

DRAFT

WHO TO TRAIN?

THE OCCUPATIONS DATA GAP IN LMI IN INDIA

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SUMMARY

The National Policy for Skill Development and Entrepreneurship 2015 envisages a national Labour Market Information System (LMIS) which answers the questions why, who and when to train? A National Skills Research Institute (NSRI)¹ will be set up at the national level to provide the answers to these questions. While the NSRI will be a necessary addition to the research landscape, alone, it is unlikely to resolve the issue of the missing data in the Indian labour market information system.

Up till now the skills forecasting element in the Indian labour market has been provided by sectoral studies but these studies did not quantify the numbers required for any skills shortage. This is primarily due to the lack of data on the numbers in occupations in India.

NSDA has already proscribed the coding system required to record the necessary data but the issue of implementing it in practice remains.

The Ministry of Statistics and Programme Implementation (MOSPI) and its subordinate the Central Statistical Office (CSO) are the two main bodies with the responsibility and the capacity to collect the missing data and provide the framework for picking representative samples to make detailed studies of the skills required.

The help and cooperation of MOSPI and the CSO are necessary to assist the NSRI in its tasks so that the LMIS will be able to answer the questions why, who and when to train and the National Qualifications Framework can complete the process by answering the questions how and what to train people in?

¹ The National Skills Research Institute (NSRI) also referred to as the National Skill and Entrepreneurship Research Institute, National Policy for Skill Development and Entrepreneurship 2015, page 32

BACKGROUND

The National Policy for Skill Development and Entrepreneurship 2015 envisages a national Labour Market Information System (LMIS) which contains data on;

- 1) supply side skilled labour force statistics
- 2) demand of skilled /unskilled labour
- 3) market trends like wage structures and distribution, economic growth trends across sectors, focus areas for skilled manpower, occupational shortages etc.²

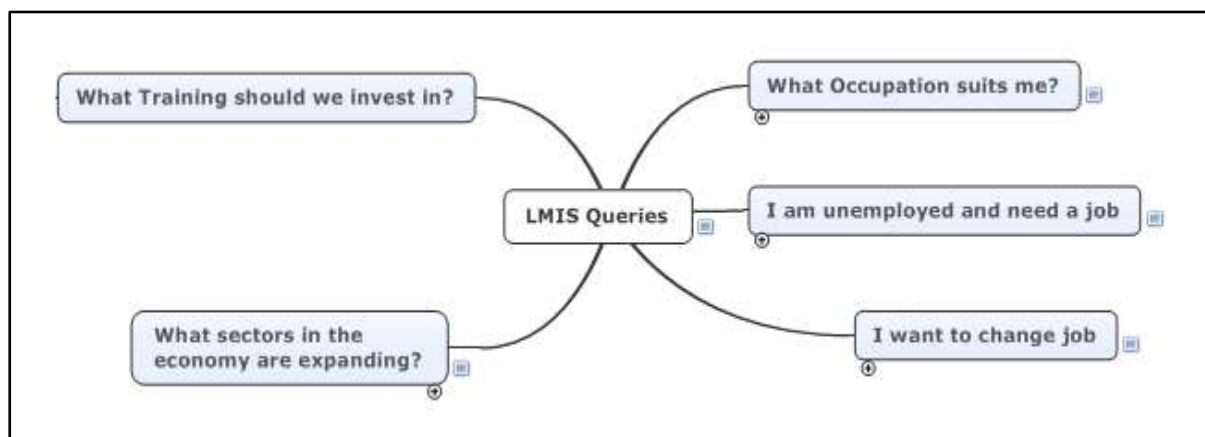
“A responsive and agile central LMIS will be created for aggregating demand and supply of skills to help align efforts towards bridging the existing and expected skill gaps. The LMIS will be responsible for a reliable and realistic assessment of economic trends and labour market needs (both existing and projected) that will be publicly available to reduce information asymmetry.”³

The LMIS will be the instrument to answer the questions why, who and when to train? However to achieve this goal with some statistical confidence there is an information gap which must be filled.

THE NEED

The need for such data on trends and needs becomes obvious once one considers the demands on any system which seeks to inform and guide those looking for work or careers at the individual level or to guide investment in skill development at sector, state and national level.

