



General Register Office
for
SCOTLAND
information about Scotland's people

Scottish regional population projections with POPGROUP

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Edinburgh
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Presentation outline

- POPGROUP set up for regional projections
- Interpreting results
- Making your own projections

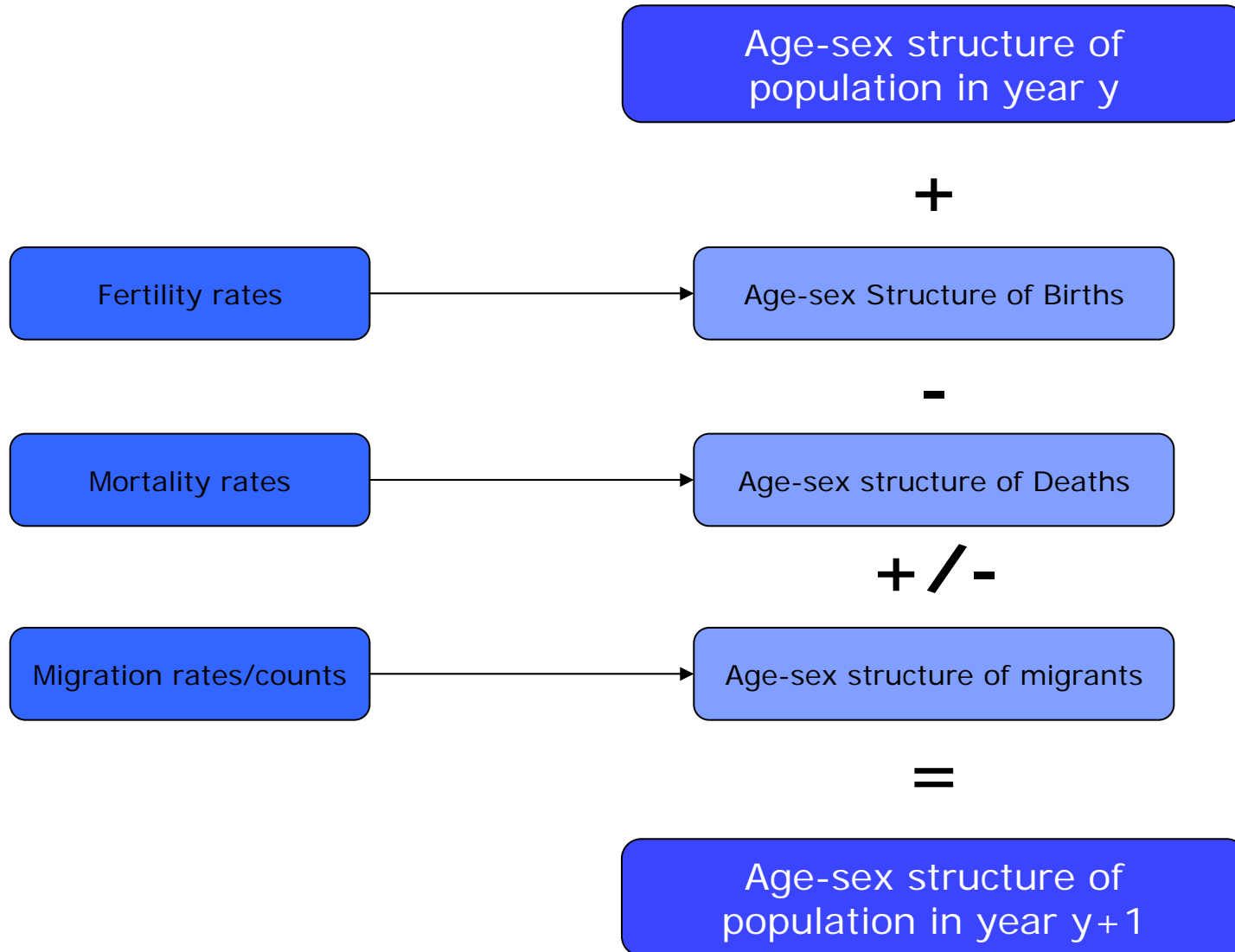
Presentation outline

- POPGROUP set up for regional projections
- Results and interpretation
- Making your own projections

