Women in Spatial SSSI Report 2012

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SUMMARY

It is surprising to see in Australia the lack of female representation in the spatial industry. This observation was supported when the Spatial Sciences Institute in Australia (SSI) and New Zealand ran a survey in 2006 to investigate this issue. The Women in Spatial (WIS) initiative was formed by the SSI after the survey was analysed and reported in 2007.
WIS has been active across Australia and New Zealand since its inception but we needed to know if the initiative has had any influence on the numbers of women and their working conditions in the industry. Also since the SSI became the SSSI adding the surveying community to the institute we need to determine what if any changes had occurred.
To try to identify any changes a further survey was conducted in 2011.
Issues such as age profile, wage trends and interrupted careers were covered by both surveys.
This paper describes the outcomes of this follow-up survey conducted by the SSSI WIS subcommittee to consolidate the 2006 findings.
The survey was open to women throughout Australia and New Zealand during September 2011. Participation was invited to members and non-members of the SSSI with an encouraging increased number of responses received.
The paper compares the findings from this recent survey with the findings from the survey conducted in 2006 and discusses the issues which are still facing women in the spatial industry in Australia and New Zealand.

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1. Introduction

Over the last year and a half I have attended multiple spatial conferences in my position as chair of the Victorian region of the Surveying and Spatial sciences Institute (SSSI). At a conference in November of 2010 I was surprised to see a panel of experts in the final session of the conference made up completely of older males.

At the recent conference in Wellington NZ we the delegates were confronted yet again by a closing panel made up of five men. It was surprising, as we know we have many experts amongst the female members of our institute and many of our well respected colleagues were seated in the audience that day. It is extremely unusual in the modern era of equal opportunity and gender equality in most walks of life to see this bias in a professional gathering. It is even stranger that this seems to happen fairly regularly in surveying and spatial gatherings. Is gender equality a myth in the surveying and spatial sciences?

At the Wellington conference a Twitter conversation was run at the same time as the final panel session. This raised a number of provocative questions which may not have been raised due to time limits and without the 'almost' anonymity of the Twitter feed. The questions raised and noted were that there were no females on the panel and also that there were no young people.

Because of this discussion we are assured that this will not happen at the next national SSSI conference to be held in Canberra in 2013. The conference organiser, who is a former chair of the SSSI Women in Spatial (WIS) group will make sure that a more gender equitable representation of members is on the closing panel at that conference!

The WIS group was first established by the former Spatial Sciences Institute (SSI) in 2006 when it was discovered that the percentage of women members in the SSI was as low as 8.5%.

The later survey has shown that the ratio has risen to 10%. A snapshot of the results of the survey is reported in this paper. This paper reports on the survey that was taken in 2011 of the females in the SSSI .

A comparison is made with the number of females in other industries. This may be used to check if there is still some discrimination against female participation in the spatial industry.

Some of the qualitative responses from the 2011 survey do suggest that this is true.

It is suggested that further research could be carried out as part of the work of FIG Commission 1 to better qualify some of the statistics and to compare them to female participation in other industries.

In analysing the topics that have been covered by FIG commission 1 over the last few years it was noticed that women and gender issues were not prominent in the word cloud. (Apart from this, social media, crowd sourcing and ethics were not conspicuous either)

In FIG presentations the lack of gender and women's issues may be because the FIG taskforce on Under Represented groups in surveying, completed its work in 2008. But it is suggested that we refocus on the issue to see whether or not there has been any improvement in the situation. The analysis of the survey material from Australia and New Zealand may help to clarify this.

2. The WIS survey results

2.1 The Survey

Two surveys have been carried out in Australia and NZ of women in the spatial industry in recent years. The first in 2005 was a survey of Women in Spatial in Australia and New Zealand. SSSI members are predominantly from Australia and New Zealand so both the surveys covered only these members, although we did receive some submissions from other countries! The first survey has now been followed up with a survey of Australian and New Zealand women in spatial in 2011. The differences show a slight increase in the participation of women in the spatial industry in Australia and NZ.