Figure 1 LMIS Queries



If India is to develop a LMIS to provide “a realistic assessment of economic trends and labour market needs” it needs to collect data on occupations by industry. Essentially there is a requirement for a table like Figure 2 which quantifies the number of people with each occupation in each industry.

² National Policy for Skill Development and Entrepreneurship 2015, Para 4.4.3

³ National Policy for Skill Development and Entrepreneurship 2015, Para 4.8.3

Figure 2 Occupations by Industry by (Nation, State, Sector, Region etc.)⁴

Industry \ Occupation	Industry 1	Industry 2	Industry 3	Industry n
Occupation 1	Nos.	Nos.	Nos.	Nos.
Occupation 2	Nos.	Nos.	Nos.	Nos.
Occupation 3	Nos.	Nos.	Nos.	Nos.
Occupation 4	Nos.	Nos.	Nos.	Nos.
Occupation n	Nos.	Nos.	Nos.	Nos.

All techniques (statistical or otherwise) require a basic cross tabulation which is illustrated by the above Figure if one wants to make quantitative assessments of skill requirements for a sector, a state or the economy. Compiling such a table requires that all labour related censuses and surveys include a question such as “What is your occupation?” and if employed “What industry do you work in?” Ideally the longer the time series one has for this type of data the more valuable is the information for producing forecasts or projections of skill needs.⁵

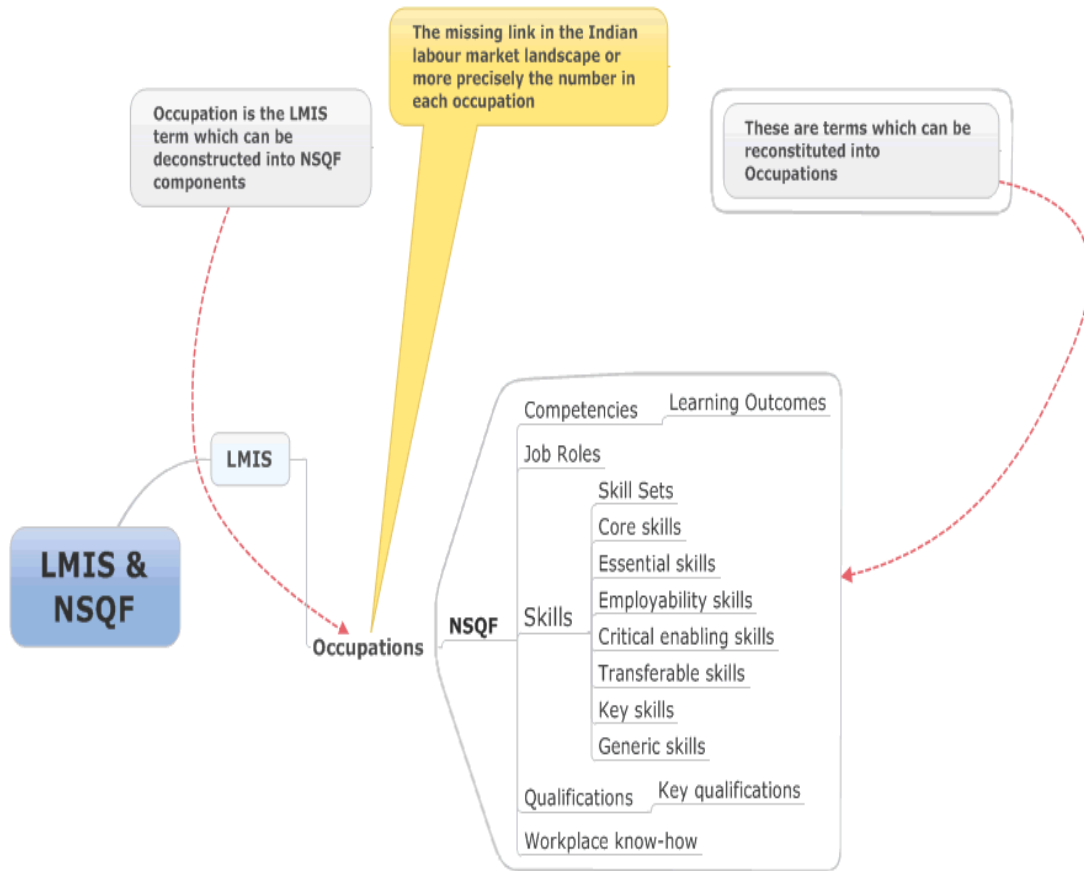
LINK BETWEEN LMIS AND NSQF

The term occupation also has an important role in the link between LMIS and the National Skills Qualification Framework (NSQF). The NSQF is essentially a quality assurance framework which describes the content, the quality, the competences needed to perform various skills which are combined and reconstituted into occupations. However the NSQF cannot inform us how many people are needed with these skills and why they should be trained (i.e. the demand).

