A scientometric analysis of 15 years of CHINZ conferences

David M. Nichols
Department of Computer Science
University of Waikato
Hamilton 3240, New Zealand
dmn@cs.waikato.ac.nz

Sally Jo Cunningham
Department of Computer Science
University of Waikato
Hamilton 3240, New Zealand
sallyjo@cs.waikato.ac.nz

ABSTRACT
CHINZ is the annual conference of the New Zealand Chapter of the Special Interest Group for Computer-Human Interaction (SIGCHI) of the ACM. In this paper we analyse the history of CHINZ through citations, authorship and online presence. CHINZ appears to compare well with the larger APCHI conference on citation-based measures. 42% of CHINZ papers were found as open access versions on the web.

Categories and Subject Descriptors
• Information systems~World Wide Web • Human-centered computing • Social and professional topics~Computing profession • Applied computing~Document metadata

Keywords
scientometrics; SIGCHI New Zealand; metadata; citations; open access

1. INTRODUCTION
CHINZ is the annual conference of the New Zealand Chapter of the Special Interest Group for Computer-Human Interaction (SIGCHI) of the ACM. In this paper we characterise the history of CHINZ using metadata and citations from the ACM Digital Library (ACM DL), Google Scholar (GS), Scopus and the conference web sites.

We first briefly review regional HCI conferences and typical scientometric analysis. Section 3 describes data gathering and data cleaning before results are presented. We then discuss how CHINZ is represented and make suggestions for authors of CHINZ papers.

2. BACKGROUND
There are three Australasian conferences that cover the area of human-computer interaction:

- CHINZ: organized by the New Zealand chapter of the ACM CHI SIG. CHINZ is intended as a broad HCI conference targeting primarily New Zealand researchers.
- OZCHI: established in 1991, the OZCHI series is organised by the special interest group of the Human Factors and Ergonomics Society of Australia (HFESA), to provide an HCI-specific forum for HFESA members and other HCI researchers in Australia ("OZ") and the region.
- AUIC: Australasian User Interface Conference as part of the Australasian Computer Science Week co-located conference grouping.

In addition, the Asia-Pacific CHI (APCHI) conference was jointly held with CHINZ in New Zealand (in 2004) and jointly with the INTERACT conference in Australia (in 1997). The number of HCI conferences across (mainly) two countries seems large in comparison with other regional HCI conferences such as the biennial NordCHI. However, the relative geographical isolation of New Zealand and Australia does limit the opportunities for community interaction.

Apperley and Nichols [1] provide a brief historical outline of both academic and industrial HCI in New Zealand but there has been no detailed analysis of these regional conferences. Table 1 shows the history of the CHINZ conference starting with a meeting at Massey University in June 2000. In 2001 the conference first produced a printed proceedings which has continued annually apart from 2014. In 2004 the conference was jointly held with the APCHI conference with the proceedings appearing in SpringerLink. From 2005 the conference was part of the International Conference Publication Series (ICPS) run by the ACM which places the proceedings into the ACM DL. The 2001–2003 conference proceedings were retrospectively added to the ACM DL in 2012.

2.1 Scientometric analysis
Scientometric analysis of the scholarly literature typically concentrates on citations although it also covers authorship and affiliation. For example, Bartneck and Hu [4] studied the main CHI conference noting that the awarded "best papers" were not cited more than other papers. Lister and Box [14] have manually analysed citations made from papers at AUIC but not citations of papers at the conference. In the last decade citation analysis has become more important as citations are an important input into university rankings. The popularity of the h-index [11] as a summary measure of research output has also focused researchers' attention on citations to their work.

There are currently three main sources of citation data: Web of Science, Scopus and Google Scholar [2, 12]. Although the first two have manual quality control processes the quality of author, affiliation and keyword metadata has often been reported as an obstacle to analysis of the scholarly literature [4, 13, 15]. These inconsistencies also occur in data from domain-specific sources such as the ACM DL that are ostensibly well-maintained;

CHINZ 2015, September 03 - 04, 2015, Hamilton, New Zealand.

ACM 978-1-4503-3670-3/15/09…$15.00
DOI: http://dx.doi.org/10.1145/2808047.2808060

Nichols, D.M. and Cunningham, S.J. (2015) A scientometric analysis of 15 years of CHINZ conferences, *Proceedings of the 15th New Zealand Conference on Human-Computer Interaction (CHINZ 2015)*. ACM. 73-80.