At a high level the surveys taken in 2005 and 2011 in Australia showed that there were far fewer women in the spatial industry than men, although this statistic was gathered from overall membership of SSI and SSSI.

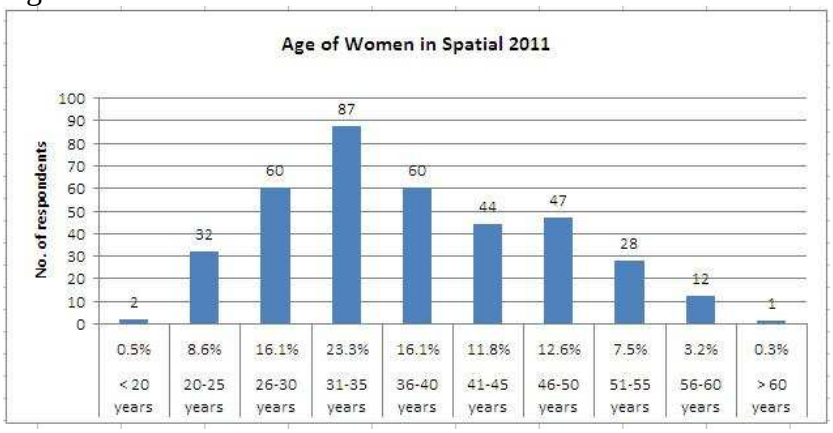
2.2 The method:

The survey was distributed to SSSI members by email and through social media and members were asked to spread the link to their networks. The link to the survey was also published on the SSSI website for general access.

Data collected from the SSSI databases indicate the change in SSSI member numbers since 2008.
As can be seen there has not been much change over this period with the average being about 10%. When the first survey was taken the average number of women in the spatial sciences was about 8.5% (Baldock and Bartolo**)**. Even though it appears that the actual numbers have dropped slightly since 2008 we still have slightly greater percentages of women than in 2005. The numbers here are of members of the SSI and SSSI but the survey was open to all women ie. not just members.