⁴ By industry we mean all industries classified in the National Industrial Classification and by occupation we mean occupations classified in the National Classification of Occupations.

⁵ http://www.bls.gov/emp/ep_table_109.htm

Figure 3 The link between LMIS and NSQF



SKILLS FORECASTING IN OTHER COUNTRIES

Figure 4 shows the number of Occupations and Industries used in making projections in various countries. Although the number of occupations and industries used in projections vary from country to country all countries with developed LMI require this information.

Figure 4 Countries by Occupation/Industry by Forecasting Method

OECD Country	Occupation by Industry	Method
Canada	512*62	Project Trend/adj Occupational Coefficients
France	18*40	Project Trend/adj Occupational Coefficients
Germany	34*38	Project Trend and RAS Method
Netherlands	82*24	Regression
UK	22*49	Project Trend/adj Occupational Coefficients
USA	500*250	Project Trend/adj Occupational Coefficients ⁶

The classification of occupations should follow the accepted National Classification of Occupations. The Directorate General of Employment & Training (DGE&T) now transferred to the Ministry of Skills Development and Entrepreneurship from the Ministry of Labour is the repository of the National Classification of Occupations in India. This coding system provides the necessary breakdown of occupations for censuses and surveys. However this classification code is not used. Figure 5 shows the results for various agencies collecting data.

Figure 5 Institutions and Data Issues⁷

No	Institutions*	Information/data	Specific Data	Issues
1	Central Statistical Organisation	Economic Census	Employment in agriculture and non-agriculture on the basis of major activity	Does not follow National Classification of Occupations
2	Central Statistical Organisation	Annual Survey of Industries	Existing employment in heavy industries	Does not follow National Classification of Occupations
3	Employment Exchanges	In-house information system	Existing demand of the labour force	Data is not collated
4	Sector Skills Councils	Skills Gap Studies	Projected demand of labour for various sector	All SGS do not follow the same methodology

⁶ Hughes, Gerald, Projecting the Occupational Structure of Employment in OECD Countries, OECD Paris 1993

⁷ Towards a More Effective Labour Market Information System in India Manipal City & Guilds May 2013, ILO DWT for South Asia & Country Office for India

No	Institutions*	Information/data	Specific Data	Issues
5	Ministry of Micro Small and Medium Enterprises	MSME Census	Existing and likely employment in micro, small and medium enterprise	Does not follow National Classification of Occupations
6	National Skills Development Corporation	Skills Gap Studies	Projected demand of labour force in the sector	All SGS do not follow the same methodology
7	Central Statistical Organisation	National Sample Survey	Labour force participation; employment and unemployment	Detailed data is not collected on the type of occupation of the labour force
8	Ministry of Home Affairs	Population Census	Main Workers, Marginal Workers	Does not follow National Classification of Occupations

WHAT IS AVAILABLE

Up till now the skills forecasting element in the Indian labour market has been provided by the sectoral studies commissioned by the NSDC⁸. These studies offered assessments of the skill needs in various sectors. However due to a gap in labour market information in India they were unable to quantify the skill requirements in terms of occupations. While the studies sometimes identify occupations the numbers required are not quantified. For example if the requirement is for production managers the study does not indicate how many.⁹

Information is available in India on Skilled, Semi-Skilled and Unskilled or Main and Marginal workers but these categories are too broad to make any useful projections regarding skill needs or investment in training. Similarly breakdowns such as the number employed in Primary, Secondary or Tertiary sectors are also at too general a level to be useful because they do not convey any meaning on the occupations or skill involved.

CLASSIFICATION SYSTEM TO BE USED BY NSDA

New proposals emerged from the LMIS Steering Committee subgroup, tasked by the NSDA to suggest new standardized codes, propose to cross tabulate National Industrial Classification (NIC) & National Classification of Occupations (NCO) Codes. The subgroup proposed three initial codes from NIC and remainder from NOC.