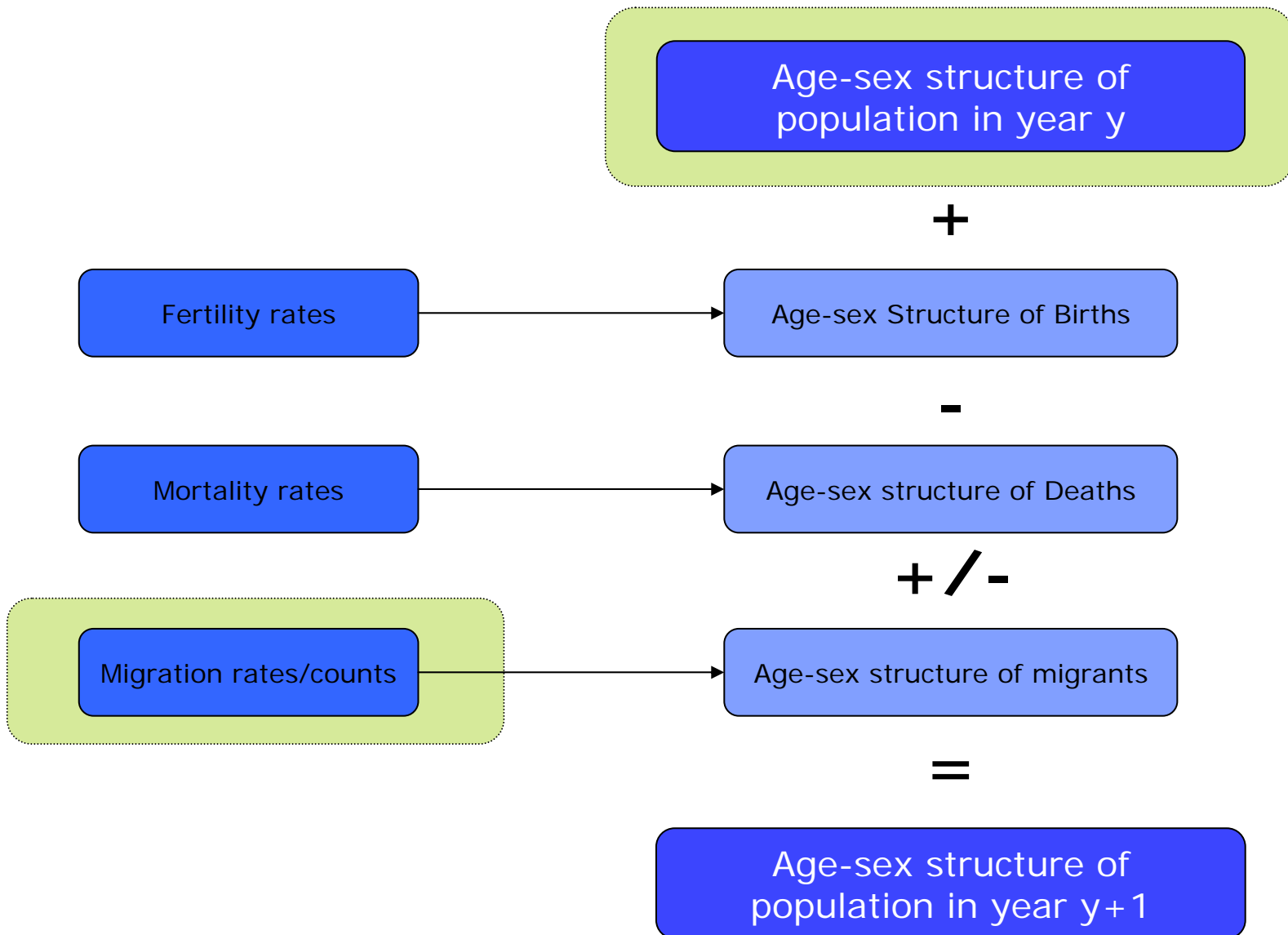
Background

- Motivation is to set-up facility for local authorities to produce their own population projections at regional level
- POPGROUP software was selected for this purpose
- Selected POPGROUP options resemble GROS projections procedure but do not follow it 100%
- Each local authority will get input files with principal assumptions to use in POPGROUP
- Data from the GROS and ONS was manipulated to fit into POPGROUP format
- Provided assumptions can be changed to produce different population projections at regional level