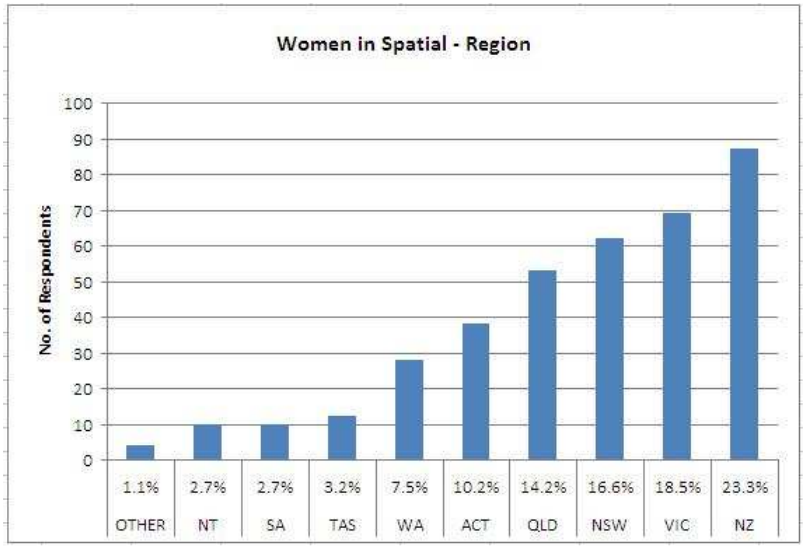
2.3 Demographics

Age



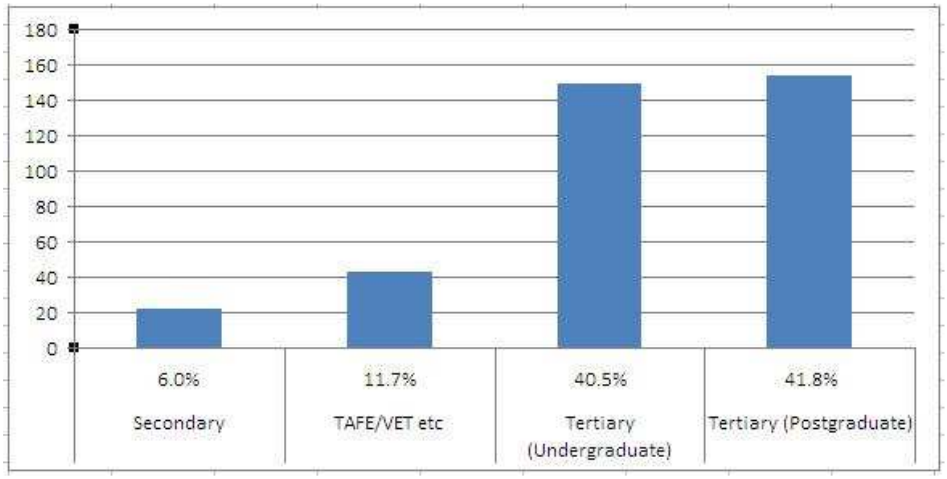
In comparison to the previous survey this just shows that the women in spatial are getting older. But the number remains very similar.

Respondents by location



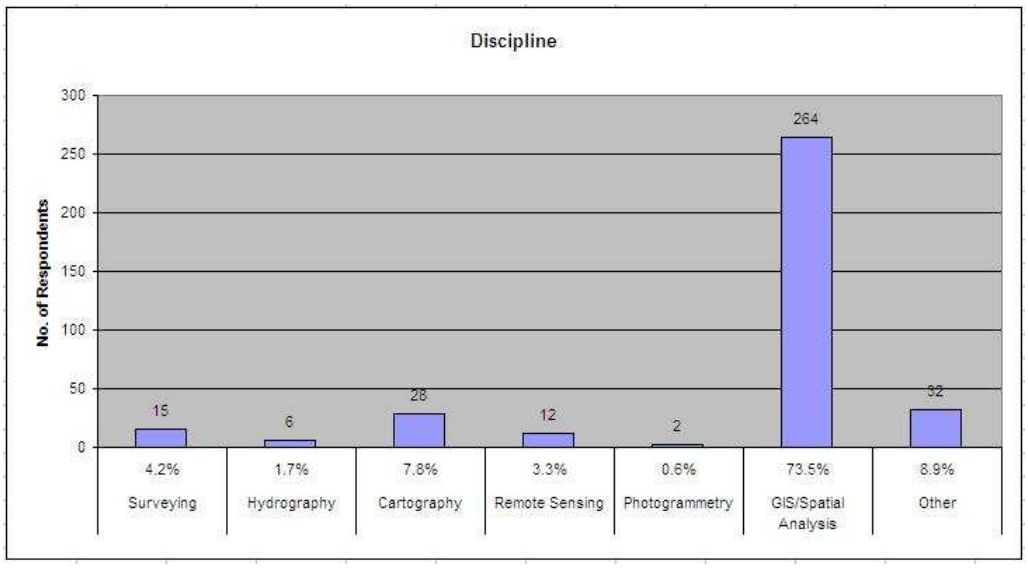
Comment – 81 respondents from New Zealand is a much larger number than the previous survey and represents an opportunity for the SSSI as we know only a small number are members of the institute.