⁸ See Appendix 1

⁹ There is also no indication of the methodology used to do these assessments. It is unlikely that the forecasts for occupations are produced by statistical methods because the traditional surveys and censuses in India do not ask respondents to indicate their occupation so the data needed to make quantifiable forecasts by occupation do not exist.

A matrix approach is to be adopted where NCO codes are taken as rows and NIC codes as column for every Job Role (Occupation). To confirm that the approach works without having fatal flaws, two selected SSCs mapped their Job roles: I-ITes & Construction.

An example of the *NIC* system of classification is as follows:

1. Section: C. Manufacturing
2. Division: 29 Manufacture of motor vehicles, trailers and semi-trailers
3. Group: 291 Manufacture of motor vehicles
4. Class: 2910 Manufacture of motor vehicles
5. Sub-class: 29101 Manufacture of passenger cars

There are 21 sections and 99 divisions which are further divided into groups, subgroups, classes and sub-classes. Only the first three codes (i.e. 291) are to be used to identify the industry.

Figure 6 NSDA Coding for Occupations by Industry

Industry Occupation	NIC xxx	NIC xxx	NIC xxx	NIC xxx	NIC xxx
NOC Code	No.	No.	No.	No.	No.
NOC Code	No.	No.	No.	No.	No.
NOC Code	No.	No.	No.	No.	No.
NOC Code	No.	No.	No.	No.	No.
NOC Code	No.	No.	No.	No.	No.
NOC Code	No.	No.	No.	No.	No.
NOC Code	No.	No.	No.	No.	No.
NOC Code	No.	No.	No.	No.	No.
NOC Code	No.	No.	No.	No.	No.
NOC Code	No.	No.	No.	No.	No.

NATIONAL SKILLS RESEARCH INSTITUTE (NSRI)

A National Skills Research Institute (NSRI)¹⁰ will be set up at the national level in the skilling landscape. The role of the institute will be to conduct Annual Skill Surveys including aggregation of the environmental scans done by the SSCs, demand and supply, study emerging demand trends.

While the NSRI will be a necessary addition to the research landscape, alone, it is unlikely to resolve the issue of the missing data. Conducting skill surveys and aggregating scans of demand and supply presume that the

¹⁰ The National Skills Research Institute (NSRI) has been changed to National Skill and Entrepreneurship Research Institute on page 32

population and sample on which these studies are based are representative of the populations in the sectors they propose to describe. Without national, state or sector data which comprehensively describes the numbers in each occupation aggregating or projecting from smaller studies will be flawed because one will not know how representative these results are of the total sector, state or at the national level.

The Ministry of Statistics and Programme Implementation (MOSPI) and its subordinate the Central Statistical Office (CSO) are the two main bodies responsible for data collection regarding employment. These have the responsibility and the capacity to collect the missing data and provide the framework for picking representative samples. It has already been agreed that they will collect data for the Unorganised Sector although the format for the data is unclear. "Efforts will be made to include the details of skill training and skilled manpower working in the unorganized and MSME sectors through the periodic Sample surveys of the National Sample Survey Office (NSSO)".¹¹

To ask the NSRI to provide this data would be to duplicate responsibility and resources. There is an option to allow the NSRI to influence the choice of questions and gain immediate access to the results by giving at least some of the staff an honorary membership of the CSO or MOSPI. This would oblige these staff to adhere to the same levels of confidentiality as the statisticians in MOSPI while benefitting from access to the data in the selection of samples for sectoral and other studies.

LABOUR MARKET MODELS

Figures 7 and 8 outline generic models for identifying labour market demand and supply and illustrate the steps involved. The models also indicate the role of Occupational Classification in the estimation of the demand and supply of labour. Although other data gaps will emerge as the requirements of the LMIS system evolves the lack of occupational data is currently the most urgent gap to be filled to answer the questions of what skills does India need and who should Indian train?

