

## 1 Original Paper

### 2 Looking for and having sex with partners met online: The 3 Second Australian study of health and relationships

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14

## 15 Abstract

16 **Background:** Studies have reported on the proportion of the population looking for potential  
17 sexual partners online, but few have investigated those who have sex with these partners,  
18 arguably a more important target group for health promotion.

19 **Objective:** To determine the proportion of people who have had sex someone met online in  
20 the previous year.

21 **Methods:** Data were analyzed from the 2012–13 Second Australian Study of Health and  
22 Relationships, a nationally representative telephone survey of 16–69-year-old Australian  
23 residents (n=20,091). The participation rate for the telephone survey was 66%. The  
24 prevalence of looking for a potential partner, physically meeting, and having sex with  
25 someone first met online (through internet site or smartphone application) was estimated.  
26 Multivariate logistic regression was used to determine demographic and behavioral factors  
27 associated with having had sex with someone met online in the last year, for men and  
28 women separately.

29

30 **Results:** Overall, 12% of respondents had looked for potential partners online, 5% had done  
31 so in the last year. In the last year, 3% had met someone in person, and 2% reported having  
32 had sex with someone first met online. Prevalence of all behaviors were greater in men than  
33 women, and in younger than older respondents. Among sexually active men, factors  
34 associated with having had sex with someone met online included: identifying as gay or  
35 bisexual (Adjusted odds ratio [AOR]: 15.37, 95% confidence interval [CI]: 8.34 –28.35),  
36 having either 2–3 or >3 sexual partners in the last year (AOR: 9.20, 95% CI: 9.20 – 34.68 and  
37 35.77, 95% CI: 18.04 – 70.94, respectively), having had an STI test in the past year (AOR:  
38 2.02, 95% CI: 1.21 – 3.38) or an STI in the last year (AOR: 3.15, 95% CI: 1.25 – 7.97). Among  
39 sexually active women, factors associated with having had sex with someone met online  
40 were: having either 2–3 or >3 sexual partners in the last year (AOR: 32.01, 95% CI: 13.17 –  
41 77.78 and AOR: 71.03, 95% CI: 27.48– 183.57, respectively), very low/low income (vs. very  
42 high AOR: 3.40, 95% CI: 1.12–10.35) and identifying as lesbian or bisexual (AOR: 2.27, 95%  
43 CI: 1.04–4.49).

44

45 **Conclusions:** More than a third of adults who had looked for potential partners online each  
46 year had sex with such partners, and those who had done so were more sexually active,  
47 suggesting that dating and hook-up websites and applications are suitable settings for  
48 targeted sexual health interventions.

49 **Trial Registration:** N/A

50 **Keywords:** Internet; Cell Phone; Sexually Transmitted Diseases; Health Risk Behaviors

51

## 52 Introduction

53 A range of dating websites, accessible via the internet or smartphone applications (apps),  
54 are now available to search for potential sexual partners online. These sites first surfaced in  
55 1995 with match.com and eHarmony in 2000; in 2009, Grindr was launched, targeting men  
56 who have sex with men, followed by Tinder in late 2012 (more targeted towards  
57 heterosexually active adults). There are increasing numbers of these apps available.

58 People have various motivations for using these sites and apps; some may be searching for a  
59 life partner and others just for a one-off encounter. The platforms enable selection of  
60 partners based on preferred personal characteristics, and some sites use geo-spatial  
61 technology to allow the user to determine the geographical proximity of a potential partner  
62 (e.g. both Grindr and Tinder are location-based hookup apps). Sites are also available for  
63 particular cultural groups, and some focus on certain sexual preferences. The sites are  
64 generally open to people aged 18 years and above.

65 Dating sites have the potential to provide sexual health promotion interventions. However,  
66 there is little available information on how many people access these sites and what their  
67 characteristics are. To date, most studies of meeting partners online have recruited specific  
68 populations and used convenience sampling strategies, such as targeting online users, gay  
69 venues or health care settings. [1-3] These settings are not representative and may result in  
70 an over-estimation of prevalence.

71 Furthermore, earlier studies reported on the proportion and characteristics of people who  
72 looked for partners online (but may not have intended to have sex with them, or actually  
73 have done so). However, it is the characteristics of people who have sex with these partners  
74 which are of greatest relevance for health promotion. Of the two population-level studies  
75 conducted to date, a study among Norwegian young people (aged 15–20 years) in 2009  
76 found that 30% reported ever having had sex with somebody they met online (but did not  
77 ask about the last year), and a British survey in adults (16–74 years) conducted between  
78 2010 and 2012 focused on the last year but only on looking for sexual partners, not whether  
79 the respondent had sex with them. [4, 5]

80 In 2012–13, the Second Australian Study of Health and Relationships (ASHR2) survey was  
81 conducted just after the introduction of Tinder and other geosocial dating apps. [6] ASHR2 is  
82 a national representative survey of the Australian population covering demographics,  
83 knowledge, attitudes, behaviors and experiences related to sexual health. A series of  
84 questions about looking for, physically meeting, and having sex with people met online were  
85 also asked [7, 8] providing an opportunity to determine both the prevalence of Australians  
86 adults who had looked for potential partners online and the characteristics of people who  
87 had sex with these partners in the past year.

## 88 **Methods**

### 89 **Study population**

90 This is a cross sectional analysis of data from ASHR2. The methods of ASHR2 have been  
91 described elsewhere. [7] In brief, ASHR2 is a national survey of 20,091 Australian residents  
92 aged 16–69 years. Data were collected in 2012 and 2013 via computer assisted telephone  
93 survey by trained interviewers. The study sample was selected using a modified random digit  
94 dialing (RDD) sampling frame which combined RDD of landlines with RDD of cell phones. The  
95 overall participation rate among eligible people was 66.2% and the study population has  
96 been shown to be broadly representative of the Australian population except for  
97 overrepresentation of people with postgraduate degrees.[7]

98

99 In order to efficiently allocate resources and gather more information from those with  
100 potentially higher human immunodeficiency virus (HIV)/sexually transmissible infection (STI)  
101 risk, the interview was administered in two forms.[7] All respondents who reported no  
102 sexual partners or more than one sexual partner in the previous year or any lifetime same-  
103 sex experience were given a long form interview, as were a 20% random sample of survey  
104 respondents who had reported having one partner in the previous year and no same same-  
105 sex experience; the remaining 80% of one-partner respondents were given the short form  
106 interview. Questions which asked only in the long form interview included those on meeting  
107 and having sex with a partner met online.

108

### 109 **Statistical analysis**

110 The estimates of prevalence included sexually active and sexually inactive respondents.  
111 However, the predictor analysis of factors associated with meeting and having sex with  
112 someone met online was restricted to sexually active respondents as many of the sexual  
113 health outcomes were only asked of sexually active survey respondents. For this study  
114 people were considered to be sexually active if they had one or more partner (for vaginal or  
115 anal intercourse or oral or manual sex) of the same or other sex in the previous 12 months.  
116 Respondents who reported no lifetime sexual experience were coded as not sexually active.