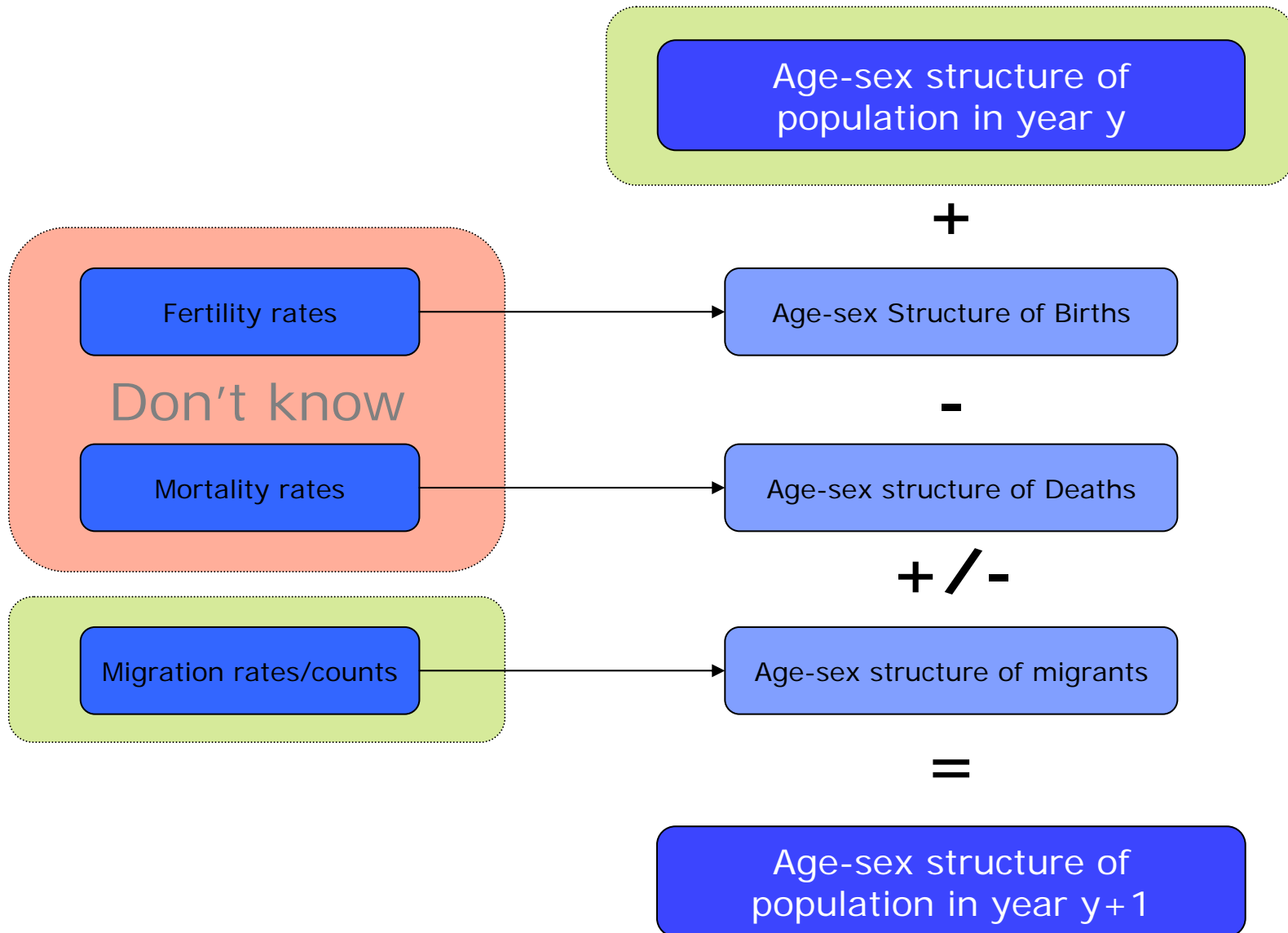
Population projections



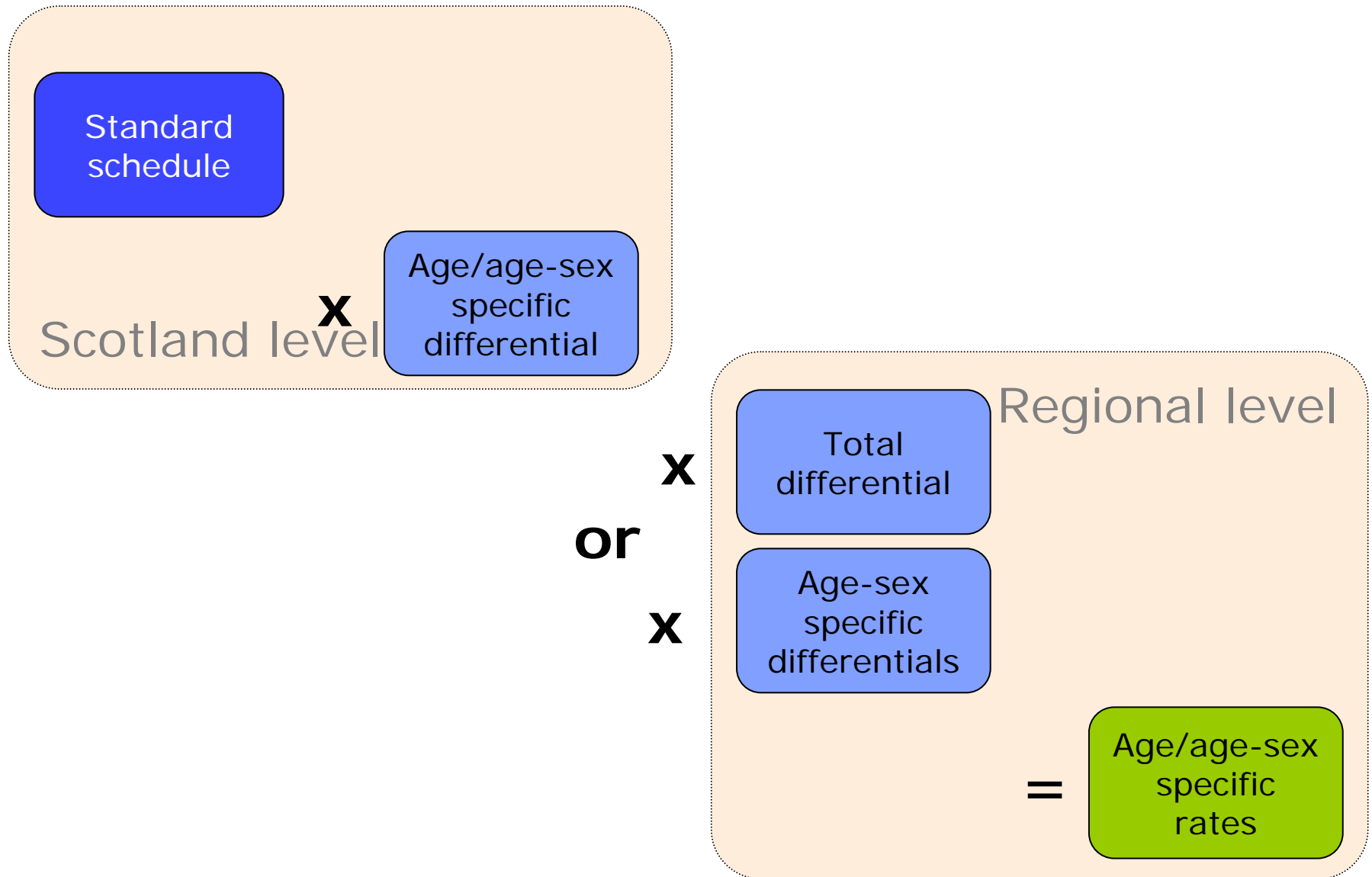
Population projections



Population projections



Calculation of age/age-sex specific rates



POPGROUP: input files

- Base population
 - by sex and single year of age
- Mortality/fertility assumptions
 - Standard schedule by single year of age and sex
 - 5-year age group differentials for each year of the projection
 - Local authority specific total fertility and age-specific mortality differentials
- In and out migration assumptions
 - Standard schedule by single year of age and sex
 - Number of migrants by 5-year age groups and sex

