

# **Socio-economic status in MaGiCAD patients**



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## Data available from the MaGiCAD questionnaire

### Marital status

- Single
- Married
- Separated / divorced
- Widowed
- Cohabiting

### Occupation

That which the patient deems to have been their main occupation during their working career. It is not necessarily that which they are currently employed. Nor is it relevant if they are retired.

The *industry* in which they worked should also be asked of the patient - please keep as succinct as possible e.g. retail, NHS. Housewives do not have an industry. Please enter only current information - so if a patient is recently widowed or divorced, do not enter the occupation of their ex-spouse.

### Spouse occupation

### Spouse industry

### Rooms in house

The number of rooms that a household has for its own use does not include small kitchens (under 6 feet wide), bathrooms or toilets but does include living rooms, kitchens and utility rooms (over 6 feet wide), bedrooms, conservatories and all other rooms. "Joint" rooms, such as a kitchen/diner are counted as one.

### Accommodation type

- Owned / mortgaged
  - Rented
  - Other
- Details of accommodation

If living in a council house, enter this as "rented".

### Cars

- None
- One
- Two
- Three or more

Is the total number of cars and vans the patient normally has available for use by them or other members of their household.

### Age finished education

Refers to continuous full-time education.

## **National Statistics Socioeconomic Classification (NS-SEC)**

Much of the information in this document is taken from the Office for National Statistics Socio-economic classification User Manual version 1.2 (June 2004).

### Introduction

Occupationally-based classification but has rules to provide coverage of the whole adult population.

Analytic version has eight classes, the first of which can be subdivided (Table 1).

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1	Higher managerial and professional occupations
1.1	Large employers and higher managerial occupations
1.2	Higher professional occupations
2	Lower managerial and professional occupations
3	Intermediate occupations
4	Small employers and own account workers
5	Lower supervisory and technical occupations
6	Semi-routine occupations
7	Routine occupations
8	Never worked and long-term unemployed

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Table 1. The NS-SEC analytic classes

For complete coverage, the three categories Students, Occupations not stated or inadequately described, and Not classifiable for other reasons are added as 'Not classified'.

A self-coded version of the NS-SEC useful for situations such as postal surveys is available.

In the past, two other SECs have been widely used:

Social class based on Occupation (SC; formerly Registrar General's Social Class)

Socio-economic Groups (SEG).

This NS-SEC replaces both of these.

### History

The NS-SEC has been developed from the 'Goldthorpe Schema', as it is conceptually clear, widely used and accepted and reasonably validated as a good predictor of health and educational outcomes.

### NS-SEC categories, sub-categories and classes

The NS-SEC may be derived in three ways (full, reduced and simplified), depending on the level of detail of employment status information available.

In addition to the eight analytic classes described above, there is a 13-part operational categorisation, with sub-categories (Table 2). This describes too much detail for a

standard clinical trial. A simple flow chart is available to help categorise people into categories, but is of little help as it only pulls out ‘non-standard’ people, such as the long-term unemployed.

Analytic classes	Operational categories and sub-categories		
1.1	L1	<b>Employers in large organisations</b>	
	L2	<b>Higher managerial occupations</b>	
1.2	L3	<b>Higher professional occupations</b> L3.1 ‘Traditional’ employees L3.2 ‘New’ employees L3.3 ‘Traditional’ self-employed L3.4 ‘New’ self-employed	
	2	L4	<b>Lower professional and higher technical occupations</b> L4.1 ‘Traditional’ employees L4.2 ‘New’ employees L4.3 ‘Traditional’ self-employed L4.4 ‘New’ self-employed
		L5	<b>Lower managerial occupations</b>
		L6	<b>Higher supervisory occupations</b>
		L7	<b>Intermediate occupations</b> L7.1 Intermediate clerical and administrative L7.2 Intermediate sales and service L7.3 Intermediate technical and auxiliary L7.4 Intermediate engineering
4	L8	<b>Employers in small organisations</b> L8.1 Employers in small organisations (non-professional) L8.2 Employers in small organisations (agriculture)	
	L9	<b>Own account workers</b> L9.1 Own account workers (non-professional) L9.2 Own account workers (agriculture)	
	5	L10	<b>Lower supervisory occupations</b>
L11		<b>Lower technical occupations</b> L11.1 Lower technical craft L11.2 Lower technical process operative	
6	L12	<b>Semi-routine occupations</b> L12.1 Semi-routine sales L12.2 Semi-routine service L12.3 Semi-routine technical L12.4 Semi-routine operative L12.5 Semi-routine agricultural L12.6 Semi-routine clerical L12.7 Semi-routine childcare	
	7	L13	<b>Routine occupations</b> L13.1 Routine sales and service L13.2 Routine production L13.3 Routine technical

		L13.4 Routine operative
		L13.5 Routine agricultural
<b>8</b>	<b>L14</b>	<b>Never worked and long-term unemployed</b>
		L14.1 Never worked
		L14.2 Long-term unemployed
*	<b>L15</b>	<b>Full-time students</b>
*	<b>L16</b>	<b>Occupations not stated or inadequately described</b>
*	<b>L17</b>	<b>Not classifiable for other reasons</b>

Table 2. NS-SEC Analytic classes, operational categories and sub-categories

Within the conceptual model is it possible to have eight, five and three class versions of NS-SEC (Table 3).