2.4 Educational Qualification



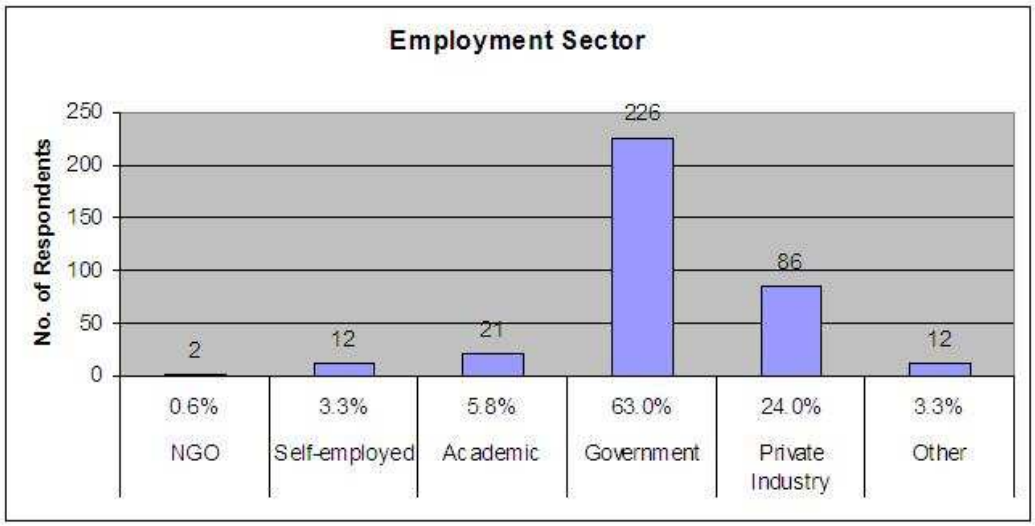
This shows little change in percentages from 2005 except that the number of postgraduates has increased slightly . More data is required to say whether there are more post graduates or whether or not more responded to the survey.

2.5 Workforce



GIS and Spatial analysis is the most common Discipline for women in the spatial industry. More data is required to compare this with the number males ie. the gender breakdown of the whole industry . The 'Other' category includes Spatial data management and Spatial policy which may be significant enough to be made separate categories in future.

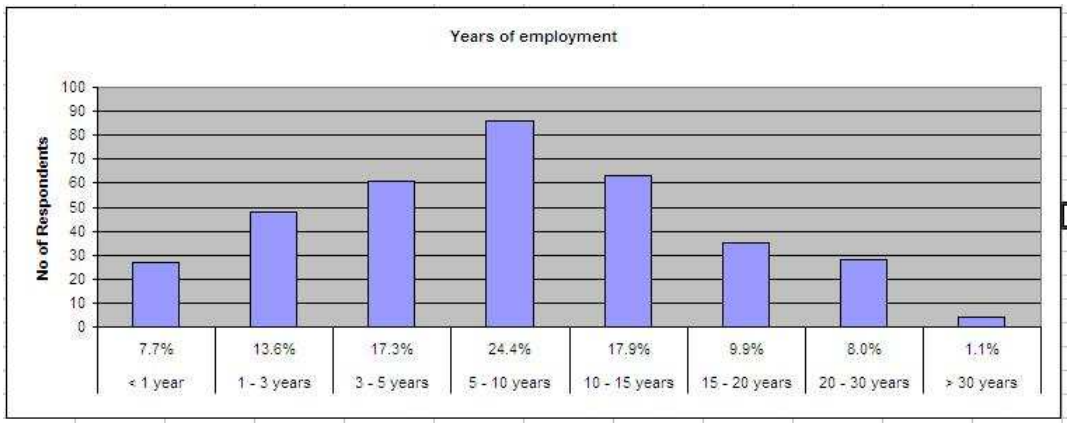
2.6 Employment sector – add no of respondents and name on graph



Employment mode

Full-time ongoing employment has dropped slightly (down from 77.6 %) while Part-time ongoing (7.9%) and part-time on contract for <12 months (1%) have increased slightly. All other categories show no significant change.