### 117 **Outcome measure**

118 The primary outcome of this study was having sex with someone met online in the past year.  
119 We also calculated the proportion of people looking for partners online and meeting  
120 someone in person who was met online. These outcomes were ascertained using the  
121 following questions collected in the long form questionnaire. The exact wording of the  
122 question is shown in figure 1. Hereafter 'online' refers to both internet dating and geosocial  
123 networking apps.

124

- |   |
|---|
| <ol style="list-style-type: none"><li>I. Have you ever used an internet site or smartphone application to look for potential partners? Have you done so in the past year?</li><li>II. In the last year have you met someone in person that you first met on an internet</li></ol> |
|---|

|  |
|--|
| site?<br>III. And did you have sex with that person? |
|--|

125 *Figure 1: Questions related to use of internet and smartphone applications from the Second*  
126 *Australian Study of Health and Relationships*

127

128 The proportion of people searching for, meeting and having sex with partners online were  
129 calculated separately using descriptive statistics. Data were weighted according to the  
130 probability of being selected for the long form questionnaire and to the Australian  
131 population. Characteristics of respondents who reported searching for partners online were  
132 compared with respondents who reported having sex with someone met online. A chi-  
133 squared test was used to compare differences in distributions between the groups for a  
134 range of co-variables.

135

136 Univariate and multivariate logistic regression, weighted in accordance with study  
137 procedures, were used to examine factors associated with having sex with someone met  
138 online in the last year. All data were analyzed using Stata statistical software version 14. [9]  
139 Variables which were significant at the  $p < 0.1$  level in the univariate analysis were included in  
140 the multivariate logistic regression analyses. Backwards elimination of variables was then  
141 used to determine the final adjusted model.

142

143 Demographic co-variables included in the models were: age group (16–29, and then 10 year  
144 age groups to 69 years), language spoken at home (English or other), annual household  
145 income in Australian dollars (very low/low (<\$52,000), middle (\$52,001–\$83,000), high  
146 (\$83,001–\$125,000) and very high (>\$125,000)), area of residence (urban or rural/ remote)  
147 according to the Accessibility/Remoteness Index of Australia. [10]

148

149 Behavioral co-variables included in the models were: levels of alcohol consumption (high or  
150 not, with high alcohol consumption classified as more than 28 standard drinks per week for  
151 men and more than 14 standard drinks per week for women), injecting drug use in last year  
152 (yes or no), smoking status (never/former or current), sexual identity (heterosexual or  
153 gay/lesbian/ bisexual/other), condom use at last event (used condoms or did not use  
154 condoms), STI history the last year (no STI test, STI test or STI diagnosis), sexual partner  
155 numbers in the previous year (1, 2 – 3 or >3). Numbers of sexual partners included both  
156 male and female partners. In relation to STIs, respondents were asked whether they had had  
157 an STI in past year, and whether they had a STI test, these two questions were combined to  
158 provide the composite variable. Included STIs were: pubic lice, genital warts, chlamydia,  
159 genital herpes, gonorrhoea and syphilis. In addition for women: warts virus on Pap smear,  
160 pelvic inflammatory disease, bacterial vaginosis/gardnerella and trichomoniasis and for men:  
161 non-specific urethritis and anal warts. [11]

### 162 **Ethical approval**

163 The study received ethical approval from La Trobe University (HEC 11-040), which was  
164 ratified by the ethics committees of the University of New South Wales, the University of  
165 Sydney and the University of Sussex.

## 166 Results

### 167 Prevalence of looking for potential partners online and meeting 168 them in person

169 Overall, 12.1% of respondents reported ever searching for potential partners online (13.5%  
170 men, 10.7% women) and 5.4% of respondents (7.0% men, 3.8% women) reported doing so  
171 in the last year. Table 1 shows that searching for potential partners online in the last year  
172 was most common among people aged 16–29 years (8.3%) and decreased with increasing  
173 age to 1.8% among people aged 60–69 years. Eight percent of sexually active respondents  
174 used the internet and smart phone apps to look for potential partners in the last year and  
175 4.9% of sexually inactive respondents did. The activity was more common among gay,  
176 lesbian and bisexual respondents (25.3%) than heterosexual respondents (<5%).

177

178 Having met in person was reported by 3.0% of survey respondents (3.7% men, 2.0%  
179 women), whereas having had sex with someone first met online was reported by 2.0% of  
180 respondents (2.5% men, 1.4% women). Having had sex with someone met online in the last  
181 year was highest among respondents who identified as gay, lesbian or bisexual (15.8%) and  
182 also more frequent among people aged 16–29 years and 30–39 years as well as those who  
183 had had an STI test or STI diagnosis in the past year, those with a higher number of sexual  
184 partners, and respondents who used a condom at their last sexual event (Table 1). The  
185 results from table one stratified by sex are presented in appendices one and two.

186

187 When restricted to sexually active respondents 16.8% had ever searched for potential  
188 partners online, 8.1% had done so in the last year and 3.0% had met with someone in  
189 person in the last year (Table 1).

190

191 Table two displays the proportion of respondents who had sex with someone met online,  
192 among those who reported using the internet or a smart phone application to search for  
193 potential partners online in the last year overall and according to selected characteristics.  
194 Overall, slightly over one third (36.1%) of those who searched for partners also reported  
195 having had sex with someone they met online in the last year. There were no statistical  
196 differences by sex. Differences were observed for sexual identity with gay, lesbian and  
197 bisexual respondents being more likely to also report having sex with someone they met  
198 online compared to heterosexual respondents (62.4% vs. 30.9%,  $P < 0.001$ ). Differences were  
199 also seen for STI testing history (no test: 35.9%, STI test: 53.8% and STI diagnosis: 64.9%,  
200  $P < 0.001$ ), condom use at most recent event (used condoms: 48.4% vs. non-use: 42.9%,  
201  $P < 0.001$ ) and numbers of sexual partners (1 partner: 15.4%, 2–3 partners: 48.8% and >3  
202 partners 72.4%,  $P < 0.001$ ).

203

204 Among respondents who had had sex with someone met online, 62.9% were male and  
205 37.1% were female. The majority of people who reported having had sex with somebody  
206 met online identified as heterosexual (77.8%). In terms of STI testing, 41.9% reported not  
207 having had an STI test in the previous year, 38.8% reported having had an STI test and 7.2%  
208 reported being diagnosed with an STI the last year (12.0% of respondents either refused to  
209 answer, could not recall or were not asked). Most respondents (68.9%) used condoms with  
210 their most recent partner. Regarding numbers of sexual partners, 36.5% had one sexual

211partner in the last year, 35.2% had two or three sexual partners and 28.3% had more than  
212three sexual partners.