Table 1. CHINZConference history

Year	Location	Host Institution	Note
2000	Palmerston North	Massey University	No Proceedings
2001	Palmerston North	Universal College of Learning (UCOL)	
2002	Hamilton	University of Waikato	
2003	Dunedin	University of Otago	
2004	Rotorua	University of Waikato	Joint with APCHI
2005	Auckland	University of Auckland	
2006	Christchurch	University of Canterbury	
2007	Hamilton	University of Waikato	
2008	Wellington	Victoria University of Wellington	
2009	Auckland	University of Auckland	
2010	Albany	Massey University	
2011	Hamilton	University of Waikato	
2012	Dunedin	University of Otago	
2013	Christchurch	University of Canterbury	Proceedings not yet in ACM DL
2014			No conference
2015	Hamilton	University of Waikato	

examples include author naming variations [17], split author profiles, difficulties with accents and non-English languages [12], affiliation variations, evolving terminology etc.

Neither Google Scholar nor the ACM DL have an application programming interface (API) for querying metadata; Bartneck and Hu [4] developed custom software for querying Google Scholar. Bartneck (2011) notes the difficulty of manual processing of citation data in performing an analysis of five years of a robotics conference using Google Scholar and the ACM DL. However, as CHINZ is a relatively small conference it is amenable to manual analysis. A manual approach allows for detailed analysis of individual metadata values as they are recorded and can potentially identify subtle errors in a way that large-scale automated harvesting may miss.

Jacsó [12] notes both the time-consuming process of using Google Scholar for citation analysis and the impact of data errors. However, other studies have shown the value of using GS as one of several sources for evaluating a research community [17]. Bartneck and Hu [4] conclude that of three citation sources (GS, Scopus and WOS) “Clearly, GS offers the coverage we require to analyze the HCI community.” Franceschet [9] also provide specific advice to “use Google Scholar when the user is interested in finding papers and corresponding citations of computer science scholars and journals”.

3. METHOD

The archival location for the CHINZ proceedings is the ACM Digital Library whereas APCHI 2004 is in SpringerLink. However, neither of these locations provides an API to extract metadata in a systematic manner. The two main citations indices are Web of Science (WOS) and Scopus. WOS has smaller coverage then Scopus and does not normally cover conference proceedings published by the ACM. Scopus has larger coverage and does include the CHINZ conferences. The APCHI proceedings are indexed in WOS, but these citations were not analysed as computer science is not well-represented in WOS [2] and the APCHI conference is not representative of CHINZ as a whole.

Since the start of the CHINZ conference the use of citation indices in university rankings has led to an increased prominence of citation-based measures. Scopus has been the data source for the QS Rankings and is now also the source for the Times Higher rankings and so is included in our analysis. As the ACM DL is the main location for CHINZ proceedings then we also record the citations recorded within the ACM DL and the recorded downloads. The joint APCHI conference in 2004 is only indexed by the ACM DL Guide at the conference level; individual papers are not included.

Data was manually extracted from the ACM Digital Library for CHINZ conferences for 2001-3 and 2005-2012. Data for the 2004 joint conference with APCHI was extracted from SpringerLink. At the time of writing the proceedings of CHINZ 2013 had not been indexed by the ACM. Data extracted from the ACM included the PDF itself, DOI, ACM citation count, ACM downloads, ACM keywords (from the BibTeX record), author names and affiliations. A side effect of this manual inspection of the PDF papers is that the download counts in the ACM DL for all CHINZ items have been increased by (at least) one

The title of each paper was entered as a query in Google Scholar and the citation count recorded. In addition the presence and location of an open access copy was also recorded; where multiple open copies were found locations in institutional repository and personal web sites were preferred. Open access copies were then classified on whether they were located in a curated location such as an institutional repository. A limitation of this technique is that it does not account for any use of the ACM Author-izer service [6] where an author can provide open access to the final version via a specific page on their web site.

The Scopus entry for each item was also identified for gathering the citation count and the Scopus index terms. As the Scopus citations are generally fewer than those in Google Scholar it was also feasible to create a Scopus NSC (Non Self-Citations) count which removes the effect of self-citations. Any overlap in authors between a paper and a citing paper was considered a self-citation. The data was processed in R 3.1.2: the source data and R code are in the supplementary material.