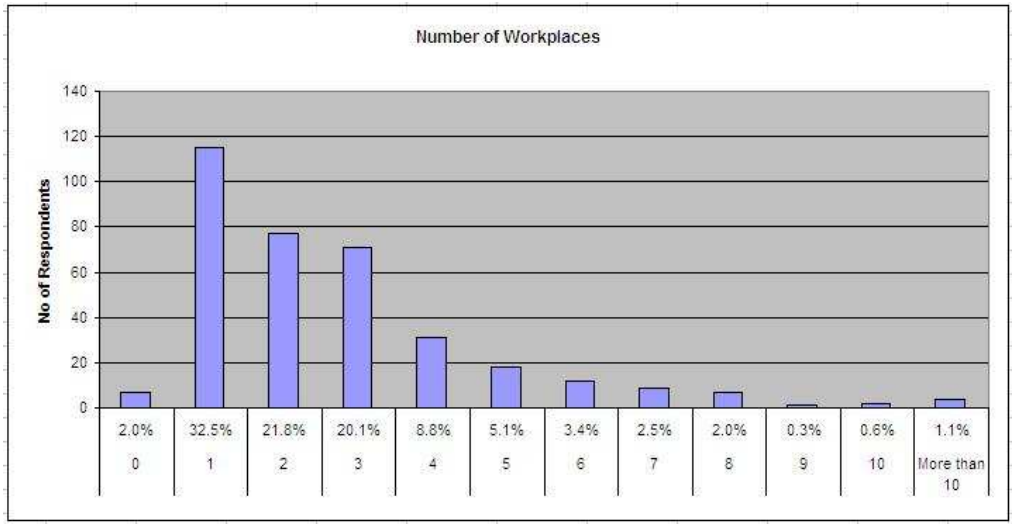
Years employed in the spatial profession



There are no significant changes here. The total number of respondents was 352 compared with 277 in the 2005 survey.