213

## 214 **Correlates of having sex with someone met online**

215Men

216Among sexually active males most respondents were heterosexual (97.3%), spoke English at  
217home (93.8%) and resided in urban area (68.0%). Age was distributed as follows; 24.2%  
218were aged 16-29 years, 21.0% were aged 30-39 years, 22.1% were aged 40-49 years, 18.7%  
219were aged 50-59 years and 14.0% were aged 60-69 years. Most respondents had either very  
220high (30.7%) or high (20.1%) annual household incomes.

221

222The peak reporting of having had sex with someone met online was among sexually active  
223men aged 16-29 years (4.8%). This declined with increasing age to 0.8% among sexually  
224active men aged 60-69 years. Reporting having had sex with someone met online was  
225substantially higher among homosexual and bisexual men compared to heterosexual men  
226(36.2% vs 1.9%). In terms of sexual practices, 1.4% of sexually active men with no STI test in  
227the last year reported having had sex with someone met online compared to 11.0% of men  
228with an STI test in the last year and 31.1% men who reported having had an STI diagnosis in  
229the last year. Less than one percent (0.6%) of sexually active men with one sexual partner in  
230the last year reported having had sex with someone met online compared to 11.9% of those  
231with 2-3 sexual partners and 22.9% of those with more than three sexual partners in the last  
232year.

233

234In the multivariate analyses, among sexually active men, several factors were associated  
235with having had sex with someone met online (Table 3); identifying as homosexual or  
236bisexual compared to heterosexual (AOR: 15.37, 95% CI: 8.34 -28.35), 2-3 sexual partners  
237(AOR: 9.20, 95% CI: 9.20 - 34.68) or >3 sexual partners in the last year (AOR: 35.77, 95% CI:  
23818.04 - 70.94) compared to one partner, STI in previous year (AOR: 3.15, 95% CI: 1.25 -  
2397.97) and having an STI test in the previous year (AOR: 2.02, 95% CI: 1.21 - 3.38) compared  
240to not tested.

241

242Women

243

244Among sexually active women most were heterosexual (96.1%), spoke English at home  
245(96.3%) and lived in urban areas (67.7%). Twenty eight percent were aged 16-29 years,  
24623.5% were aged 30-39 years, 20.7% were aged 40-49 years, 17.1% were aged 50-59 years  
247and 9.8% were aged 60-69 years. Most sexually active women reported very high (23.2%) or  
248high (22.4%) annual household income compared to middle (17.7%) or low/very low  
249(16.7%).

250

251Among sexually active women those aged 16-29 years (2.3%) were most likely to report  
252having had sex with someone met online and the least likely group were those aged 60-69  
253years. Having had sex with someone met online was higher among lesbian and bisexual  
254women compared to heterosexual women (5.5% vs 1.4%). Women with low and very low  
255annual household income (3.3%) more frequently reported having had sex with someone  
256met online compared to women with either middle (0.6%), high (0.4%) or very high incomes

257(0.5%). Those with either an STI test (4.3%) or an STI diagnosis (10.0%) in the last year were  
258more likely to report having had sex with someone met online compared with those who  
259had not had an STI test in the last year (0.9%). Women with 2-3 (13.4%) or more than three  
260(25.3%) sexual partners in the last year were substantially more likely to report having sex  
261with someone met online than women with one sexual partner (0.4%).

262

263Among sexually active women, several factors were associated with having had sex with  
264someone met online (Table 4); having 2-3 sexual partners in last year (AOR: 32.01, 95% CI:  
26513.17 - 77.78) or >3 sexual partners in the last year (AOR: 71:03, 95 % CI: 27.48 - 183.57),  
266reporting a very low/low annual household income compared to very high annual household  
267income (AOR: 3.40, 95% CI: 1.12 - 10.35) and identifying as lesbian or bisexual (AOR: 2.27,  
26895% CI: 1.04 - 4.49).

269

270

## 271 Discussion

### 272 *Principal Results*

273 Overall, our findings indicate that in 2012–13, approximately one in ten Australian adults  
274 aged between 16–69 years had ever looked for potential partners online, of whom  
275 approximately half had done so in the in the last year. Among people who searched in the  
276 last year, over half had physically met with someone and approximately two thirds of these  
277 people had had sex with someone they met online in the last year, equating to 2.0% of the  
278 population. For sexually active respondents, the population which is often used in other  
279 studies, uptake was higher. Among sexually active survey respondents 16.1% had ever  
280 looked for partners online, 8.1% had done so in the last year.

281

282 These nationally representative estimates for looking for and having had sex with someone  
283 met online are lower than surveys focusing on specific subpopulations and using  
284 convenience sampling frames which have reported 6%–40% of the population meeting  
285 sexual partners online [2, 5, 12, 13] and 18%–76% using dating applications and websites. [3,  
286 14–19] The difference is almost certainly related to the different populations sampled and  
287 may also be related to the fact that ASHR2 asked specifically about having sex with  
288 someone, rather than looking for partners only or meeting in person, and our analyses  
289 included the entire survey population as the denominator instead of only sexually active  
290 respondents. Additionally, age was strongly correlated with having had sex with someone  
291 met online and this study included a broader range of ages than many studies. Younger  
292 people have higher levels of mobile phone and internet access. Just over a third (36%) of  
293 people who used internet dating and hook-up applications in the last year reported having  
294 had sex with someone they met online in the last year. Certain populations were less likely  
295 to report having had sex with someone met online. For example, 31% of heterosexual  
296 respondents who reported that they had used the internet or a mobile phone application to  
297 search for a potential partner in the last year reported having had sex with someone they  
298 met online compared with 62% of gay, lesbian and bisexual survey respondents (see table 2).  
299 This suggests other studies which report on the use of internet dating and hook-up apps as a  
300 proximal marker of having had sex with someone met online are likely to overestimate the  
301 prevalence of the practice among lower-risk segments of the population.

302

303 In this survey, around 16% of gay, lesbian and bisexual respondents reported meeting a  
304 sexual partner in the last year. Higher uptake of finding partners online among non-  
305 heterosexual respondents was also observed in the British population survey. [4] Yet, in our  
306 study, after adjusting for age and other characteristics, the strongest correlate of having had  
307 sex with someone who was met online was higher numbers of sexual partners in the last  
308 year, suggesting that these technologies are favored by the most sexually active  
309 respondents. This finding is consistent with other studies which report that people who look  
310 for partners online have increased sexual activity compared to non-users, including younger  
311 age at first sex [2, 5] and higher numbers of sexual partners.[2, 4, 5, 13, 16, 17] Due to the  
312 cross-sectional nature of the survey, determining causality is not possible, so the findings  
313 could mean the platforms provide an efficient means for more sexually active individuals to  
314 connect with new partners, or alternatively people who were already more sexually active  
315 were attracted to the sites and other ways to meet sexual partners.

