and try again. These occasional errors are inevitable with a complex program working on many different operating environments, and are not unique to POPGROUP.

If an error occurs more than once, note what happened (take a screen shot if you can), and email details to popgroup@edgeanalytics.co.uk.

9 Next Steps

9.1. Other guides in this series

POPGROUP is a versatile tool for analysis of population dynamics. The 'How to...' Guides in this series are:

1. How to get started with population projections
2. How to get started with household projections
3. How to get started with labour force projections
4. How to create population projections led by a plan for house-building
5. How to create population projections led by an economic plan for jobs
6. How to integrate population, housing and labour force projections

9.2. Service demand as a consequence of a jobs plan

In this User Guide we have used POPGROUP to estimate the future population when constrained by a plan for jobs. The results are important because they show not only the total population but the demand related to particular age-groups that relate to adult, children's and other services. For example, if extra jobs attract some migration, some migrants will be children.

Equally importantly, the young adult migrants will have children during the years of the forecast; this is modelled by fertility rates within POPGROUP. The output, for example of the future number of children aged 5-10 and 11-15 on the `comp` or `summ` files, can help show the extra demand for school places.

9.3. Small areas

Some users make forecasts for areas other than local authorities, for example for electoral wards, service or housing market areas, or functional economic market areas. Methods developed for small areas are documented and available from popgroup@edgeanalytics.co.uk. The NRS has its own [advice and guide](#) for small areas in Scotland.

9.4. Jobs and housing

POPGROUP can show the impact of a jobs plan not only on the population but also on housing. If the user sets up a household projection, it can be run in the background of POPGROUP in the same scenario that uses a jobs plan as a constraint. The projection of households, the relationship between households and housing, and the integration of population, housing and jobs, are the subjects of User Guides 2, 4 and 6.

9.5. What if a plan changes the unemployment rate, or economic activity rates, or migration profiles?

This Guide has described how POPGROUP is used to estimate the impact of a plan for jobs on the resident population, by calculating the number of migrants needed to fill the revised number of jobs, according to the age-sex profile of migrants and the economic activity rates projected for the District. In Section 5.2, it discussed the choice of migration age-sex profiles that can be used.

There are other issues which some users will want to consider, which cannot be given full treatment in this introductory guide, for example:

- Will unemployment rates remain the same during the projection? They can be altered on the **DFSupply** file (see Section 2 above).
- Will economic activity rates remain the same during the projection? Will additional jobs or policy changes mean some encouragement into the labour force that increases economic activity rates?
- In areas with particular student migration, is the use of the area's usual migration (which includes students), suitable to judge the impact of a jobs plan?