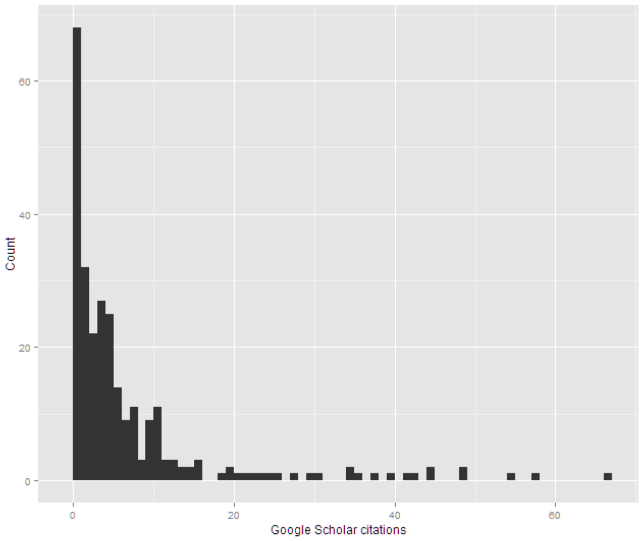

Figure 1. CHINZ Citations from Google Scholar.

3.1 Data Cleaning

Manual inspection of the data revealed several inconsistencies in metadata, particularly around author names. Several names were harmonised before further analysis; for example, “Elizabeth A. Kemp”, “E.A. Kemp”, “E. Kemp” and “Elizabeth Kemp” were all grouped together. Authors with multiple institutions listed were assigned to their first listed institution

Bartneck & Hu (2009) report they observed six variations of the name for the Eindhoven University of Technology in their data from the ACM. We also observed some limited variations for institution names: Free University Berlin/Freie Universität Berlin and Unitec Institute of Technology/UNITEC. These variations derive from the papers’ authors rather than from processing by ACM, Springer or Scopus. The ETRI research centre in South Korea is referred to as both the “Electronic and Telecommunications Research Institute” and the “Electronics and Telecommunications Research Institute”. Although many authors add variations to the names of their institutions this problem may be worse in non-English language countries. Variations in authors and affiliations were explicitly harmonised as the first step of automated processing and the results below derive from the cleaned version of the data.

4. RESULTS

Table 2 shows the overall item counts for all the CHINZ conferences including APCHI and excluding the 2000 event (as there was no printed proceedings). The 2004 joint APCHI conference is noticeable for its large size and the only event to include a Doctoral Consortium. Keynote addresses were only recorded for 2001-2003 and the only conference with demonstrations was CHINZ 2012. There are 79 items in APCHI 2004 and 192 items in the remainder of the CHINZ conferences. Two keynote addresses in 2001 and 2002 do not have a full text file in the ACM DL leaving 190 full text ACM items and 269 fulltext items in total. The 2001-2003 items are image PDFs as they were scanned from the printed proceedings.

Table 2. Item types in CHINZ Conference Proceedings

	Keynote	Paper	Short Paper	Poster	Demo	Doctoral Consortium	Total
2001	1	13	0	2	0	0	**16**
2002	1	15	0	2	0	0	**18**
2003	2	19	0	4	0	0	**25**
2004	0	56	13	0	0	10	**79**
2005	0	12	4	0	0	0	**16**
2006	0	16	2	0	0	0	**18**
2007	0	10	1	0	0	0	**11**
2008	0	7	0	0	0	0	**7**
2009	0	8	10	1	0	0	**19**
2010	0	6	9	1	0	0	**15**
2011	0	12	6	0	0	0	**18**
2012	0	9	4	0	16	0	**29**
Total	**4**	**183**	**49**	**9**	**16**	**10**	**271**

4.1 Citations

We use four citation measures: GS, ACM DL, Scopus and Scopus NSC. However, the demonstrations from CHINZ 2012 aren’t indexed in Scopus and APCHI papers are not included in the ACM DL. Excluding keynotes there are 172 common items remaining across the four citation measures.

Google Scholar records the highest citation count to CHINZ items (1741), followed by Scopus (330), ACM DL (302) and Scopus NSC (253). Figure 1 shows the overall distribution of citations from Google Scholar for the full dataset of 271 items. The most cited paper with 66 citations is from APCHI 2004; it has 9 citations recorded in both Scopus and Scopus NSC.

Table 3 and 4 show summary citation statistics for CHINZ alone and for APCHI. The results for APCHI include the doctoral consortium papers but are similar when they are excluded. Generally GS records have more citations than the ACM DL or Scopus. Approximately three-quarters of APCHI items have not been cited in Scopus by non-authors. Of all of the citations identified in Scopus 23% were identified as self-citations (an

Table 3. Citations for 172 full-text items (papers, short papers and posters): excluding APCHI

	Min	Max	Mean	Median	Uncited %
GS	0	57	7.0	3	20
ACM	0	20	1.7	1	48
Scopus	0	20	1.3	0	60
Scopus NSC	0	20	1.2	0	67

overlap between the original authors and the citing authors).