316

317In general, people who met partners online and had sex with them were more likely to  
318engage in higher risk practices than those who did not, except for condom use at the last  
319sexual event which was higher among people who met partners online. There was  
320attenuation of the condom use variable in the multivariate analysis, meaning that the  
321association was not significant in the adjusted analysis after controlling for numbers of  
322sexual partners and other demographic factors. Higher levels of condom use at the last  
323event could reflect condom use with newer and less established partners where STI  
324prevention is prioritized. This explanation seems highly plausible as online tools are often  
325used to facilitate new sexual partnerships and those who report using online platforms to  
326find sexual partners also report higher numbers of recent sexual partners, however the  
327finding is in contrast with other many studies which tend to find meeting or seeking partners  
328online is linked to condomless sexual intercourse. [4, 5, 15, 16]

329

330In relation to STI history, both STI testing and diagnoses were higher among people who  
331reported meeting partners online and having sex with them. Again, in the adjusted analysis  
332there was attenuation of STI history for women after adjusting for numbers of sexual  
333partners. This implies that women who reported either an STI test or diagnosis in the last  
334year were also more likely to have multiple sexual partners in the last year. The relationship  
335between STI history and meeting partners online remained significant for men, even after  
336adjusting for partner numbers and other demographic factors. Interestingly, this pattern has  
337also been seen in the other two population studies with a significant relationship between  
338STIs and searching for or meeting partners online among men but not women. [4, 5]

339Findings from other studies have been mixed as to whether STI diagnoses are related to  
340either finding or searching for sexual partners online. [1-4, 17, 20] A number of studies have  
341reported on HIV testing history among gay men and tend to find that men who use apps are  
342more likely to have been tested for HIV.[15, 20] Studies in gay men in Australia, suggest that  
343men who use a combination of mobile phone apps, internet websites and offline places to  
344meet partners appear to be at increased risk of STIs or HIV compared with men who use a  
345narrower range of online and offline methods.[21]

346

347In women, low annual household income was associated with meeting partners online.  
348Socioeconomic deprivation has been linked with poor health outcomes including STI  
349acquisition [22-24], and other reports from ASHR2 found lower income was related to  
350multiple sexual partners. [25] Aside from age and income level for women other  
351sociodemographic factors, smoking and high alcohol consumption and injecting drug use  
352were not associated with having sex with someone met online.

353

### 354 **Limitations**

355To our knowledge this is the first study to report the prevalence of having had sex with  
356someone met online in the past year from a representative survey of the general adult  
357population. One of the strengths of this study is the capacity to assess the proportion of  
358people who used of internet dating, met in person and had sex with someone met online  
359within the same population. Nonetheless, our study also has several limitations to consider  
360when interpreting the findings. Firstly, the study was conducted in 2012-13 and since that  
361time the technology landscape and behaviors related to the uptake of technology have  
362changed and it is very likely that the uptake of dating and hook-up apps has substantially  
363increased since the survey was conducted. Secondly, the sample of homosexual and bisexual

364men was not sufficiently large to enable analyses focused on this group. Thirdly, all  
365outcomes including STI outcomes were based on self-report which is susceptible to recall  
366and other reporting biases. Several similar studies have used biological measurement to  
367ascertain STI prevalence, a more robust measure. [2, 4, 5] However, when asked, 89% of  
368participants reported answering all survey questions truthfully and a further 10% reported  
369that they had answered 90-99% of the survey honestly. This equates to 99% of participants  
370answering at least 90% of questions truthfully. [7] Furthermore, the clear majority (90%) of  
371participants reported that they were either not embarrassed or only slightly embarrassed by  
372the questions. Evidence of the relatively low embarrassment and discomfort with questions  
373related to sexual practices is seen in the number of people declining answering particular  
374questions. The question with the highest rate of refusal was about annual income (8.3%)  
375compared to much lower refusal rates for questions about sexual practices (for example  
376masturbation 2.6%).  
377

### 378**Implications**

379Understanding the extent and the characteristics of people who are most likely to use these  
380technologies to meet new sexual partners assists the organizations who are responsible for  
381HIV/STI prevention programs to identify places and populations where they can focus their  
382health promotion and testing initiatives. Our study has also demonstrated that although the  
383prevalence of having had sex with someone met online was 3.8% in people aged 20–29  
384years, it remained at 2.3% in people aged 30–49 years, suggesting the need for promotional  
385material to cover a broad range of ages, not only younger adults. Although STIs are most  
386prevalent in people aged 16–29 years, recent studies have suggested an increased rate in  
387people aged over 30 years.[26] Further, despite the finding that people who met partners  
388online were more likely to have had an STI test in the last year, a substantial proportion of  
389respondents who reported having sex with someone they met online (likely to be new sexual  
390partner) reported not having an STI test in the past year, suggesting there is an opportunity  
391to raise awareness about STI testing further and use targeted advertisements to direct  
392people to easy access points such as new websites where pathology requests forms can be  
393downloaded online without attending a clinic.[27] It has also been suggested that these  
394platforms have the capacity to enable partner notification and data collection in relation to  
395sexual health.[28] Although, it should be noted that historically owners of dating websites  
396and applications have been concerned about associating their platform with STIs and  
397therefore reluctant to promote public health initiatives.[28]

### 398**Conclusions**

399We found internet and smartphone technologies are a relatively common way of meeting  
400new sexual partners among highly sexually active survey respondents, homosexual and  
401bisexual men and younger adults, suggesting the use of online and in-app health promotion  
402is a feasible approach to targeting these populations. [29, 30] Future research could explore  
403the potential of health promotion in online dating and geosocial applications. The use of  
404smartphone technologies to search for potential sexual partners may become a normative  
405dating practice among Australian adults in their twenties and thirties and repeat surveys  
406would be important to document the prevalence of this over time.

407 **Acknowledgements**

408 The Australian Study of Health and Relationships was funded by the National Health and  
409 Medical Research Council (project grant number 1002174).