¹¹ National Policy for Skill Development and Entrepreneurship 2015, Para 4.7.3

Figure 7 Labour Demand Model

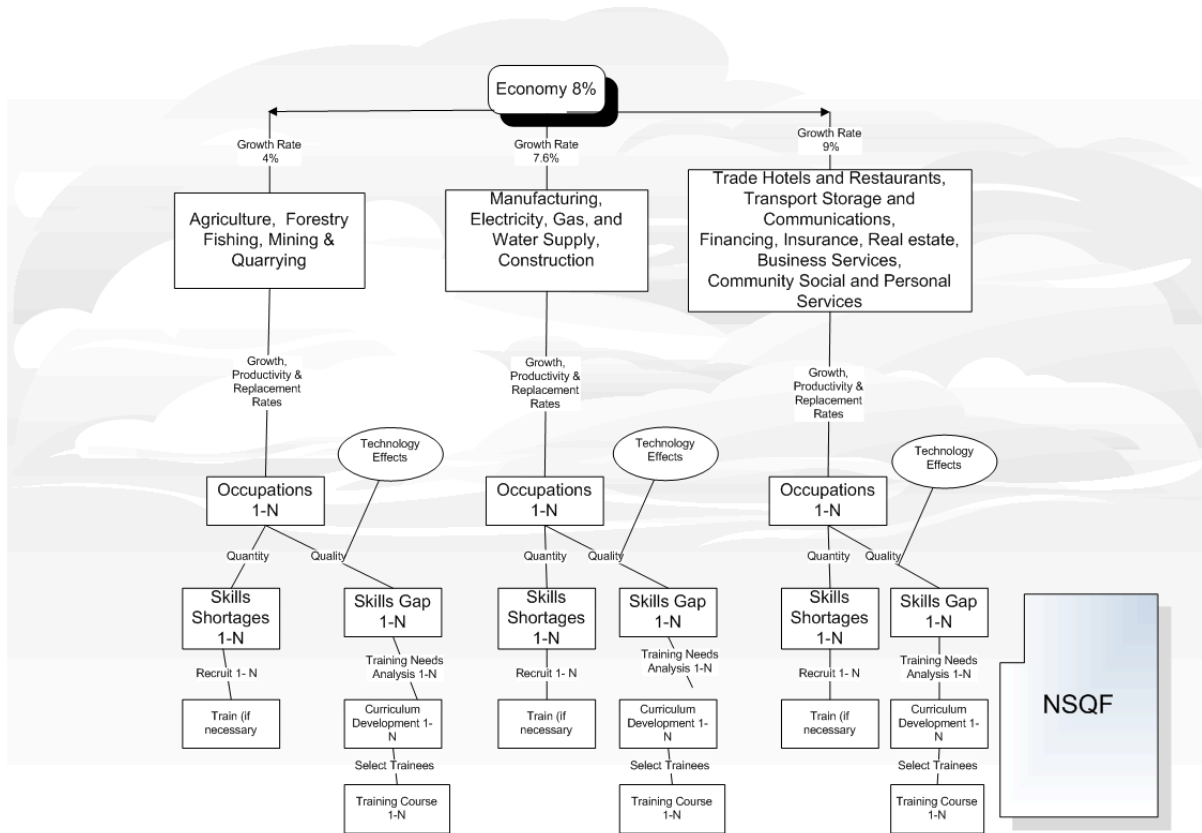
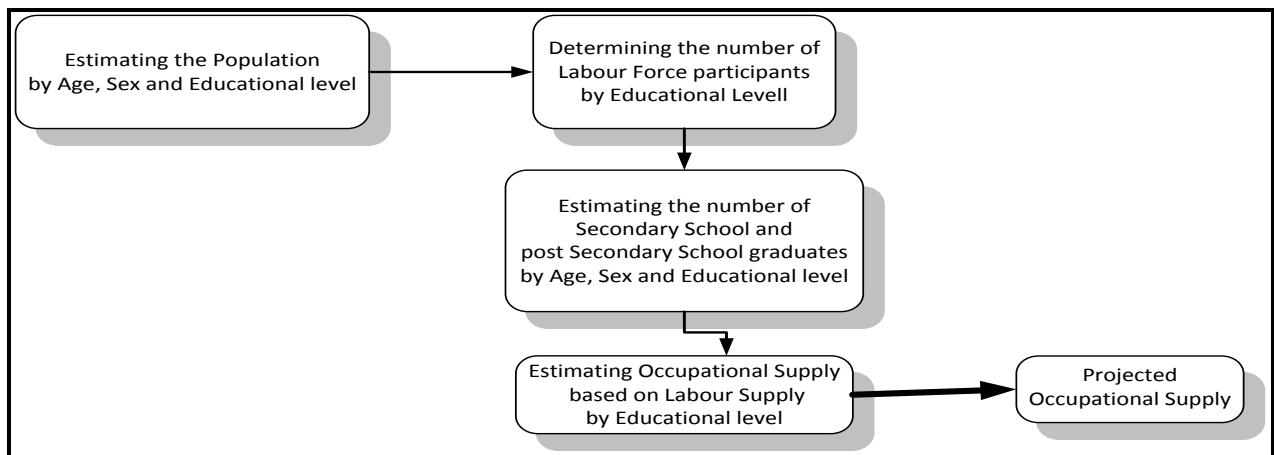