The comparison of citation rates for these conferences is complicated by the different lengths of time the papers have had to accrue citations. Comparing citation rates per year since publication can address some of this difference. However, the usual pattern of citation rates rising to a peak after a few years then falling implies that recent papers would be disadvantaged by even a per year comparison. In addition, the lack of digital distribution for CHINZ 2001-2003 disadvantages papers from those conferences. We therefore compared APCHI with the following four CHINZ conferences (2005-8) on Google Scholar citations per year. CHINZ 2005 ranked first on citations per year (on both mean and median measures) and APCHI was last. This ranking is the same when the APCHI doctoral consortium papers are excluded.

Table 4. Citations for 79 APCHI items

	Min	Max	Mean	Median	Uncited %
GS	0	66	6.4	3	25
Scopus	0	11	1.3	0	58
Scopus NSC	0	11	0.8	0	74

The h-index has become a common method to characterise the citations received by the scholarly outputs of individual researchers: "a scientist has index h if h of his or her ... papers have at least h citations each" [11]. Both Scopus and Google Scholar automatically calculate an h-index across publications in researcher profiles. Table 5shows the h-indices of CHINZ from GS and Scopus. The higher values for GS are consistent with the wider coverage of GS. Although the single APCHI conference represents 29% of all items in the dataset it only has a marginal effect on the h-indices. Excluding self-citations in the Scopus data produces drops of approximately 10% in the h-indices; similar to those reported in a broader evaluation of computer scientists by Ferrara and Romero [8].

Table 5. H-indices for CHINZ conferences

	CHINZ (including APCHI)	CHINZ (excluding APCHI)
GS	21	19
Scopus	9	8
Scopus NSC	9	8
ACM DL	*NA*	8

Figure 2 shows the citations as recorded in Scopus and Google Scholar for the 253 papers that are indexed in Scopus; the Pearson correlation coefficient is 0.80. The dotted line in Figure 2 represents the places where citations from the two sources would be equal: there are only few items with more Scopus citations than Google Scholar. There is one paper with three Scopus citations and zero Google Scholar citations, in fact this item is a paper from APCHI 2004. Two of the citations are from book chapters (often not well-indexed by citation databases) and one is from CHINZ 2007. Although Google Scholar usually has wider coverage then manually curated citation indices (most points are above the dotted line), in this specific case Scopus performs better at citation detection. On the other hand there are items such as "Tools for the selection of colour palettes" from CHINZ 2002 with zero Scopus citations and 15 Google Scholar citations. Examination of these citations shows several originate from papers in reputable journals (from Elsevier, IEEE and Taylor & Francis). However, there is considerable variation in the text labels used to refer to the conference (e.g. "Proceedings of the New Zealand Symposium On Computer-Human Interaction, SIGCHI 2002") which appears to have led to mis-matching in the Scopus database. Overall, Figure 2 reflects the uncitedness in the Scopus database summarised in Tables 3 and 4; there is a concentration of over half the data points at zero Scopus citations.

Strong positive correlations can be found between all the various citation sources. Bartneck [3] found a 0.88 correlation between ACM DL and GS citations for the International Conference on Human Robot Interaction; we find a 0.80 correlation in the CHINZ dataset for these sources. There is a 0.95 correlation between the Scopus and the Scopus NSC citation data.

CHINZ conferences have not had a best paper award so we cannot replicate the Bartneck and Hu analysis [4]. However, for broad impact we can identify the most influential papers of each conference using citations as a proxy. Table 7 shows these papers and their ranks in the three main citation sources across each conference. In most cases the most influential paper is straightforward to determine; close decisions were resolved by preferring the Scopus NSC data. The papers represent a variety of topics in HCI including open source usability, visualisation, mobile technology, augmented reality and the web.

4.2 Topics

To investigate broader themes in CHINZ we also examined the keywords allocated to the papers. There are several sets of keywords for each paper: the author keywords in the PDF paper keywords in the ACM BibTex entries, Scopus Author keywords, Scopus indexed keywords, Scopus engineering controlled terms and Scopus engineering main heading. The APCHI papers do not have ACM BibTex entries. Of these sets we prefer the author keywords as more reliable indicators of topics (see Section 5.1).

There were 541 unique values for the 157 CHINZ papers with defined author keywords. The keywords are sparsely distributed; the eleven most frequently occurring keywords are allocated to 63 papers with a long tail of keywords allocated to only one paper. The most frequently used keyword was "augmented reality" (10 occurrences) which is partially due to several demonstrations at CHINZ 2012. Other frequently used terms were "design", "usability", "user interface", "computer vision" and "telehealth".