410

## 411 Tables

412 Table 1: Prevalence of looking for potential partners online and having sex with these  
413 partners, N=20,089 (8,184)<sup>a</sup>

414

| Characteristic                      |                                 | Searched for potential partner- ever | Searched for potential partner- last year | Met in person - last year | Had sex- last year      |
|-------------------------------------|---------------------------------|--------------------------------------|---|---------------------------|-------------------------|
|                                     |                                 | % <sup>b</sup> (95% CI)              | % <sup>b</sup> (95% CI)                   | % <sup>b</sup> (95% CI)   | % <sup>b</sup> (95% CI) |
| <b>All participants</b>             |                                 | 12.1 (11.2-13.0)                     | 5.4 (4.9- 6.0)                            | 3.0 (2.6 - 3.3)           | 2.0 (1.7-2.3)           |
| <b>Sex</b>                          |                                 |                                      |   |                           |                         |
|                                     | Men                             | 13.5 (12.3-14.9)                     | 7.0 (6.2-7.9)                             | 3.7 (3.2-4.4)             | 2.5 (2.1-3.0)           |
|                                     | Women                           | 10.7 (9.5-11.9)                      | 3.8 (3.2-4.5)                             | 2.2 (1.8-2.7)             | 1.4 (1.0-1.7)           |
| <b>Sexually active in last year</b> |                                 |                                      |   |                           |                         |
|                                     | Yes                             | 11.4 (10.5-12.4)                     | 8.1 (7.0-9.4)                             | 3.0 (2.3-3.8)             | N/A                     |
|                                     | No                              | 16.1 (14.6-17.7)                     | 4.9 (4.3-5.5)                             | 3.0 (2.6-3.4)             | N/A                     |
| <b>Age group (years)</b>            |                                 |                                      |   |                           |                         |
|                                     | 16-29                           | 14.2 (12.3-16.5)                     | 8.3 (7.0-9.9)                             | 4.7 (3.8-5.7)             | 3.0 (2.4-3.8)           |
|                                     | 30-39                           | 15.9 (13.7-18.4)                     | 6.3 (5.1-7.8)                             | 3.6 (2.7-4.7)             | 2.3 (1.7-3.1)           |
|                                     | 40-49                           | 11.8 (10.2-13.7)                     | 4.8 (3.9-5.8)                             | 2.4 (1.9-3.1)             | 1.8 (1.3-2.4)           |
|                                     | 50-59                           | 10.0 (8.5-11.7)                      | 3.5 (2.8-4.5)                             | 2.0 (1.4-2.8)             | 1.2 (0.8-1.9)           |
|                                     | 60-69                           | 5.8 (4.7-7.2)                        | 1.9 (1.4-2.4)                             | 1.0 (0.7-1.5)             | 0.6 (0.3-1.0)           |
| <b>Sexual identity</b>              |                                 |                                      |   |                           |                         |
|                                     | Heterosexual                    | 11.0 (10.1-11.9)                     | 4.7 (4.2-5.3)                             | 2.4 (2.1-2.8)             | 1.5 (1.2-1.7)           |
|                                     | Homosexual/lesbian/<br>bisexual | 42.8 (38.0-47.8)                     | 25.3 (21.4-29.7)                          | 18.9 (15.5-<br>22.9)      | 15.8 (12.7-19.6)        |
| <b>Language spoken at home</b>      |                                 |                                      |   |                           |                         |
|                                     | English only                    | 12.1 (8.4-18.7)                      | 5.3 (4.8-5.8)                             | 3.0 (2.9-3.9)             | 2.0 (1.8-2.3)           |

|  |                         |                  |                  |                      |                  |
|--|-------------------------|------------------|------------------|----------------------|------------------|
|  | Other                   | 11.4 (11.2–13.0) | 7.5 (4.7–11.8)   | 2.9 (1.7–2.6)        | 0.9 (0.4–2.1)    |
| <b>Annual household income</b>             |                         |                  |                  |                      |                  |
|  | Very low/ low           | 11.9 (10.1–14.0) | 6.6 (5.2–8.3)    | 4.0 (3.0–5.4)        | 2.5 (1.8–3.5)    |
|  | Middle                  | 10.5 (8.6–12.8)  | 4.7 (3.6–6.0)    | 1.9 (1.4–2.6)        | 1.1 (0.8–1.7)    |
|  | High                    | 9.5 (7.7–11.7)   | 2.4 (1.7–3.6)    | 0.9 (0.6–1.4)        | 0.6 (0.3–0.9)    |
|  | Very high               | 9.8 (8.0–11.9)   | 2.7 (1.9–3.8)    | 1.6 (1.0–2.4)        | 1.0 (0.7–1.5)    |
| <b>Area of residence <sup>c</sup></b>      |                         |                  |                  |                      |                  |
|  | Urban                   | 12.9 (11.8–14.1) | 5.6 (5.0–6.4)    | 3.4 (2.9–3.9)        | 2.1 (1.8–2.5)    |
|  | Regional/remote         | 10.3 (9.0–11.7)  | 4.9 (4.1–5.9)    | 2.1 (1.7–2.6)        | 1.5 (1.2–2.0)    |
| <b>High alcohol consumption</b>            |                         |                  |                  |                      |                  |
|  | No                      | 12.5 (11.5–13.6) | 5.5 (4.9–6.2)    | 2.9 (2.5–3.4)        | 1.9 (1.6–2.2)    |
|  | Yes                     | 11.2 (9.7–12.9)  | 5.1 (4.3–6.2)    | 3.2 (2.5–4.0)        | 2.1 (1.6–2.80)   |
| <b>Injected drugs in last year</b>         |                         |                  |                  |                      |                  |
|  | No                      | 11.9 (11.1–12.9) | 5.3 (4.8–5.9)    | 2.9 (2.6–3.3)        | 1.9 (1.5–2.1)    |
|  | Yes                     | 19.1 (14.2–25.1) | 10.5 (7.4–14.6)  | 4.9 (3.0–7.9)        | 3.6 (2.2–3.8)    |
| <b>Smoking status</b>                      |                         |                  |                  |                      |                  |
|  | Never smoked/<br>former | 11.1 (10.2–12.1) | 4.7 (4.1–5.3)    | 2.6 (2.3–3.0)        | 1.8 (1.7– 2.2)   |
|  | Current smoker          | 16.8 (14.6–19.1) | 9.1 (7.6–5.3)    | 4.9 (3.8–6.2)        | 2.9 (2.0–6.4)    |
| <b>STI testing in last year</b>            |                         |                  |                  |                      |                  |
|  | No test                 | 9.1 (8.2–10.1)   | 3.3 (2.8–3.9)    | 1.7 (1.4–2.1)        | 1.2 (1.0–1.5)    |
|  | STI test                | 23.9 (20.4–27.7) | 13.6 (11.2–16.4) | 9.6 (7.7–11.8)       | 7.3 (5.9–9.0)    |
|  | STI diagnosis           | 37.0 (14.3–17.4) | 26.0(18.1–35.9)  | 21.1 (14.2–<br>30.2) | 16.9 (10.9–25.3) |
| <b>Condom use with most recent partner</b> |                         |                  |                  |                      |                  |
|  | Used condoms            | 17.2 (12.5–17.2) | 9.3 (7.8–11.2)   | 5.8 (4.7–7.1)        | 4.5 (3.6–5.7)    |

|   |             |                  |                  |                  |                  |
|---|-------------|------------------|------------------|------------------|------------------|
|   | Did not use | 12 (10.5–13.9)   | 4.5 (3.6–5.5)    | 2.7 (2.1–3.4)    | 1.9 (1.5–2.4)    |
| <b>Number of sexual partners in last year</b> |             |                  |                  |                  |                  |
|   | 1           | 9.7 (8.8–10.6)   | 3.0 (2.6–3.6)    | 1.2 (0.9–1.5)    | 0.5 (0.3–0.7)    |
|   | 2-3         | 34.0 (30.6–37.5) | 25.4 (22.3–28.7) | 16.8 (14.3–19.8) | 12.4 (10.2–15.0) |
|   | >3          | 39.4 (34.5–44.6) | 33.0 (28.4–38.0) | 26.9 (22.7–31.7) | 23.9 (19.9–28.5) |