8 classes	5 classes	3 classes
1. Higher managerial and professional occupations 1.1 Large employers and higher managerial occupations 1.2 Higher professional occupations	1. Managerial and professional occupations	1. Managerial and professional occupations
2. Lower managerial and professional occupations		
3. Intermediate occupations	2. Intermediate occupations	2. Intermediate occupations
4. Small employers and own account workers	3. Small employers and own account workers	
5. Lower supervisory and technical occupations	4. Lower supervisory and technical occupations	3. Routine and manual occupations
6. Semi-routine occupations	5. Semi-routine and routine occupations	
7. Routine occupations		
8. Never worked and long-term unemployed	Never worked and long-term unemployed	Never worked and long-term unemployed

Table 3. Collapsing the NS-SEC into five and three-class versions.

The three class version may be assumed to involve some sort of hierarchy. However none of the other versions can be regarded as ordinal scales, not least because of the recognition of self-employment as a separate class. *It is not recommended* that users create an ordinal scale by combining the self-employed in Class 4 with the intermediate class 3. This is because the self-employed are distinctive in their life chances and behaviour.

Users should consider carefully whether to allocate the ‘never worked’ and ‘long-term unemployed’ to semi-routine/routine and manual occupations respectively or keep them separate. For example, users performing health analyses would need to be very careful about how the ‘long-term unemployed’ and the ‘never worked’ were defined since including the permanently sick would clearly not be sensible. They should be classified on the basis of last main job and the ‘long-term unemployed’ should include only those who are seeking or available for work. Of course, this may still leave some people who are permanently sick or disabled in the never worked category, hence this warning.

## How to derive the NS-SEC

To create the NS-SEC, data on occupation and employment status are required. An NS-SEC is allocated using a combination of

- information about occupation coded to occupational unit group (OUG) level of the Standard Occupational Classification 2000 (SOC2000); and
- information about employment status and size of organisation in the form of an employment status variable.

The majority of users are expected to use software to derive the NS-SEC. However, using the tables in the NS-SEC User Manual is an option. The NS-SEC is derived by cross-referencing the information on the occupation (OUG; see above) with employment status categories. The derived employment status variable is created by combining data on whether an individual is an employer, self-employed or an employee, size of organisation (where collected) and supervisory status. The definitions of these are given in the User Manual.

There are blank cells in the derivation tables which correspond to situations deemed not to arise, such as self-employed police officer.

There are three derivation methods used to derive the functional categories of the NS-SEC (L1 to L13). The choice of method depends on the information gathered about employment status (Table 4).

Method	Information required
Full	SOC2000 unit group, employment status, size of organisation
Reduced	SOC2000 unit group, employment status
Simplified	SOC2000 unit group

Table 4. Derivation methods of the NS-SEC

At the eight-class level the Reduced method correctly allocates 98.1% of cases compared to the Full method. The Simplified method correctly allocates 83.2% of cases compared to the Full method.

At the five-class level the Reduced method correctly allocates 99.9% of cases compared to the Full method. The Simplified method correctly allocates 85.0% of cases compared to the Full method.

At the three-class level the Reduced method correctly allocates 99.9% of cases compared to the Full method. The Simplified method correctly allocates 90.7% of cases compared to the Full method.

There are two series of questions that are needed in order to derive the NS-SEC: three on employment and five on employment status/size of organisation. Harmonised questions are provided in the User's Manual, which are designed to harmonise collection of data across interview surveys, and can be used to identify students and the long term unemployed.

A detailed method is given on how to derive the NS-SEC using each of the methods: full, reduced and simplified. Since we only have the information to use the simplified method, no further information will be given here on the full and reduced methods.

There are two steps to derive the NS-SEC by the simplified method:

- Code occupation to the Standard Occupational Classification 2000 four-digit unit group (OUG)
- With the SOC unit group code, use the Full or Reduced Derivation table to assign an operational category or an analytic class of the NS-SEC

SOC2000 was published in June 2000. An online resource from the Warwick Institute of Employment Research enables you to find the OUG from the occupation<sup>1</sup>. The four-digit OUG can then be used to assign an operational category or an analytic class using the NS-SEC User Manual. Filemaker will be set up to do this automatically, so the only manual part of the operation is to assign the OUG from the occupation using the Cascot software.