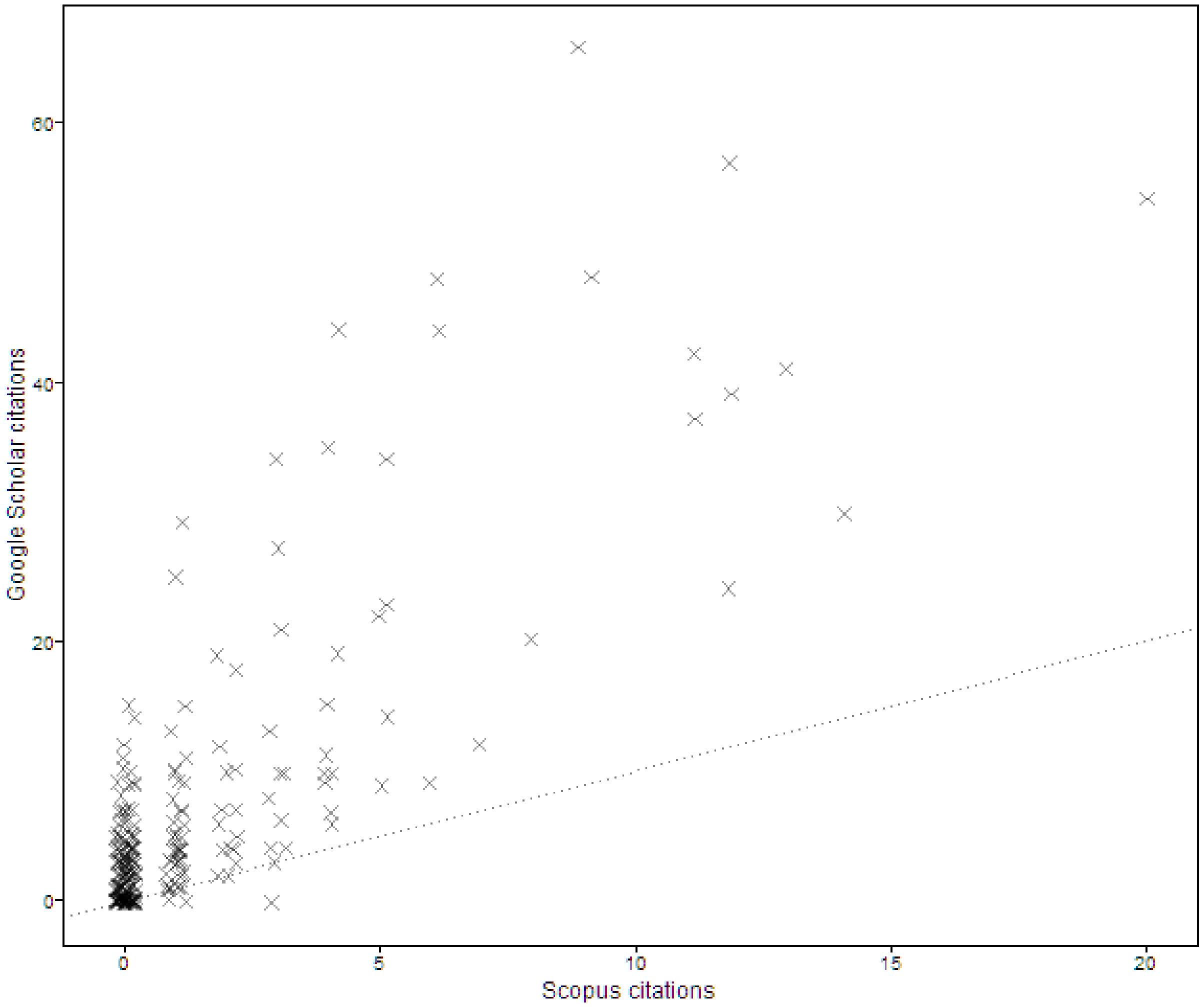

Figure 2. Citations to CHINZ papers (2001-2012, including APCHI 2004) from Scopus and Google Scholar. The dotted line represents the places where citations from the two sources would be equal. Plot has transparency and added jitter to better show the distribution.

4.3 Open Access

Of the 271 items we found 115 (42%) were openly available on the web outside the ACM DL and SpringerLink. 24 of the openly accessible items were from institutional repositories. The remaining papers were mainly found on university web sites, *CiteSeerX* and *ResearchGate*. Only one open item from CHINZ 2001 was located, with a broadly increasing trend to about half the papers having an open version by 2012. The APCHI openness rate of 43% was similar to the overall openness rate.