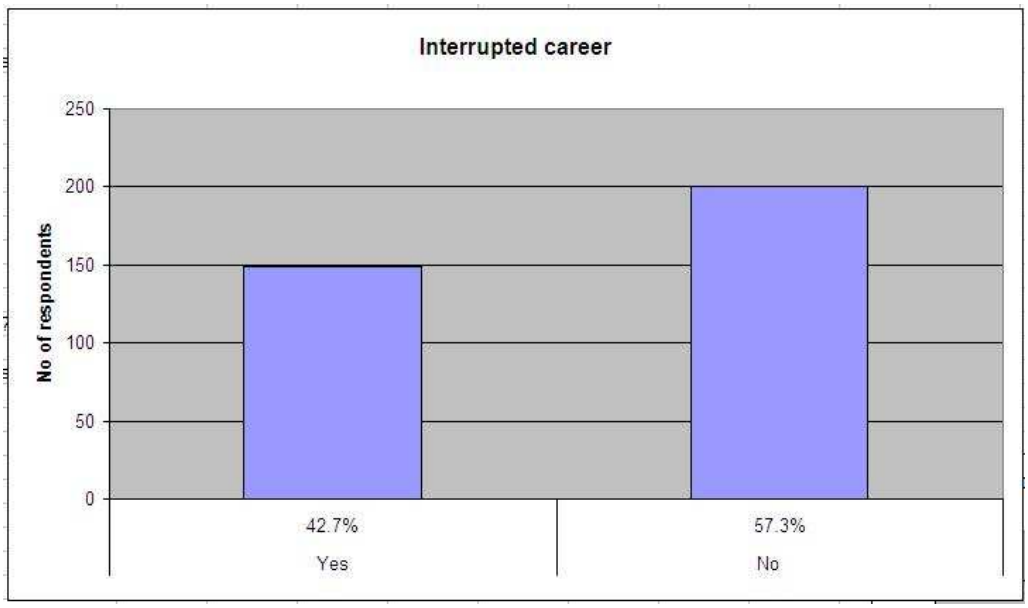
Workforce mobility

Number of workplaces

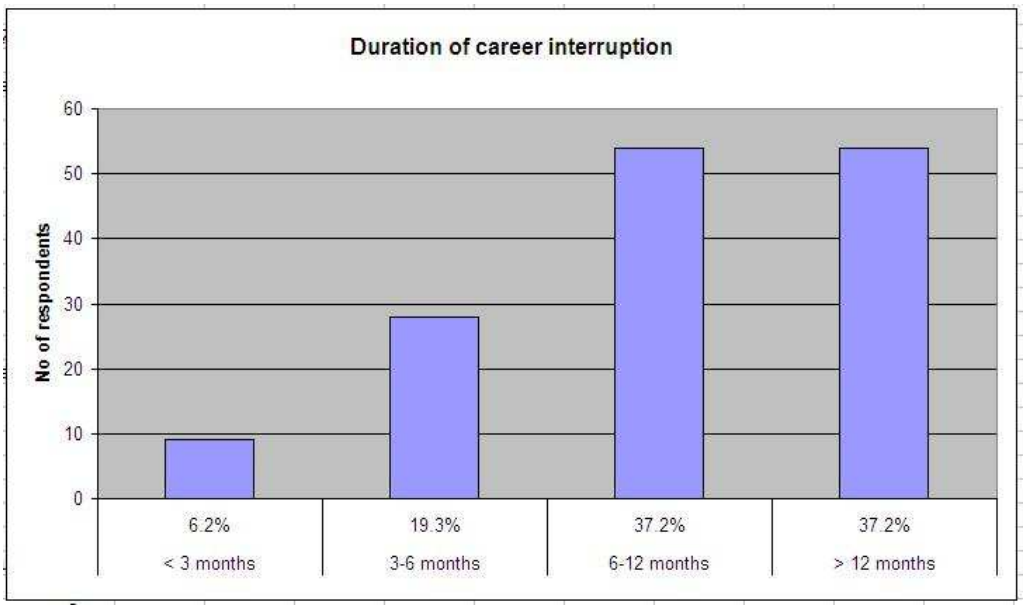


This is a reflection of the number of workplaces a respondent has been employed as a spatial professional. Similary to the 2005 previous survey the results show that the workforce is not particularly mobile. Just on 10% of respondents had worked in 6 or more workplaces. This is only up by 1% on the 2005 results.

2.7 Interrupted career



Duration of career interruption



The qualitative responses received to the question - Do you think your career break has had an effect on your long-term career path? – are of particular interest. The respondents describe a high number of problems for women who have taken extended breaks to have children and who have found that there are barriers causing detrimental effects to their careers. It is not the re-skilling that is the problem but the inability to continue in their chosen fields that appears to create the barrier to progression.

Unfortunately there were not too many positive responses to this question. One comment was from a woman who returned from maternity leave to be told that job sharing in the GIS area was not allowed. It is not clear why and more research is needed into the reasons for such a decision but it does seem very short sighted. A modern workforce understands that flexibility is necessary for working parents.

Missed opportunities, lack of promotion and some prejudice towards young mothers were cited as reasons for dissatisfaction with taking career breaks. This is an area that needs to be further studied and possibly recommendations/submissions made to employers. We as a professional organisation need to be aware of the difficulties facing members returning to work while juggling family responsibilities and ensure that professional events suit these types of members.

2.8 Comparing the results to other industries

The data that has been collected from the Women in Spatial surveys needs to be compared and validated against data from other industries. Comparing the overall results with research into numbers of women in the ICT industry is relevant for example, as there is an overlap with ICT and the spatial industry. In the Victorian ICT skills snapshot for 2011 (Australian

Computer Society 2010), the employment by gender is reported. The overall number is slightly healthier than in the Spatial industry at 18 % . This figure has been consistent over the last five years. A comment included in this report, from the Victorian ICT for Women group, is that the industry still fails to attract sufficient young women to raise the percentage.

It is significant to note that the levels of employment of females and the issue of an ageing workforce are also of concern in other disciplines. Further research based on the overall representation of women in the workforce, will most probably show that we are just part of the bigger problem. It was interesting to hear the Young Australian of the year for 2012, a female engineer, at the awards ceremony on the 26th January 2012. In her acceptance speech she stated the demographic breakdown for engineers:
Less than 10 percent of engineers in Australia are women.
The numbers of retirees is outstripping new engineering graduates.
Less than 15 percent of new engineering students are women.
This all seems very familiar.