### Household level NS-SEC

Traditionally the unit of analysis or class composition has been the family/household rather than the individual. That is, the nuclear family is seen as the basic structural element because of the inter-dependence and shared conditions of family members. A family member's own position may have less relevance to his/her life chances than those of another family member. A practical solution to this problem has been to select one family or household member as a reference person and take that person's position to stand for the whole household.

Essentially, assigning an NS-SEC category to a household involves deciding which household member best defines that household's position. This person is termed the household reference person (HRP). In the past the reference person was defined as the Head of Household - the eldest householder, with males taking precedence over females in the case of couples or non-related joint householders. Because of the overt sexism involved in this definition, the definition has been and a change has been agreed. From 2001 a new definition of the Household Reference Person will be used: the person responsible for owning or renting or who is otherwise responsible for the accommodation. In the case of joint householders, the person with the highest income takes precedence and becomes the HRP. Where incomes are equal, the older is taken as the HRP. This procedure increases the likelihood both that a female will be the HRP and that the HRP better characterises the household's social position.

### Continuity issues: social class, socio-economic groups and NS-SEC

The operational categories of the NS-SEC can be aggregated to produce approximated Social Class based on Occupation and approximated Socioeconomic Group, as shown in the tables below. These approximations achieve a continuity level of 87 per cent for both Social Class and SEG.

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<sup>1</sup> <http://www2.warwick.ac.uk/fac/soc/ier/publications/software/cascot/>

<b>Social Class</b>		<b>NS-SEC Operational Categories</b>
I	Professional, etc. occupations	3.1, 3.3
II	Managerial and Technical occupations	1, 2, 3.2, 3.4, 4.1, 4.3, 5, 7.3, 8.1, 8.2, 9.2
IIIN	Skilled occupations – non-manual	4.2, 4.4, 6, 7.1, 7.2, 12.1, 12.6
IIIM	Skilled occupations – manual	7.4, 9.1, 10, 11.1, 12.3, 13.3
IV	Partly skilled occupations	11.2, 12.2, 12.4, 12.5, 12.7, 13.1, 13.2, 13.5
V	Unskilled occupations	13.4

Table 5. Operational Categories of the NS-SEC linked to Social Class

<b>Socio-economic group</b>		<b>NS-SEC Operational Categories</b>
1	Employers and managers in central and local government, industry, commerce, etc. - large establishments	
	1.1 Employers in industry, commerce, etc. - large establishments	1
	1.2 Managers in central and local government, industry, commerce, etc. - large establishments	2
2	Employers and managers in industry, commerce, etc. - small establishments	
	2.1 Employers in industry, commerce, etc. - small establishments	8.1
	2.2 Managers in industry, commerce, etc. - small establishments	5
3	Professional workers - self-employed	3.3
4	Professional workers - employees	3.1
5	Intermediate non-manual workers	
	5.1 Ancillary workers and artists	3.2, 3.4, 4.1, 4.3, 7.3
	5.2 Foremen and supervisors non - manual	6
6	Junior non-manual workers	4.2, 7.1, 7.2, 12.1, 12.6
7	Personal service workers	12.7, 13.1
8	Foremen and supervisors - manual	10
9	Skilled manual workers	7.4, 11.1, 12.3, 13.3
10	Semi-skilled manual workers	11.2, 12.2, 12.4, 13.2
11	Unskilled manual workers	13.4
12	Own account workers (other than professional)	4.4, 9.1
13	Farmers - employers and managers	8.2
14	Farmers - own account	9.2
15	Agricultural workers	12.5, 13.5
16	Members of armed forces	
17	Inadequately described and not stated occupations	16