The mean GS citations for open access items (10.28) is higher than for non-open items (3.56): across the whole data set the mean GS citations is 6.45. This pattern is repeated with the ACM DL, Scopus and Scopus NSC citation data. These results are consistent with the reported "open access citation advantage" [18] although we do not make firm conclusions on these small sample sizes. A limitation of this analysis is that it doesn't account for papers which have been openly available since a conference but which are currently not discoverable.

Table 7. Most cited papers from the CHINZ conferences

Year	Title	Citation Rank GS	Citation Rank Scopus	Citation Rank Scopus NSC
2001	Usability and open-source software development	1	1	1
2002	A taxonomy of user-interface metaphors	1	=1	=2
2003	Participatory usability: supporting proactive users	1	1	1
2004	Extending tree-maps to three dimensions: A comparative study	1	2	1
2005	Information visualisation utilising 3D computer game engines case study: a source code comprehension tool	1	=1	=1
2006	Virtual and augmented reality as spatial ability training tool	1	1	1
2007	Using a mobile phone for 6 DOF mesh editing	1	1	1
2008	End-user GUI customization	=1	1	1
2009	Web 2.0: extending the framework for heuristic evaluation	1	1	1
2010	Framework for Healthcare4Life: a ubiquitous patient-centric telehealth system	1	=1	=1
2011	Architecture of a ubiquitous smart energy management system for residential homes	2	=1	1
2012	Constraint solving for beautiful user interfaces: how solving strategies support layout aesthetics	1	1	1

4.4 Authors and Affiliations

There were 719 authoring instances from 474 unique authors across the full dataset. Table 6 shows the most frequent authors from the dataset. As might be expected these authors are all from New Zealand universities. The total number of unique authors for each conference peaked at 173 for APCHI; CHINZ 2008 was the lowest at 18 and CHINZ is usually in the 30-60 range. The mean number of authors per paper ranges from 2.3 to 3.4, with a slight increasing trend over time. There have been more multiply authored papers than single-authored papers in each conference.

Table 6. CHINZ Authoring Frequency

Rank	Author	Frequency
1	Elizabeth Kemp	17
2	Christof Lutteroth	15
3	Chris Phillips	12
=4	Masood Masoodian	11
=4	Paul Lyons	11
6	Bill Rogers	10
7	Beryl Plimmer	9
=8	Gerald Weber Sally Jo Cunningham	8
=10	Mark Apperley E.G. Todd Burkhard Wünsche	7

Most papers in each conference have one unique affiliation; i.e. all the authors come from the same institution. In CHINZ 2009 every item was a single-institution paper but the overall mean number of affiliations is 1.2. The most frequent affiliations are the University of Auckland (115), the University of Waikato (96), Massey University (95), University of Canterbury (38), University of Otago (25) and Victoria University of Wellington (25).

4.5 Conference Web Presence

There are 14 web sites associated with all the CHINZ events from 2000 to 2013. Nine of these still have live web sites and four can only be accessed via the Internet Archive *Wayback Machine* (`https://archive.org/web`). The four events not currently present on the web are from 2000, 2001, 2003 and 2006. Two of the conferences (2010 and 2013) are on the Chapter web server at `http://sigchinz.acm.org` while the others are on servers at their host institutions (Table 1).

Although some information is only available via the WayBack Machine the web pages that have been archived do appear to represent most, if not all, of the conference web sites themselves. This suggests that a detailed record of CHINZ conferences is recoverable.

5. DISCUSSION

5.1 Metadata Accuracy

In the background section above we noted that other studies have found considerable errors in the available metadata. We also found several issues in the quality of the available metadata.

5.1.1 Authors, Affiliations and Papers

The most frequent author at CHINZ, Elizabeth Kemp, has been split into two profiles at the ACM DL. One profile contains four items, all from CHINZ 2001 and 2003, while the other contains all of her other ACM publications. This asymmetry possibly results from the late addition of CHINZ 2001-3 to the ACM DL in 2012. The four editors for the CHINZ 2001 proceedings have been conflated into three: “Elizabeth Kemp”, “Chris Phillips Kinshuk” and “John Yanes”: Chris Philips and Kinshuck have been joined to create a unique hybrid profile. Conversely, there are other situations where inconsistent author names in the source PDF files have been correctly merged into the same profile. A paper with “Paul Lyons” from CHINZ 2010 and one with “P. Lyons” from CHINZ 2009 have both been correctly mapped to the same “Paul J. Lyons” profile in both the ACM DL and Scopus. However, it is not possible to tell whether the individual authors have had any input in maintaining accurate profiles.