The 2012 figures for Licensed surveyors in Australia and NZ have been obtained and they tell an even more shocking story. The percentages of females in this industry are particularly low. Only New Zealand seems to be attracting more females to the industry.

Number of Male and Female Licensed Surveyors in Each Jurisdiction

Jurisdiction	Males (practising)	Total Males	Females (practising)	Total Females	Total Licensed Surveyors	Percentage of Total
VIC	414	513	11	12	526	2.3%
NSW		tba		Tba	969*	
ACT	-	76	-	1	77	1.2%
QLD		702		4	706	0.5%
NT	-	84	-	2	86	2.3%
WA		tba		Tba	626*	
SA		tba		Tba	156*	
TAS	-	102	-	1	103	0.9%
NZ	-	651	-	47	698	6.7%

Note: at the time of writing, not all the jurisdictions had provided their numbers.

- Figures are as at 31st December 2010

3. Responding to the Survey and Future Issues.

The results of the 2011 survey show that the number of women in the spatial industry remains low, but we also know the numbers are low for both males and females.
We know that there is an ongoing problem with an ageing population of surveyors and all other spatial professionals. Experts have been warning us about the declining numbers of

spatial professionals and the effect this may have on the industry for a number of years.
In Australia and New Zealand various initiatives have been started to try to reduce the decline. The surveying industry have the Surveying Task Force (STF) which was created in 2007.
Another initiative that has been created in Australia by SSSI is Destination Spatial. This includes a website which aims to hold all the information in one place that a potential student needs to direct them on the appropriate pathway to a spatial career. In Victoria the SSSI regional committee has created an education subcommittee based on Destination Spatial to supplement the STF with the intention of extending the message to cover the whole of the spatial disciplines.

The push to create this education subcommittee happened because it was becoming increasingly apparent to SSSI and spatial industry members that efforts to promote career opportunities and awareness of the Spatial Industry in Victoria would only be successful if we worked collaboratively, expanded the reach and avoided duplication of effort. (SSSI / SIBA 2011 Mid - Year report). To achieve this a number of industry bodies including SSSI set up the Education sub committee.
This group has been very active especially in the state of Victoria over 2011 with a particular emphasis on women. The Geography Teachers Association of Victoria is a member of the Education subcommittee and they have used the skills of the subcommittee to run events such as "Girls make it Go". This event was designed to attract girls away from typical health and childcare professions and encourage them to consider alternative careers through a practical workshop forum. The Education sub committee members and volunteers attended many career presentations and events throughout 2011.

We rely on enthusiastic and dedicated members of our organisations to volunteer their time to present to young people at educational and careers events. The presentations are aimed at encouraging young people and especially women into the spatial workforce.
Social media is being tested as a meidum to discuss issues of relevance to our industry and perhaps to spread the message about the industry to young people. Research will show if this is a successful method. At RMIT University in Victoria, Australia, surveys are carried out yearly with new and continuing students to find out what influenced them to choose the spatial courses. RMIT University researchers (Pupedis and Bellman) have found that Generation X and Y are not as impressed by social media as we tend to think. Further work is needed to find out what the best medium is for the marketing messages. These student surveys will continue to be run each year helping to monitor the changing levels of student interest.

The results from the RMIT University surveys contrast with reports from Sweden. In 2003 a report from Sweden was published in a FIG newsletter (Lindqvist and Nilsson) on the very successful efforts of Sweden's University of Lund to attract women into the survey courses. This FIG report discussed the methods used to attract young women into the Surveying stream at the University of Lund. It was claimed that just by doing the obvious things ie, marketing, careers information sessions, presentations to school students, the numbers increased.