Figure 8 Labour Supply Model¹²



¹² El Achkar, Souleima, A Companion Guide to Analyzing and Projecting Occupational Trends, CSLS Research Report 2010-07, August 2010, Centre for The Study of Living Standards.

CONCLUSIONS & RECOMMENDATIONS

The absence of data on occupations (the numbers of people in each occupation) by industry is a major obstacle to determining skill needs and who to train and what training to invest in. All countries with developed LMIS can provide such data. The recommendations of the subgroup of the Steering Committee on LMIS proposes the necessary coding which needs to be implemented across all censuses and survey related to the labour market. The NRSI has been given the responsibility for conducting Annual Skill Surveys including aggregation of the environmental scans done by the Sector Skill Councils (SSCs), but in the absence of a proper statistical framework based on the population of occupations by industry the capacity of the NRSI to generalise from surveys and studies is greatly reduced. The Ministry of Statistics and Programme Implementation (MOSPI) and its subordinate the Central Statistical Office (CSO) have the responsibility and the capacity to collect the missing data and provide the framework for picking representative samples. Their support and cooperation is vital in the development of the LMIS.

In terms of the India EU Skills Development project it means that while the National Skills Development Framework answers the questions, how to train and what to train in, the LMIS will be the instrument to answer the questions why, who and when to train? However to achieve these goals there is an information gap which must be filled.

APPENDICES

NSDC REPORTS

Figure 9 NSDC Reports

Skill Requirements in Agriculture	http://www.nsdcindia.org/sites/default/files/files/Agriculture.pdf
Skill Requirements in Automobile and Auto-Components	http://www.nsdcindia.org/sites/default/files/files/Auto-and-Auto-Components.pdf
Skill Requirements in Banking, Financial Services and Insurance	http://www.nsdcindia.org/sites/default/files/files/Banking-Financial-Services-Insurance.pdf
Skill Requirements in Beauty and Wellness	http://www.nsdcindia.org/sites/default/files/files/Beauty-Wellness.pdf
Skill Requirements in Building Construction and Real Estate	http://www.nsdcindia.org/sites/default/files/files/Building-Construction-Real-Estate.pdf
Skill Requirements in Construction Material Building Hardware sector	http://www.nsdcindia.org/sites/default/files/files/Construction-Material-Building-Hardware.pdf
Skill Requirements in Domestic Help sector	http://www.nsdcindia.org/sites/default/files/files/Domestic-Help.pdf
Skill Requirements in Education and Skill-Development sectors	http://www.nsdcindia.org/sites/default/files/files/Education-Skill-Development.pdf
Skill Requirements in Electronics IT hardware	http://www.nsdcindia.org/sites/default/files/files/Electronics-IT-hardware.pdf
Skill Requirements in Food Processing	http://www.nsdcindia.org/sites/default/files/files/Food-Processing.pdf
Skill Requirements in Furniture and Furnishing	http://www.nsdcindia.org/sites/default/files/files/Furniture-Furnishing.pdf
Skill Requirements in Gems and Jewellery	http://www.nsdcindia.org/sites/default/files/files/Gems-Jewellery.pdf
Skill Requirements in Handlooms and Handicrafts	http://www.nsdcindia.org/sites/default/files/files/Handlooms-Handicrafts.pdf
Skill Requirements in Healthcare	http://www.nsdcindia.org/sites/default/files/files/Healthcare.pdf
Skill Requirements in IT and ITeS	http://www.nsdcindia.org/sites/default/files/files/IT-and-ITeS.pdf
Skill Requirements in Leather & Leather goods industry	http://www.nsdcindia.org/sites/default/files/files/Leather-and-Leather-Goods.pdf