A B C D E F G H I J K L M N O P

Population Estimates and Forecasts **Aberdeen City population projection 2006-2031**

Population Base for year: 2006

Base population

Check sums of all persons entered

206,880 206,880

Validate

Population Group

Sex	Age	Total	Aberdeen
male	78	449	449
male	79	519	519
male	80	428	428
male	81	389	389
male	82	323	323
male	83	266	266
male	84	258	258
male	85	268	268
male	86	283	283
male	87	122	122
male	88	93	93
male	89	93	93
male	90+	300	300
all males		101,841	101,841
female	0	1,034	1,034
female	1	1,055	1,055
female	2	908	908
female	3	963	963
female	4	951	951
female	5	922	922

Population Estimates and Forecasts **Aberdeen City population projection 2006-2031**

Fertility *Age schedule of fertility rates, boys per thousand girls, and mixed parentage table*

Options **VALIDATE** Population Group ... **Standard AS fertility (mortality) schedule**
 Aberdeen
 ASFR
 Boys/1000 girls
 Mixed parentage births
Double click any population group/rate for which you will insert below values different from the standard

Data **Age specific fertility rates (per 1,000 women)**
 Population Group

36	female	37	47.5
37	female	38	37.3
38	female	39	27.4
39	female	40	18.4
40	female	41	12.5
41	female	42	7.5
42	female	43	4.0
43	female	44	2.0
44	female	45	0.6
45	female	46	0.9
46	female	47	0.0
47	female	48	0.0
48	female	49	0.0

Boys/1000 girls 1,050

A1 Population Estimates and Forecasts

Population Estimates and Forecasts *Aberdeen City population projection 2006-2031*

Annual Assumptions [Go to Births](#) [Go to Differentials](#) [Go to TFRs](#)

Fertility [Options wizard](#) ~~~~~shortcuts~~~~~

[VALIDATE](#) Total, all groups Total population

Fertility (mortality) differentials

FERTILITY DIFFERENTIALS (by which to multiply the single age schedule)

Options

Year beginning July 1

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Provide total																		
Trend total																		
Provide age values	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Trend age values																		

Double click any option you wish to select (or de-select) for a year and then fill in the relevant data below

Data

	Total	Age	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
female 15-19	1.00	0.95	0.92	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
female 20-24	1.00	0.99	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
female 25-29	1.00	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
female 30-34	1.00	1.03	1.05	1.06	1.06	1.05	1.03	1.01	1.00	1.00	0.99	0.99	0.99	0.98	0.98	0.98	0.98	0.98	0.98	0.98
female 35-39	1.00	1.03	1.07	1.09	1.09	1.07	1.03	1.00	0.99	0.98	0.97	0.97	0.96	0.96	0.95	0.95	0.95	0.95	0.95	0.95
female 40-44	1.00	1.06	1.10	1.12	1.12	1.10	1.06	1.02	1.00	0.99	0.98	0.98	0.97	0.97	0.96	0.95	0.95	0.95	0.95	0.95
female 45-49	1.00	1.04	1.07	1.09	1.09	1.07	1.04	1.01	0.99	0.99	0.98	0.98	0.97	0.97	0.97	0.96	0.96	0.96	0.96	0.96

TOTAL FERTILITY RATES

cannot be set in the 'all groups' sheet
 Rates / Sched / Notes / Total / Aberdeen

Population Estimates and Forecasts
 Aberdeen City population projection 2006-2031

Annual Assumptions
 Fertility
 VALIDATE
 Options wizard
 Population Group: Aberdeen

Go to Births
 Go to Differentials
 Go to TFRs

Regional fertility (mortality) differentials

FERTILITY DIFFERENTIALS (by which to multiply the single age schedule)

Year beginning July 1

Options	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Provide total	<input checked="" type="checkbox"/>																	
Trend total		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Provide age values																		
Trend age values																		

Double click any option you wish to select (or de-select) for a year and then fill in the relevant data below

Data

	Total	Age	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
			0.85																	
female	15-19																			
female	20-24																			
female	25-29																			
female	30-34																			
female	35-39																			
female	40-44																			
female	45-49																			

Population Estimates and Forecasts

Aberdeen City population projection 2006-2031

Migration

Age-sex schedule of migration from the standard population

Standard AS migration schedules

VALIDATE

In-Migration

Options

Population Group

Aberdeen

ASMigR

Double click the cell under any population group for which you will insert below values different from the standard

Data

Age specific migration rates (per 1,000 population)

Population Group

Sex Age Standard Aberdeen

97	male	83	10.1	7.8
98	male	84	7.8	3.7
99	male	85	8.8	3.5
100	male	86	13.1	0.0
101	male	87	15.8	10.8
102	male	88	17.6	0.0
103	male	89	17.2	3.3
104	male	90+	17.2	3.3

Age specific migration rates (per 1,000 population)