Table 6. Operational categories of the NS-SEC linked to Socio-economic groups

<b>NS-SEC Operational Categories</b>		<b>Approx. Social class</b>	<b>Approx. SEG</b>
L1	Employers in large organisations	II	1.1
L2	Higher managerial	II	1.2
L3.1	Higher professionals (traditional) - employees	I	4
L3.2	Higher professionals (new) - employees	II	5.1
L3.3	Higher professionals (traditional) - self-employed	I	3
L3.4	Higher professionals (new) - self-employed	II	5.1
L4.1	Lower professionals and higher technical (traditional) - employees	II	5.1
L4.2	Lower professionals and higher technical (new) - employees	IIIN	6
L4.3	Lower professionals and higher technical (traditional) - self-employed	II	5.1
L4.4	Lower professionals and higher technical (new) - self-employed	IIIN	12
L5	Lower managerial	II	2.2
L6	Higher supervisory	IIIN	5.2
L7.1	Intermediate clerical and administrative	IIIN	6
L7.2	Intermediate sales and service	IIIN	6
L7.3	Intermediate technical and auxiliary	II	5.1
L7.4	Intermediate engineering	IIIM	9
L8.1	Employers in small organisations (non-professional)	II	2.1
L8.2	Employers in small organisations (agriculture)	II	13
L9.1	Own account workers (non-professional)	IIIM	12
L9.2	Own account workers (agriculture)	II	14
L10	Lower supervisory	IIIM	8
L11.1	Lower technical craft	IIIM	9
L11.2	Lower technical process operative	IV	10
L12.1	Semi-routine sales	IIIN	6
L12.2	Semi-routine service	IV	10
L12.3	Semi-routine technical	IIIM	9
L12.4	Semi-routine operative	IV	10
L12.5	Semi-routine agriculture	IV	15
L12.6	Semi-routine clerical	IIIN	6
L12.7	Semi-routine childcare	IV	7
L13.1	Routine sales and service	IV	7
L13.2	Routine production	IV	10
L13.3	Routine technical	IIIM	9
L13.4	Routine operative	V	11
L13.5	Routine agricultural	IV	15
L14.1	Never worked	-	
L14.2	Long-term unemployed	-	
L15	Full-time students	-	
L16	Occupations not stated or inadequately described	-	17
L17	Not classifiable for other reasons	-	-

Table 7. Social Class and Socio-economic Group linked to Operational Categories of the NS-SEC

### The NS-SEC Self-coded method

NS-SEC is derived from occupation and employment status information, occupation being ideally coded to the most detailed level of the Standard Occupational Classification 2000 (SOC2000). As there are 353 unit groups within SOC2000, occupational coding is time-consuming and costly. Therefore there is a demand for a simpler and less expensive self-completion version of NS-SEC.

The five-class version of self-coded NS-SEC has the following classes

Class	Label
1	Managerial and professional occupations
2	Intermediate occupations
3	Small employers and own account workers
4	Lower supervisory and technical occupations
5	Semi-routine and routine occupations

Table 8. The five-class version of the self-coded NS-SEC

These are identical to the classifications in the five-class version of the interviewer-coded NS-SEC.

In comparisons of the self-coded and interviewer-coded five-class NS-SEC there was agreement in classifying 75 per cent of cases. It is apparent that the self-coded five-class NS-SEC is not as accurate as its interviewer-coded counterpart. Some disagreement between the two classifications may arise from coder error. Despite this, validation exercises show that the self-coded and interviewer-coded five-class NS-SECs display similar patterns and strength in their relationships with other variables (e.g. with smoking).

Full details of the appropriate questions and derivation of the self-coded NS-SEC are given in the NS-SEC User's Manual.

## **Use of other MaGiCAD questionnaire data**

The use of alternative measures, such as education, size of house and car ownership are much less widely used than occupation as a measure of SES. Car ownership and size of house are questions that are used by the ONS in the Census, but they do not have the same power to discriminate as occupation and don't give the sort of gradient that is usually so apparent with occupation and education.

Of the three alternative measures, education is used more often than the other two measures. The most powerful way of using education level to assign SES is by grouping people according to their highest attained educational qualification (e.g. none, O levels, A levels, degree, advanced degree). However, in more elderly cohorts, age at leaving school can be more appropriate because very few study participants will have gone to University.

To the best of my knowledge there is no measure of SES that combines any of these variables. Catharine Gale and Christopher Martyn (MRC Environmental Epidemiology Unit, University of Southampton) sometimes take account of both occupational social class and education, as they can both independently predict outcome, despite being highly correlated.

## **Measures of SES to be used in MaGiCAD**

The NS-SEC introduces many different ways of classifying individuals by SES. These are summarised below:

1. Analytic classes (Table 1, p. 5 and Table 3, p. 7)
  - a. Eight class
  - b. Five class
  - c. Three class
2. Operational categories and sub-categories (Table 2, p. 7)
3. Social class (Table 5, p. 10)
4. Socio-economic groups (Table 6, p. 10)

Each of these has advantages and disadvantages. Only two of the classifications (the three class analytic method and social class) are ordinal in nature, which makes them much more useful for our research. All of the other classifications are nominal, and therefore no trend between groups will be meaningful.

The Filemaker database will therefore be set up to require entry of the SOC2000 OUG for each occupation (determined using the Warwick Institute web-site). The OUG will then be used to determine the operational category / sub-category of the NS-SEC, from which will be deduced the analytic class (three-level) and the social class.