Skill Requirements in Media Entertainment	http://www.nsdindia.org/sites/default/files/files/Media-Entertainment.pdf
Skill Requirements in Pharmaceuticals	http://www.nsdindia.org/sites/default/files/files/Pharmaceuticals.pdf
Skill Requirements in Private Security Services	http://www.nsdindia.org/sites/default/files/files/Private-Security-Services.pdf
Skill Requirements in Retail (Organised)	http://www.nsdindia.org/sites/default/files/files/Retail.pdf
Skill Requirements in Telecommunications	http://www.nsdindia.org/sites/default/files/files/Telecommunications.pdf
Skill Requirements in Textile-and-Clothing	http://www.nsdindia.org/sites/default/files/files/Textile-and-Clothing.pdf
Skill Requirements in Transportation Logistics Warehousing and Packaging	http://www.nsdindia.org/sites/default/files/files/Transportation-Logistics-Warehousing-and-Packaging.pdf
Skill Requirements in Travel Tourism and Hospitality	http://www.nsdindia.org/sites/default/files/files/Travel-Tourism-and-Hospitality.pdf

EMPLOYMENT PROJECTIONS PROGRAM, U.S. DEPARTMENT OF LABOR SAMPLE

Figure 10 Employment Projections program, U.S. Department of Labor, U.S. Bureau of Labor Statistics

Occupation		2012			2022			Percent change	Employment change
Code	Title	Employment	Percent of industry	Percent of occupation	Employment	Percent of industry	Percent of occupation		
00-0000	Total, all occupations	800.5	100.0	0.6	921.7	100.0	0.6	15.1	121.2
11-0000	Management occupations	49.0	6.1	0.6	56.5	6.1	0.6	15.1	7.4
11-1000	Top executives	20.2	2.5	0.9	23.2	2.5	0.9	15.2	3.1
11-1011	Chief executives	1.8	0.2	0.5	2.0	0.2	0.6	10.3	0.2
11-1021	General and operations managers	18.4	2.3	0.9	21.3	2.3	1.0	15.7	2.9
11-2000	Advertising, marketing, promotions, public relations, and sales managers	2.5	0.3	0.4	3.0	0.3	0.4	16.7	0.4
11-2020	Marketing and sales managers	2.3	0.3	0.4	2.7	0.3	0.5	16.8	0.4
11-2021	Marketing managers	0.8	0.1	0.4	0.9	0.1	0.4	16.3	0.1
11-2022	Sales managers	1.6	0.2	0.4	1.9	0.2	0.5	17.1	0.3
11-	Public relations and fundraising man-	0.2	0.0	0.3	0.2	0.0	0.3	15.5	0.0

2031	agers								
11-3000	Operations specialties managers	11.1	1.4	0.7	12.7	1.4	0.7	14.1	1.6
11-3011	Administrative services managers	1.3	0.2	0.5	1.5	0.2	0.5	15.4	0.2
11-3021	Computer and information systems managers	0.7	0.1	0.2	0.8	0.1	0.2	15.4	0.1
11-3031	Financial managers	3.5	0.4	0.7	4.0	0.4	0.7	15.2	0.5
11-3051	Industrial production managers	3.3	0.4	1.9	3.7	0.4	2.2	12.2	0.4
11-3061	Purchasing managers	0.8	0.1	1.0	0.9	0.1	1.2	13.7	0.1
11-3071	Transportation, storage, and distribution managers	0.6	0.1	0.6	0.7	0.1	0.6	14.2	0.1
11-3111	Compensation and benefits managers	0.1	0.0	0.4	0.1	0.0	0.5	11.2	0.0
11-3121	Human resources managers	0.8	0.1	0.8	0.9	0.1	0.8	14.4	0.1
11-3131	Training and development managers	0.1	0.0	0.3	0.1	0.0	0.3	14.8	0.0
11-9000	Other management occupations	15.2	1.9	0.4	17.5	1.9	0.4	15.5	2.4
11-9021	Construction managers	2.0	0.2	0.4	2.3	0.3	0.4	18.0	0.4
11-9041	Architectural and engineering managers	8.8	1.1	4.6	10.2	1.1	4.9	15.4	1.4
11-9121	Natural sciences managers	0.3	0.0	0.6	0.3	0.0	0.6	13.9	0.0

Ireland Occupations by Economic Sector (%)

A: Agriculture, forestry and fishing H: transportation and storage B: mining and quarrying C: manufacturing D: electricity, gas, steam and air conditioning supply