415

416 Individuals with missing data are not shown; this was less than 5% for all variables except for income which was incomplete for 24.5% of participants

417

418<sup>a</sup> Weighted (unweighted) denominators

419<sup>b</sup> All proportions have been weighted to match the Australian population

420<sup>c</sup> Accessibility/Remoteness Index of Australia (ARIA)

421

422

423Table 2: Proportion of respondents reporting having sex with someone met online among  
424people who searched for partners online N=578 (413) <sup>a</sup>

425

| Characteristic                                |                                 | % (95% CI) <sup>b</sup> | P value |
|---|---------------------------------|-------------------------|---------|
| All participants                              |                                 | 36.1 (31.6-40.8)        |         |
| <b>Sex</b>                                    |                                 |                         |         |
|   | Men                             | 36.3 (30.9-42.0)        | 0.90    |
|   | Women                           | 35.7 (28.2-43.9)        |         |
| <b>Sexual identity</b>                        |                                 |                         |         |
|   | Heterosexual                    | 30.9 (26.2-36.0)        | <.001   |
|   | Homosexual/lesbian/<br>bisexual | 62.4 (53.2-70.8)        |         |
| <b>STI testing in last year</b>               |                                 |                         |         |
|   | No test                         | 35.9 (28.9-43.9)        | <.001   |
|   | STI test                        | 53.8 (43.9-63.3)        |         |
|   | STI diagnosis                   | 64.9 (46.8-79.6)        |         |
| <b>Condom use with most recent partner</b>    |                                 |                         |         |
|   | Used condoms                    | 48.4 % (39.7 57.2)      | <.001   |
|   | Did not use                     | 42.9 (33.5-52.8)        |         |
|   | Missing/ Don't know/<br>Refused | 23.3 (18.0-29.5)        |         |
| <b>Number of sexual partners in last year</b> |                                 |                         |         |
|   | 1                               | 15.4 (10.5-21.9)        | <.001   |
|   | 2-3                             | 48.8 (41.7-56.0)        |         |
|   | >3                              | 72.4 (64.0-79.6)        |         |

426<sup>a</sup> Weighted (unweighted) denominators

427<sup>b</sup> All data have been weighted to match the Australian population

428Abbreviations: CI=Confidence interval

429Table 3: Sociodemographic and behavioural correlates of having sex with someone met  
 430online among sexually active men (n=8494 (2710))<sup>a</sup>  
 431

| Characteristic                       |                               | % <sup>b</sup> (95% CI) in subgroup | % <sup>b</sup> (95% CI) outcome | OR (95% CI)          | P value | AOR (95% CI) <sup>e</sup> | P |
|--------------------------------------|-------------------------------|-------------------------------------|---------------------------------|----------------------|---------|---------------------------|---|
| <b>Demographic characteristics</b>   |                               |                                     |                                 |                      |         |                           |   |
| <b>Age group (years)</b>             |                               |                                     |                                 |                      |         |                           |   |
|                                      | 16-29                         | 24.2 (22.0-26.6)                    | 4.8 (3.5 -6.5)                  | 1.60 (0.95 - 2.68)   | 0.08    | 0.43 (0.23-0.82)          | 0 |
|                                      | 30-39                         | 21.0 (19.1-23.2)                    | 3.1 (2.06 -4.55)                | Ref                  |         | Ref                       |   |
|                                      | 40-49                         | 22.1 (20.3-24.1)                    | 2.4 (1.68 -3.41)                | 0.78 (0.45 - 1.34)   | 0.36    | 1.01 (0.51-2.01)          | 0 |
|                                      | 50-59                         | 18.7 (17.0-20.4)                    | 1.8 (1.13 -2.75)                | 0.57 (0.31 - 1.05)   | 0.07    | 0.62 (0.28-1.40)          | 0 |
|                                      | 60-69                         | 14.0 (12.6-15.5)                    | 0.8(0.46 -1.43)                 | 0.26 (0.13 - 0.52)   | <.001   | 0.28 (0.12-0.65)          | 0 |
| <b>Sexual identity</b>               |                               |                                     |                                 |                      |         |                           |   |
|                                      | Heterosexual                  | 97.3 (96.9-97.8)                    | 1.9 (1.48 -2.35)                | Ref                  |         | Ref                       |   |
|                                      | Homosexual, bisexual or other | 2.7 (2.3 - 3.1)                     | 36.2 (28.83 - 44.34)            | 30.01 (19.88- 45.31) | <.001   | 15.37 (8.34- 28.35)       | < |
| <b>Language spoken at home</b>       |                               |                                     |                                 |                      |         |                           |   |
|                                      | English only                  | 93.8 (92.4-97.8)                    | 2.9 (2.44 -3.50)                | —                    |         |                           |   |
|                                      | Other                         | 6.2 (5.1-7.6)                       | *                               | —                    |         |                           |   |
| <b>Annual household income</b>       |                               |                                     |                                 |                      |         |                           |   |
|                                      | Very high                     | 30.7 (28.5- 32.9)                   | 1.4 (1.0-2.1)                   | Ref                  |         |                           |   |
|                                      | High                          | 20.1 (18.2 -22.1)                   | 0.7 (0.3-1.3)                   | 0.49 (0.22 - 10.9)   | 0.08    |                           |   |
|                                      | Middle                        | 16.2 (14.5-18.1)                    | 1.8 (1.1-2.9)                   | 1.28 (0.67-2.45)     | 0.45    |                           |   |
|                                      | Very low/low                  | 13.5 (12.0-15.2)                    | 2.4 (1.5-3.9)                   | 1.82 (0.93-3.56)     | 0.08    |                           |   |
| <b>Area of residence<sup>c</sup></b> |                               |                                     |                                 |                      |         |                           |   |