Population Group

Sex Age Standard Aberdeen

109	female	Newborn	24.4	17.4
110	female	0	41.3	26.5
111	female	1	37.7	29.7
112	female	2	34.0	23.9

Population Estimates and Forecasts **Aberdeen City population projection 2006-2031**

Annual Assumptions [Go to Migrants](#) [Go to Differentials](#) [Go to SMigRs](#)

Migration [Options wizard](#) ~~~~~shortcuts~~~~~

[VALIDATE](#) **Population Group: Aberdeen City** **Number of migrants**

Migrants *Year beginning July 1*

<i>Options</i>	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Provide total migrants																		
Trend total migrants																		
Provide age-sex mgt's	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

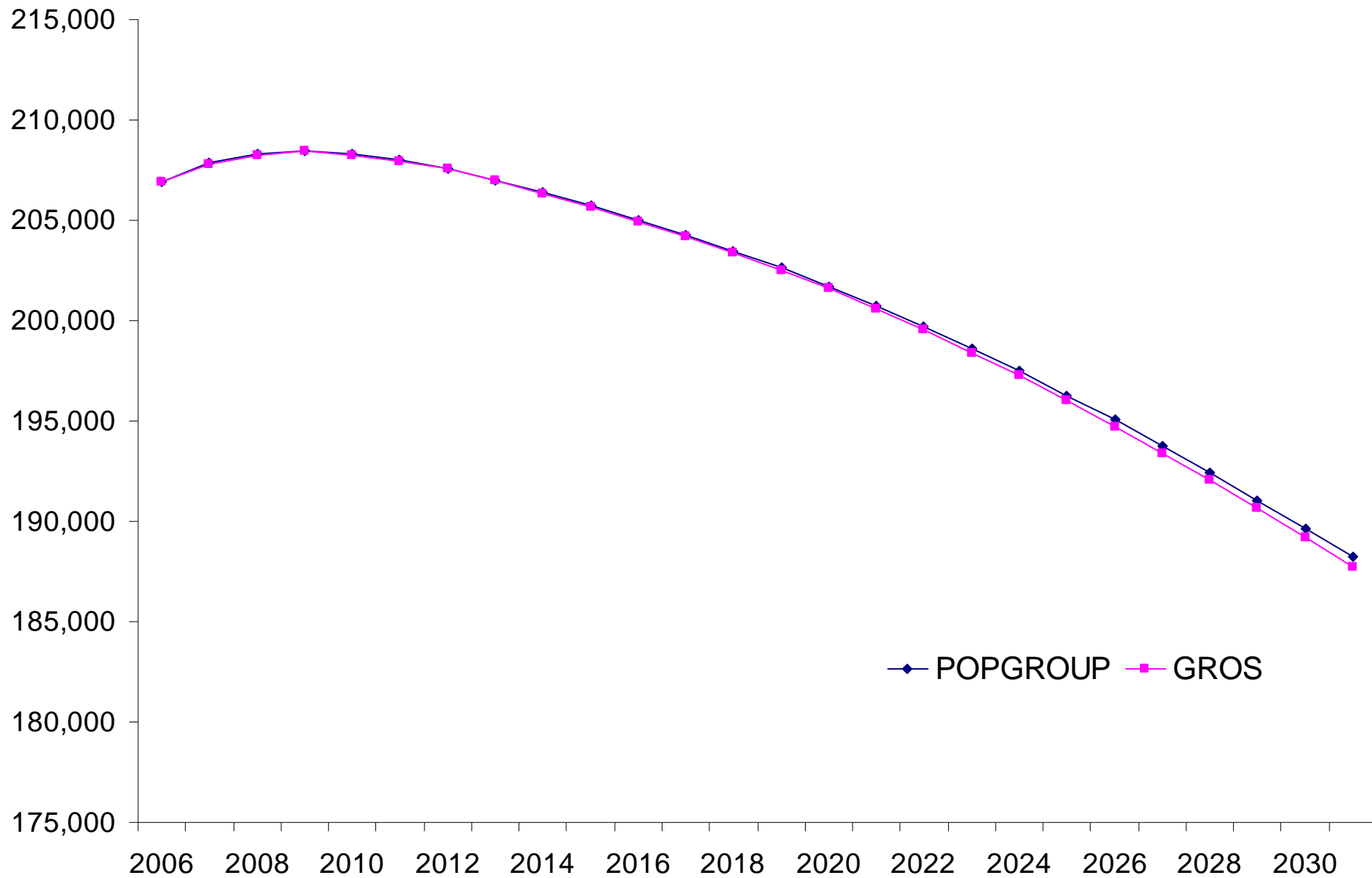
NOTE *Double click any option you wish to select (or de-select) for a year and then fill in the relevant data below*