Figure 11 Ireland Occupations by Economic Sector (%)

Occupation/sector	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	Total	
IT Business analysts & systems designers			12%							38%	16%		12%		8%								100%
Programmers & software developers			16%							59%	12%												100%
Web designers & developers			6%				9%			53%	9%		9%					5%					100%
ICT professionals n.e.c.			16%							61%	12%												100%
Medical practitioners																	95%						100%
Pharmacists			8%				85%										6%						100%
Physiotherapists																	100%						100%
Occupational & other therapy professionals																	92%						100%
Nurses & midwives																	98%						100%
Other health professionals n.e.c.													8%		9%		76%						100%
Higher & further education teaching profs.																99%							100%
Secondary teachers																99%							100%
Primary & nursery teachers																97%							100%
Teaching & other educational professionals																79%	9%						100%
Barristers, judges, solicitors & related professionals											5%		77%		8%								100%
Accountants & tax experts			9%								19%		66%										100%
Mgt. consultants, business analysts & project managers			7%							23%	25%		26%										100%
Actuaries, economists & statisticians; other business professionals			6%								23%		14%			20%		25%					100%
Architects & town planners			6%										70%		16%								100%
Architectural technologists, construction project managers & surveyors			10%								5%	7%	61%										100%
Social workers & welfare professionals															6%		63%		29%				100%
Media professionals							8%			49%			14%						16%				100%
Laboratory technicians			49%										18%		7%	10%	9%						100%
Electrical, electronic & engineering technicians			41%				9%			14%			11%		7%	5%							100%

SKILL SHORTAGES IRELAND SAMPLE

Figure 12 Skill Shortages Ireland Sample

Occupation	Number Employed, 2014 (Annual Average - '000s)	% Female	% Part-Time	Unemployment Rate (%)	% Aged 55 years and over	% Non-Irish Nationals	% Third Level Graduates	Annualised Employment Growth Rate, 2009-2014 (%)	New Employment Permits Issued, 2014 (Number)	SIMRU Recruitment Agency Survey	Projected Medium Term Growth Rate (%)	Replacement Rate (%)	Turnover Rate (%)	Shortage Indicator
Horticultural, agricultural & fishing trades n.e.c.	16.1	7.8%	33.8%	A.A.	26.9%	14.8%	26.0%	2.3%	1		B.A.	8.4%	12.2%	No shortage
Metallforming, welding & related trades	10.0	0.0%	5.7%		11.7%	17.4%	11.9%	-0.9%	1	X	A.A.	9.8%	13.7%	Skills shortage
Metallmachining, fitting & instrument making trades	27.3	4.0%	8.3%	B.A.	20.1%	6.9%	32.6%	0.3%	11		A.A.	5.2%	5.1%	Skills shortage
Vehicle trades	21.1	0.8%	8.8%	B.A.	15.7%	12.2%	13.8%	0.9%	0	X	B.A.	6.2%	6.0%	No shortage
Electrical & electronic trades, etc.	33.9	4.5%	3.3%	B.A.	12.6%	11.9%	44.7%	-6.2%	82		A.A.	3.9%	10.3%	No shortage
Bricklayers	3.8	1.0%	27.2%	A.A.	12.9%	10.3%	9.3%	-9.9%	0		B.A.	11.8%	25.3%	No shortage
Plumbers	7.7	2.7%	10.8%		15.0%	6.8%	15.6%	-7.4%	0		A.A.	3.7%	20.7%	No shortage
Carpenters & joiners	16.2	0.0%	12.5%	A.A.	13.3%	16.1%	9.5%	-10.3%	0		A.A.	8.0%	19.2%	No shortage
Plasterers	3.8	0.0%	22.2%	A.A.	15.9%	9.1%	9.1%	-6.7%	0		A.A.	3.2%	7.2%	No shortage
Painters & decorators	6.2	2.6%	14.8%	A.A.	10.1%	24.2%	9.3%	-5.5%	0		A.A.	9.2%	12.6%	No shortage
Other construction trades	20.3	1.7%	10.1%	A.A.	18.7%	12.3%	15.9%	-8.8%	0	X	A.A.	8.3%	12.8%	Skills shortage
Printing trades	3.4	2.8%	2.7%		8.4%	16.4%	27.6%	-6.8%	0		B.A.	5.5%	0.0%	No shortage

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