APCHI 2004 is only represented as a single conference item in the ACM DL and so only the three editors are linked to existing ACM profiles. The link for “Steve Jones” goes to a separate profile separated from his other publications. Errors in author metadata are often related to the frequency of a name in the population and this error highlights that authors with common names need to explicitly maintain the accuracy of online citation profiles until unique identifiers such as ORCID are ubiquitous [7].

Several affiliations have been inaccurately recorded: “Calvin College” is simply “College” in the ACM DL. The University of Southern California has been stored as “University of Southern, California” though is linked to the correct institutional profile. In Scopus the affiliation of “University of Tampere” has been reduced to just “Tampere”. Many of these errors do not affect the data processing in this paper and so would likely be missed by purely automated methods.

We also observed that Scopus has assigned some unusual values in their “Indexed Keywords” representation of papers. The paper “Bottle top maths: a primary school interactive multiplication maths resource” from CHINZ 2001 has been incorrectly assigned an “Engineering main heading” of “Bottles”. The paper “Encouraging better hand drying hygiene” from CHINZ 2008 has likewise been assigned an “Engineering controlled terms” value of “Dewatering”. However, the “Author keywords” appear to be identical to those provided by the authors in the PDF versions of the papers and also appear to be more useful.

5.1.2 Conference Representation

All of the Digital Object Identifiers (DOIs) for CHINZ 2007 were not working at the time of data gathering; returning “DOI not found” from the DOI resolver at `dx.doi.org`. This implies that ACM are not monitoring all the DOIs that they allocate.

From 2005 CHINZ has been part of the ACM International Conference Proceeding Series. As a consequence the search result displays (the item surrogates) in Scopus refer to an item in the “ACM International Conference Proceeding Series” (ICPS) rather than a CHINZ item. For example, CHINZ 2005 is “ACM International Conference Proceeding Series” (Volume 94)”: although this volume number is not present in the ACM DL presentation of individual items, conferences or the conference series as a whole. However, CHINZ 2010 and CHINZ 2011 are treated as independent conferences and are not listed as part of ICPS. Taken together these issues indicate that the information transfer between the ACM and Scopus might not be as consistent as might be hoped.

5.2 Assessing CHINZ

The first three years of CHINZ conferences (2001-3) had limited accessibility to the global HCI audience until they were added to the ACM DL in 2012. Only one item from 2001 was available on the web in an open access manner. Most papers will accumulate most of their citations in the first decade following publication. Consequently it is likely that most of the 59 items in these three conferences missed a potential opportunity for wider impact beyond the limited attendees at the conferences.

Once CHINZ proceedings were regularly made accessible outside of the actual conference (i.e. after 2003) the papers themselves are on a roughly level playing field with other outputs. Web discovery, particularly via Google Scholar, is arguably more significant than attendees at an actual event. The open access accessibility of CHINZ papers (42%) compares well with research outputs in general [5]. In a large cross-disciplinary study the closest domain of “Engineering & Technology” averaged approximately 25% open access availability over a similar time period [10].

The joint APCHI conference in 2004 provides a form of ‘natural experiment’ to evaluate CHINZ. The citation and self-citation rates show CHINZ as roughly comparable to the much larger APCHI conference. Wainer and Valle [19] report approximately half of the computer science papers sampled from the ACM DL from 2003 were uncited in the ACM DL: their conference subset was 44% uncited. The 48% uncited rate for a small regional conference such as CHINZ (Table 3) seems roughly consistent with their results: particularly with the limited audience for CHINZ 2001–3. On the “uncited” measure CHINZ compares favourably with the much larger APCHI conference.

5.3 Recommendations

The reputation of many conferences is partially based on their history. SIGCHI-NZ could improve the web-visible history of CHINZ by collecting/archiving all the conference websites at the main society website (`http://sigchinz.acm.org/`). Such an act of preservation would be a precaution against the conference websites disappearing from the live web.

Individual authors could likely enhance the impact and accessibility of their papers through greater use of open access in curated repositories. Authors at CHINZ could be encouraged to take advantage of the relatively liberal ACM copyright policy on the distribution of “accepted” versions: for both existing and future papers.