|   |                                |                  |                        |                          |       |                        |
|---|--------------------------------|------------------|------------------------|--------------------------|-------|------------------------|
|   | Urban                          | 68.0 (65.9-70.9) | 3.1 (2.46 -3.76)       | Ref                      |       |                        |
|   | Regional/remot<br>e            | 30.3 (28.3-32.5) | 2.2(1.56 -3.10)        | 0.72 (0.48 -<br>1.09)    | 0.12  |                        |
| <b>Other characteristics</b>                      |                                |                  |                        |                          |       |                        |
| <b>High alcohol consumption<sup>d</sup></b>       |                                |                  |                        |                          |       |                        |
|   | No                             |                  | 2.7(2.18 -3.23)        | Ref                      |       |                        |
|   | Yes                            |                  | 3.2(2.18 - 4.74)       | 1.22 (0.78 -<br>1.92)    | 0.38  |                        |
| <b>Injected drugs in last year</b>                |                                |                  |                        |                          |       |                        |
|   | No                             |                  | 2.7 (2.26 -3.27)       | Ref                      |       |                        |
|   | Yes                            |                  | 5.3(2.59 -10.57)       | 2.00 (0.93 -<br>4.33)    | 0.08  |                        |
| <b>Smoking status</b>                             |                                |                  |                        |                          |       |                        |
|   | Never smoked/<br>former smoker |                  | 2.4 (1.92 -2.95)       | Ref                      |       |                        |
|   | Current smoker                 |                  | 4.4 (3.14 -6.05)       | 1.87 (1.25 -<br>2.81)    | 0.002 |                        |
| <b>STI testing in last year</b>                   |                                |                  |                        |                          |       |                        |
|   | No test                        |                  | 1.4 (1.09 -1.88)       | Ref                      |       | Ref                    |
|   | STI test                       |                  | 11.0 (8.42 -<br>14.21) | 8.50 (5.67 -<br>12.74)   | <.001 | 2.02 (1.12-3.38)       |
|   | STI diagnosis                  |                  | 31.1(17.57 -<br>48.86) | 31.30 (14.07 -<br>69.69) | <.001 | 3.15 (1.25-7.97)       |
| <b>Condom use with most recent<br/>partner</b>    |                                |                  |                        |                          |       |                        |
|   | Used condoms                   |                  | 3.4 (2.2 -5.2)         | 3.26 (2.11-5.04)         | <.001 |                        |
|   | Did not use                    |                  | 3.6 (2.3 -5.5)         | Ref                      |       |                        |
| <b>Number of sexual partners in last<br/>year</b> |                                |                  |                        |                          |       |                        |
|   | 1                              |                  | 0.6 (0.2 -0.9)         | Ref                      |       | Ref                    |
|   | 2-3                            |                  | 11.9 (9.9 -17.8)       | 24.40 (13.82-<br>43.00)  | <.001 | 17.86 (9.20-<br>34.60) |

|  |    |  |                    |                      |       |                     |   |
|--|----|--|--------------------|----------------------|-------|---------------------|---|
|  |    |  |                    | 43.07)               |       | 34.68)              |   |
|  | >3 |  | 22.9 (17.2 - 35.6) | 69.64 (36.75-131.97) | <.001 | 35.77 (18.04-70.94) | < |

432

433 Individuals with missing data are not shown; this was less than 5% for all variables except for income and condom use with last sexual

434 partner (not available for 42%)

435\* Too few responses for analysis (n<15)

436<sup>a</sup> Weighted (unweighted) denominators

437<sup>b</sup> All data have been weighted to match the Australian population

438<sup>c</sup> Accessibility/Remoteness Index of Australia (ARIA)

439<sup>d</sup> 28 or more standard drinks per week

440<sup>e</sup> Adjusted for age group, sexual identify, STI testing in last year and numbers of sexual partners in last year

441

442 Abbreviations: OR=Odds Ratio; AOR=Adjusted Odds ratio; CI=Confidence interval

443

444Table 4: Sociodemographic and behavioural correlates of having sex after someone met  
445online among sexually active women (8126 (2571))<sup>a</sup>

446

| Characteristic                       |                            | % <sup>b</sup> (95% CI) in subgroup | % <sup>b</sup> (95% CI) outcome | OR (95% CI)        | P value | AOR (95% CI) <sup>c</sup> | P |
|--------------------------------------|----------------------------|-------------------------------------|---------------------------------|--------------------|---------|---------------------------|---|
| <b>Demographic characteristics</b>   |                            |                                     |                                 |                    |         |                           |   |
| <b>Age group (years)</b>             |                            |                                     |                                 |                    |         |                           |   |
|                                      | 16-29                      | 28.9 (26.4-31.5)                    | 2.3 (1.6-3.40)                  | 1.40 (0.75 - 2.59) | 0.29    | 0.43 (0.21 - 0.86)        | 0 |
|                                      | 30-39                      | 23.5 (21.4-25.6)                    | 1.7 (1.0-2.7)                   | Ref                |         | Ref                       |   |
|                                      | 40-49                      | 20.7 (18.9-22.7)                    | 1.3 (0.7-2.4)                   | 0.75 (0.34 - 1.68) | 0.49    | 1.16 (0.45 - 3.01)        | 0 |
|                                      | 50-59                      | 17.1 (15.6-18.8)                    | 1.1 (0.4-3.0)                   | 0.63 (0.20-1.99)   | 0.43    | 1.22 (0.36 - 4.18)        | 0 |
|                                      | 60-69                      | 9.8 (8.7-11.1)                      | 0.6 (0.1-2.8)                   | 0.35 (0.07- 1.79)  | 0.21    | 0.66 (0.11 - 3.98)        | 0 |
| <b>Sexual identity</b>               |                            |                                     |                                 |                    |         |                           |   |
|                                      | Heterosexual               | 96.1 (95.4-96.7)                    | 1.4 (1.08 - 1.91)               | Ref                |         | Ref                       |   |
|                                      | Lesbian, bisexual or other | 3.9 (3.3-4.7)                       | 5.5 (3.12- 9.54)                | 4.05 (2.09 - 7.84) | <.001   | 2.27 (1.04-4.94)          | 0 |
| <b>Language spoken at home</b>       |                            |                                     |                                 |                    |         |                           |   |
|                                      | English only               | 96.3 (2.8-5.0)                      | 0.8 (0.20 - 3.88)               | —                  |         |                           |   |
|                                      | Other                      | 3.8 (95.0-97.2)                     | *                               | —                  |         |                           |   |
| <b>Annual household income</b>       |                            |                                     |                                 |                    |         |                           |   |
|                                      | Very high                  | 23.2 (21.2-25.3)                    | 0.5 (0.3-1.1)                   | Ref                |         | Ref                       |   |
|                                      | High                       | 22.4 (20.3-24.5)                    | 0.4 (0.2-1.0)                   | 0.79 (0.25 - 2.53) | 0.69    | 0.86 (0.28 - 2.67)        | 0 |
|                                      | Middle                     | 17.7 (15.8-19.7)                    | 0.6(0.3-1.3)                    | 1.12 (0.37 - 3.39) | 0.84    | 1.00 (0.31 - 3.23)        | 0 |
|                                      | Very low/low               | 16.7 (15.0-18.7)                    | 3.3 (2.1-2.0)                   | 6.49 (2.71-15.55)  | <.001   | 3.40 (1.12 - 10.35)       | 0 |
| <b>Area of residence<sup>c</sup></b> |                            |                                     |                                 |                    |         |                           |   |