Swedish female surveying student numbers were over 50% when this paper was written. The writers argue that the reason for the raised interest in surveying by females is because of the

way the course is presented as a very practical method of learning. They also recommend the use of marketing and getting the message directly to students via careers events. This is the way we see our promotions heading in Australia but the increase in numbers is not yet obvious.

It is suggested that much more research is needed to monitor the trends. The research in this paper is not thorough and further work is needed to achieve accurate and conclusive results. To continue the investigation it is suggested that Commission 1 conduct an FIG survey of members worldwide using FIG colleagues and contacts for sources of data showing number of male / females in the surveying/spatial industry worldwide. In 2003 it was proposed that an FIG women's networking group be set up as as a group within Commission 1. This was to be called the Global Network for Female Surveyors. This forum was to be used as a place for discussion, sharing experiences, access to good practice such as mentoring, and for support. It was to be a link for those with similar aims and a point of contact for those doing research in the area. We propose that this network be created and supported by FIG Commission1.

3.1 Conclusion

The WIS initiative was set up because it was perceived that the number of women in the industry is very low, the statistics showing at the time that the numbers were well down on males. The current numbers of women in spatial in 2012 is not much higher than it was when our first survey was taken, although there is a good ratio of females in the governance of our institute.

Statistics from other industries tend to show that women are favouring the less scientific streams, for example the ICT statistics show almost 50% of the ICT workers employed in the Graphic, web designers and illustrators are women. It is yet to be seen if women will start to choose more technical or scientific streams of study. We know that if this is to happen we must continue to be active in encouraging all young people and women to consider the geospatial sciences as a career.

We in the SSSI have a very high level of female representation in governance of the institute. I believe this will help as we work towards encouraging young people into the industry. We are not just focusing on females but on educating everyone on what the spatial industry does and how exciting it is to be part of it. Greater exposure to the industry is what we need and through school presentations and careers councillors, geography teachers etc we believe the message will eventually be delivered.

We know there are women in the industry who have the same level of experience as the men and we know that in the SSSI the sexes are equally represented at a high level of governance for the institute. So we look forward to seeing a final panel at our next conference with an even mix of male and female, young and not so young ready to answer our questions!

REFERENCES

Australian Computer Society, Australian ICT Statistical Compendium 2010
www.acs.org.au/2010compendium

Baldock, P. and Bartolo, R. 14-18 May 2007 , Women in the Spatial Sciences: A Snapshot of Gender Composition in the Spatial Industry.
Proceedings of the Spatial Science Institute Biennial International Conference (SSC2007), Hobart, Tasmania, Australia, (non-refereed paper)

Lindqvist, L. and Nilsson, .J 2003 The Survey Program in Sweden – A Gender Perspective NEWSLETTER NO. 4/03 JOINT COMMISSION WORKING GROUP ON UNDER-REPRESENTED GROUPS IN SURVEYING **FIG Working Group on Under-represented Groups in Surveying**
http://www.fig.net/pub/underrep_news/200304/newsletter200304.htm#The Survey Program in Sweden Accessed 29/12/2012

Pupedis, G and Bellman, C., 2011, Shove over GenY: Gen Z is almost here. *Paper presented at the SSSC2011 Wellington, New Zealand.*

SSSI / SIBA Education Sub Committee – 2011 Mid - Year report - Unpublished

WEB SITE REFERENCE LIST

Destination spatial website - www.destinationspatial.org.au

Surveying Task force website - www.alifewithoutlimits.com.au/where-to-study.html

BIOGRAPHICAL NOTES

Robyn McCutcheon is the current chair of the Surveying and Spatial Sciences Institute (SSSI) Victorian region and Chair of the national SSSI Women in Spatial group. She has a background in Cartography, GIS and Information management. She has worked for the Victorian government for many years beginning with VicRoads and is now with the Department of Sustainability and Environment in the Information Services Branch. Robyn is currently working as the Product manager for the Victorian Mapping and address service, a web service providing address verification and mapping services to government departments. She is also a Vice Chair of FIG Commission 1.

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