Authors should also be encouraged to actively check their profiles in external databases. The ‘split profile’ problem is common to several databases and requires manual maintenance to resolve. Corrections to the representation of CHINZ have been submitted to various databases as a part of the process of authoring this paper. The practice of using a consistent version of your name in publications can help to reduce the profile problem although there are several reasons why this can prove difficult in practice (Mckay, 2010). Metadata problems are a common obstacle to scientometric analysis and we can only add our voices to others who have reported the same issue [3, 4, 12].

6. CONCLUSION

The CHINZ conference appears to compare relatively well with APCHI. A natural extension for further work would be to do similar analyses for the OZCHI and AUIC conferences. The representation of CHINZ does not appear to be significantly different when viewed through any of the main citation databases.

Although this paper has focused on external metadata-driven analysis, it is important to remember that CHINZ, as with many conferences, performs a variety of training, community and intangible functions that are difficult to quantify.

7. REFERENCES

[1] Apperley, M.D. and Nichols, D.M. 2011. Usability in Aotearoa/New Zealand, In (eds.) Douglas, I. and Liu, Z., *Global Usability*. Human-Computer Interaction Series. Springer. 237-245.

[2] Bar-Ilan, J. 2008. Which h-index?—A comparison of WoS, Scopus and Google Scholar. *Scientometrics* 74, 2, 257-271.

[3] Bartneck, C. 2011. The end of the beginning: a reflection on the first five years of the HRI conference. *Scientometrics* 86, 2, 487-504.

[4] Bartneck, C. and Hu, J. 2009. Scientometric analysis of the CHI proceedings. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (CHI '09). ACM, New York, NY, USA. 699-708.

[5] Björk, B.-C., Laakso, M., Welling, P. and Paetau, P. (2014), Anatomy of green open access. *Journal of the Association for Information Science and Technology*, 65, 2, 237–250.

[6] Delman, S.E. 2011. ACM offers a new approach to self-archiving. *Communications of the ACM*, 54, 11, 14.

[7] Fenner, M. 2011. ORCID: Unique Identifiers for Authors and Contributors. *Information Standards Quarterly*, 23, 3, 10-13.

[8] Ferrara, E. and Romero, A.E. 2013. Scientific impact evaluation and the effect of self-citations: Mitigating the bias by discounting the h-index. *Journal of the Association for Information Science and Technology*, 64, 11, 2332–2339.

[9] Franceschet, M. 2010. A comparison of bibliometric indicators for computer science scholars and journals on Web of Science and Google Scholar. *Scientometrics* 83, 1, 243-258.

[10] Gargouri, Y., Larivière, V., Gingras, Y., Carr, L., and Harnad, S. 2012. Green and gold open access percentages and growth, by discipline. Paper presented at *17th International Conference on Science and Technology Indicators (STI),* Montreal, Canada. Retrieved from http://eprints.soton.ac.uk/340294

[11] Hirsch, J. 2005. An index to quantify an individual's scientific research output. *Proceedings of the National Academy of Sciences*, 102, 46, 16569–16572.

[12] Jacsó, P. 2008. The pros and cons of computing the h-index using Google Scholar, *Online Information Review*, 32, 3, 437-452.

[13] Kaye, J. 2009. Some statistical analyses of CHI. In *CHI '09 Extended Abstracts on Human Factors in Computing Systems (CHI EA '09)*. ACM, New York, NY, USA. 2585-2594.

[14] Lister, R. and Box, I. 2009. *Proceedings of the Tenth Australasian User Interface Conference (AUIC 2009).* Australian Computer Society, Inc. 35-44.

[15] Liu, Y., Goncalves, J., Ferreira, D., Hosio, S., and Kostakos, V. 2014. Identity crisis of ubicomp?: mapping 15 years of the field's development and paradigm change. In *Proceedings of the 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp '14)*. ACM, New York, NY, USA. 75-86.

[16] McKay, D., Sanchez, S., and Parker, R. 2010. What's my name again? Sociotechnical considerations for author name management in research databases. In: *Proceedings of the 22nd Annual Conference of the Australian Computer–Human Interaction Special Interest Group (OZCHI 2010)*. CHISIG, Australia. 240–247.

[17] Meho, L. I. and Yang, K. 2007. Impact of data sources on citation counts and rankings of LIS faculty: Web of science versus Scopus and Google Scholar. *Journal of the Association for Information Science and Technology*, 58: 2105–2125.

[18] Norris, M., Oppenheim, C. and Rowland, F. 2008. The citation advantage of open-access articles. *Journal of the Association for Information Science and Technology*, 59: 1963–1972.

[19] Wainer, J. and Valle, E. 2013. What happens to computer science research after it is published? Tracking CS research lines. *Journal of the Association for Information Science and Technology*, 64, 6, 1104–1111.