<i>Data</i>	<i>Total</i>	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Sex	Age																		
male	0-4	136	127	125	122	119	120	118	118	118	118	118	118	118	118	118	118	118	118
male	5-9	90	86	83	80	81	79	77	77	77	77	77	77	77	77	77	77	77	77
male	10-14	90	82	82	80	76	75	72	72	72	72	72	72	72	72	72	72	72	72
male	15-19	517	506	492	483	481	478	474	474	474	474	474	474	474	474	474	474	474	474
male	20-24	565	542	525	509	507	501	493	493	493	493	493	493	493	493	493	493	493	493
male	25-29	394	372	366	351	347	342	339	339	339	339	339	339	339	339	339	339	339	339
male	30-34	259	244	237	229	226	223	218	218	218	218	218	218	218	218	218	218	218	218
male	35-39	175	164	160	154	151	151	148	148	148	148	148	148	148	148	148	148	148	148
male	40-44	130	124	120	115	111	111	112	112	112	112	112	112	112	112	112	112	112	112
male	45-49	100	93	91	87	86	86	85	85	85	85	85	85	85	85	85	85	85	85
male	50-54	75	70	67	66	64	66	62	62	62	62	62	62	62	62	62	62	62	62
male	55-59	50	44	43	43	41	42	42	42	42	42	42	42	42	42	42	42	42	42
male	60-64	22	19	19	18	18	18	17	17	17	17	17	17	17	17	17	17	17	17
male	65-69	15	13	13	13	11	12	13	13	13	13	13	13	13	13	13	13	13	13
male	70-74	11	10	10	10	9	9	8	8	8	8	8	8	8	8	8	8	8	8

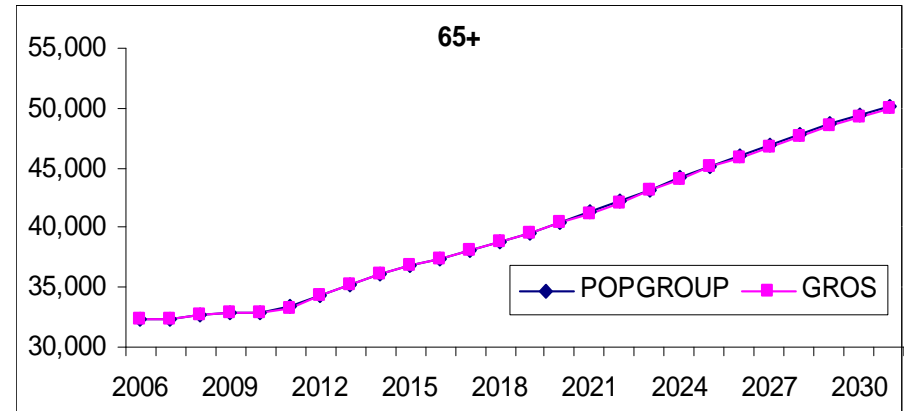
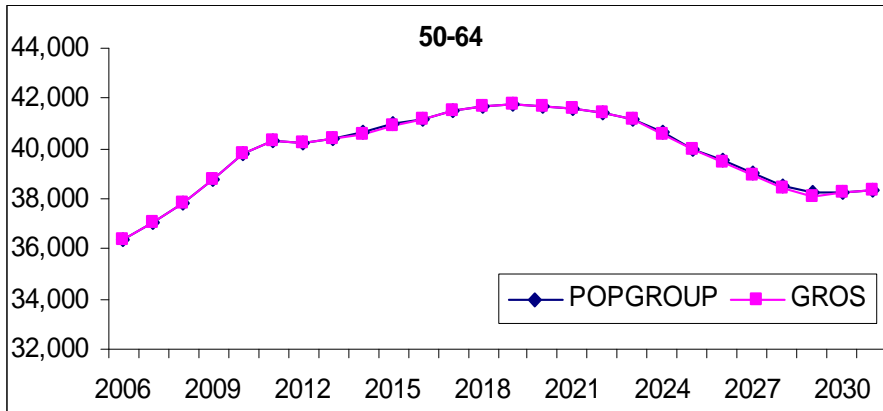
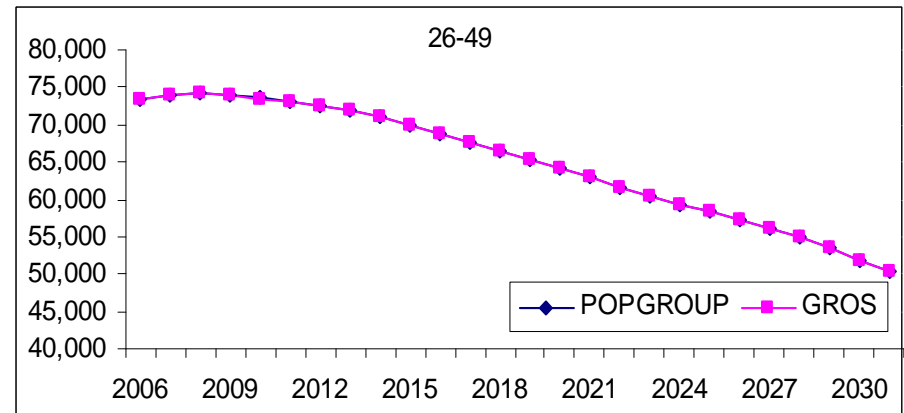
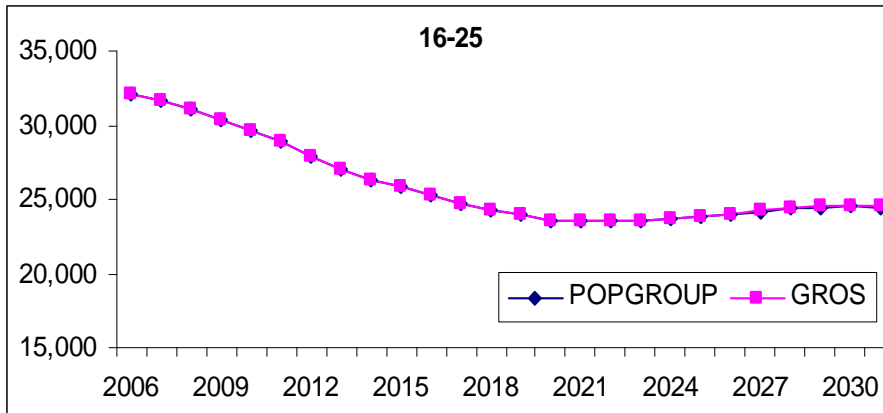
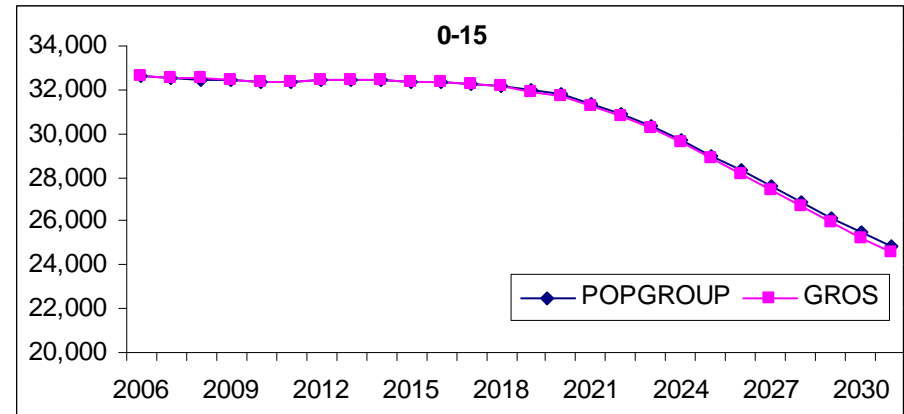
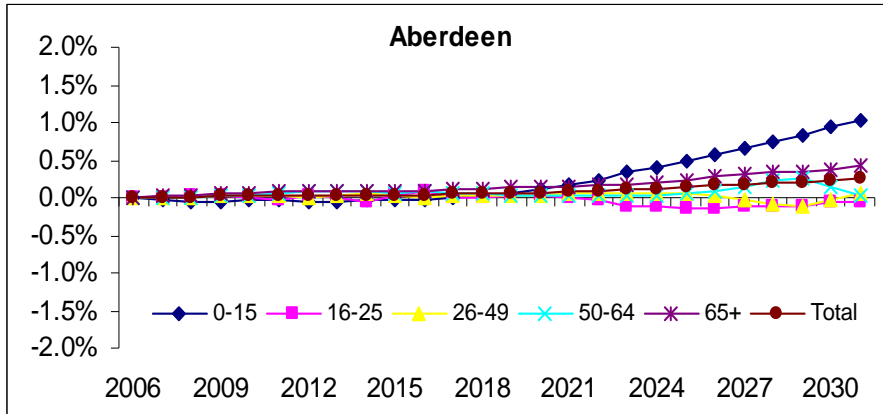
Presentation outline

- POPGROUP set up for regional projections
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Aberdeen total population



Selected age groups



Presentation outline

- POPGROUP set up for regional projections
- Results and interpretation
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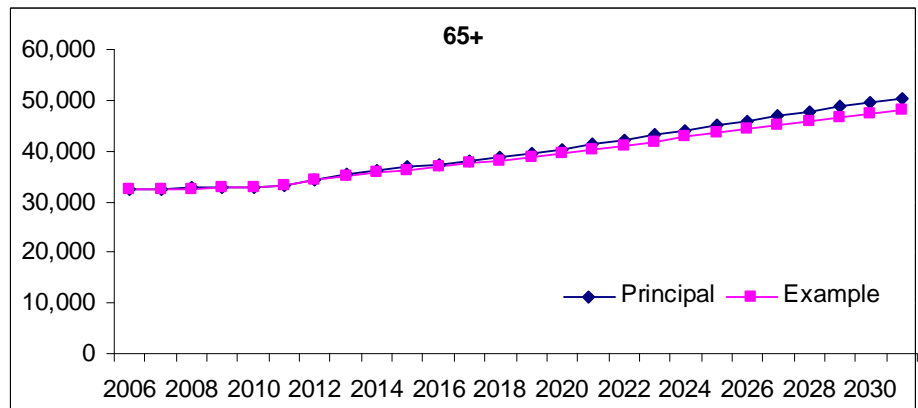
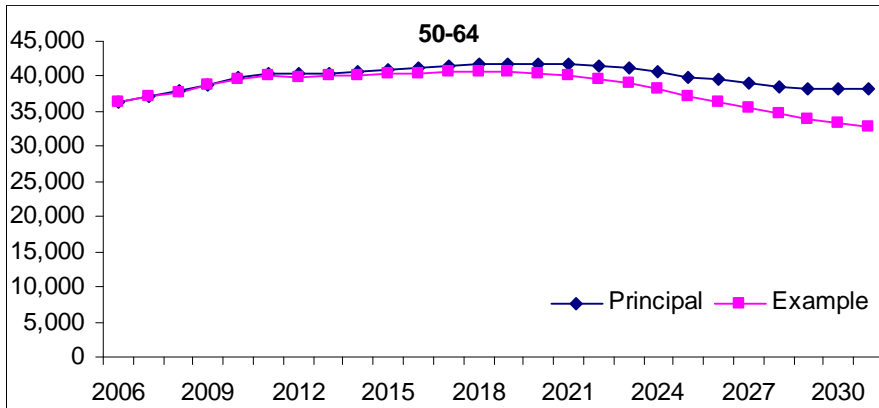
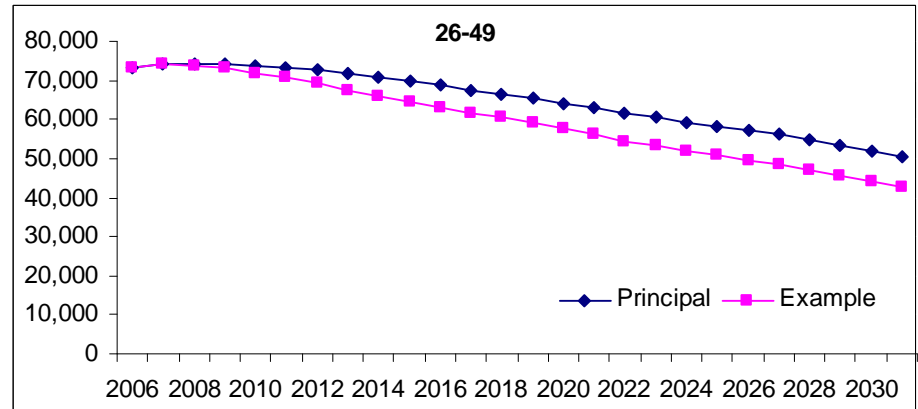
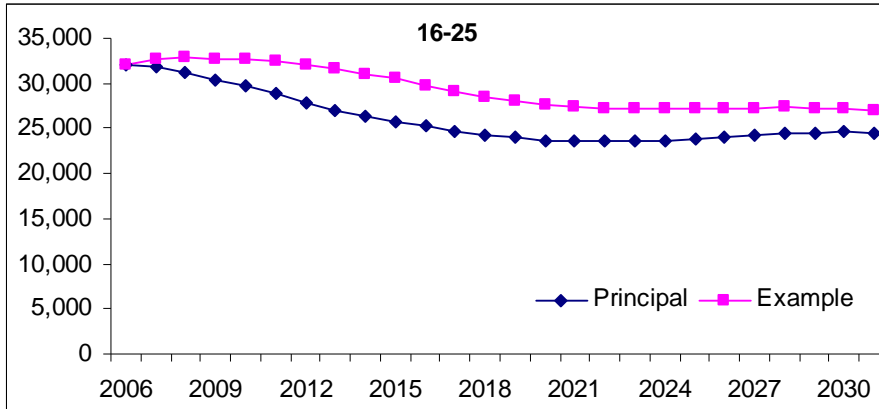
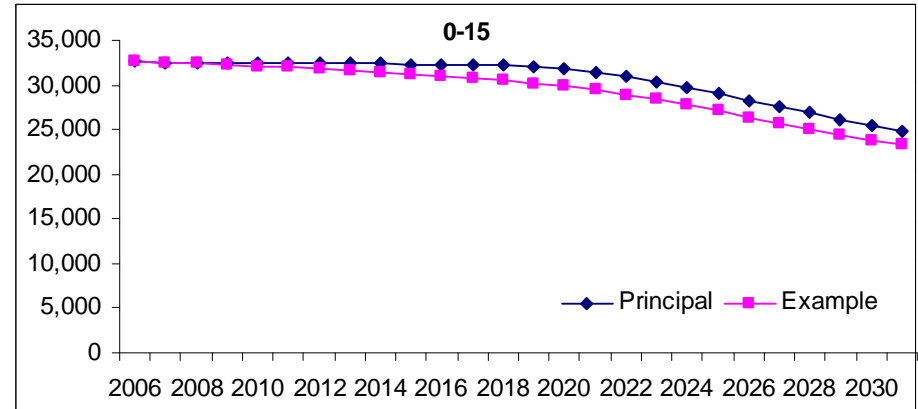
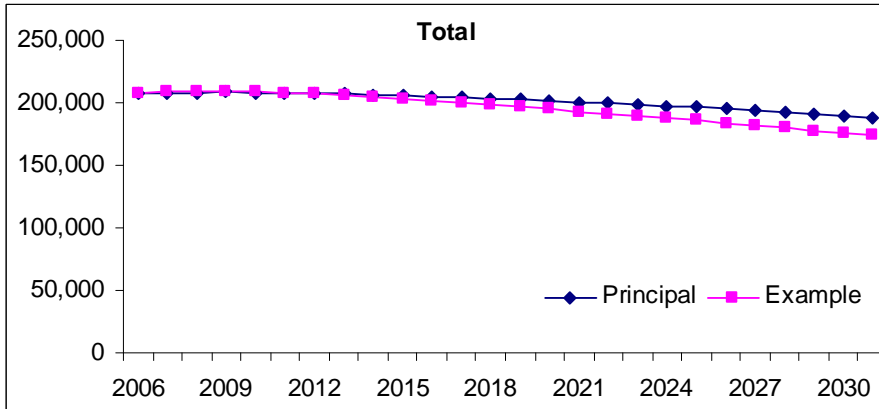
Changing assumptions

- Don't change standard schedule
- To change fertility/mortality assumptions
 - Change differentials
 - ✓ Scotland level
 - ✓ Regional level
- To change migration assumptions
 - Change number of in or out migrants

Example

- Double net migration
 - Increase in-migration
 - Decrease out-migration
 - Change both
- Determine important age groups
- Compare results

Example: results



Percentage difference with official projections