|   |                         |                  |                        |                          |       |                           |
|---|-------------------------|------------------|------------------------|--------------------------|-------|---------------------------|
|   | Urban                   | 67.8 (65.4-70.0) | 1.7 (1.26 - 2.4)       | 1                        |       |                           |
|   | Regional/remot<br>e     | 30.5 (28.3-32.8) | 1.2 (0.79 - 1.78)      | 0.68 (0.40 -<br>1.14)    | 0.12  |                           |
| <b>Other characteristics</b>                      |                         |                  |                        |                          |       |                           |
| <b>High alcohol consumption<sup>d</sup></b>       |                         |                  |                        |                          |       |                           |
|   | No                      |                  | 1.4 (1.02 - 2.05)      | Ref                      |       |                           |
|   | Yes                     |                  | 1.8 (1.24 - 2.67)      | 1.27 (0.75 -<br>2.15)    | 0.38  |                           |
| <b>Injected drugs in last year</b>                |                         |                  |                        |                          |       |                           |
|   | No                      |                  | 1.6 (1.22 - 2.07)      | Ref                      |       |                           |
|   | Yes                     |                  | 2.1 (0.64 - 6.76)      | 1.34 (0.39 -<br>4.62)    | 0.65  |                           |
| <b>Smoking status</b>                             |                         |                  |                        |                          |       |                           |
|   | Never smoked/<br>former |                  | 1.6 (1.18 - 2.12)      | Ref                      |       |                           |
|   | Current smoker          |                  | 1.7 (1.03 - 2.81)      | 1.08 (0.60 -<br>1.97)    | 0.81  |                           |
| <b>STI testing in last year</b>                   |                         |                  |                        |                          |       |                           |
|   | No test                 |                  | 0.9 (0.59 - 1.37)      | Ref                      |       |                           |
|   | STI test                |                  | 4.3 (2.97 - 6.16)      | 4.94 (2.79 -<br>8.77)    | <.001 |                           |
|   | STI diagnosis           |                  | 10.0 (4.93 -<br>19.20) | 12.38 (5.17 -<br>29.62)  | <.001 |                           |
| <b>Condom use with most recent<br/>partner</b>    |                         |                  |                        |                          |       |                           |
|   | Used condoms            |                  | 3.4 (2.2 -5.2)         | 1.06 (0.57-1.96)         | 0.86  |                           |
|   | Did not use             |                  | 3.6 (2.3 -5.5)         | Ref                      |       |                           |
| <b>Number of sexual partners in last<br/>year</b> |                         |                  |                        |                          |       |                           |
|   | 1                       |                  | 0.4 (0.2-0.9)          | Ref                      |       | Ref                       |
|   | 2-3                     |                  | 13.4 (9.9-17.8)        | 35.13 (16.12-<br>76.59)  | <.001 | 32.01 (13.17-<br>77.78)   |
|   | >3                      |                  | 25.3 (17.2 -<br>35.6)  | 77.08 (32.75-<br>181.43) | <.001 | 71.03 (27.48 -<br>183.57) |

447

448 Individuals with missing data are not shown; this was less than 5% for all variables except for income and condom use with most recent partner (not available for 42%)

450\* Too few responses for analysis (n<15)

451<sup>a</sup> Weighted (unweighted) denominators

452<sup>b</sup> All data have been weighted to match the Australian population

453<sup>c</sup> Accessibility/Remoteness Index of Australia (ARIA)

454<sup>d</sup> 14 or more standard drinks per week (for women)

455<sup>e</sup> Adjusted for age group, income and numbers of sexual partners in last year

456 Abbreviations: OR=Odds Ratio; AOR=Adjusted Odds ratio; CI=Confidence interval

458

459

460 **Conflicts of Interest**

461 None declared

462 **Abbreviations**

463 JMIR: Journal of Medical Internet Research

464 OR: Odds Ratio

465 AOR: Adjusted Odds Ratio

466 CI: Confidence interval

467

## 468 Appendix 1

469 Prevalence of looking for potential partners online and having sex with these partners

470 among males, N=9,761 (3,890)<sup>a</sup>

471

| Characteristic                       |                                 | Searched for potential partner- ever | Searched for potential partner- last year | Met in person - last year | Had sex- last year      |
|--------------------------------------|---------------------------------|--------------------------------------|---|---------------------------|-------------------------|
|                                      |                                 | % <sup>b</sup> (95% CI)              | % <sup>b</sup> (95% CI)                   | % <sup>b</sup> (95% CI)   | % <sup>b</sup> (95% CI) |
| <b>All participants</b>              |                                 |                                      |   |                           |                         |
| <b>Age group (years)</b>             |                                 |                                      |   |                           |                         |
|                                      | 16-29                           | 17.7 (14.7 - 21.2)                   | 11.1 (8.9 - 13.6)                         | 6.3 (4.8 - 8.2)           | 4.1 (3.1 - 5.5)         |
|                                      | 30-39                           | 18.4 (15.0 - 22.4)                   | 8.9 (6.4 - 11.7)                          | 4.6 (3.1 - 6.8)           | 2.9 (2.0 - 3.4)         |
|                                      | 40-49                           | 12.5 (10.2 - 15.2)                   | 6.0 (4.7 - 7.7)                           | 3.0 (2.2 - 4.1)           | 2.4 (1. - 3.3)          |
|                                      | 50-59                           | 10.6 (8.5 - 13.2)                    | 4.6 (3.5 - 6.0)                           | 2.2 (1.5 - 3.1)           | 1.6 (1.1 - 2.5)         |
|                                      | 60-69                           | 5.4 (4.0 - 7.2)                      | 1.9 (1.4 - 2.7)                           | 1.0 (0.7 - 1.6)           | 0.7 (0.4 - 1.2)         |
| <b>Sexual identity</b>               |                                 |                                      |   |                           |                         |
|                                      | Heterosexual                    | 12.1 (10.8 - 13.4)                   | 5.9 (5.1 - 6.8)                           | 2.8 (2.3 - 3.4)           | 1.7 (1.3 - 2.1)         |
|                                      | Homosexual/lesbian/<br>bisexual | 58.0 (51.0 - 64.7)                   | 38.9 (32.5 - 45.7)                        | 31.6 (25.6 - 38.3)        | 28.8 (23.0 - 35.4)      |
| <b>Language spoken at home</b>       |                                 |                                      |   |                           |                         |
|                                      | Other                           | 15.3 (9.5 - 23.7)                    | 11.0 (6.4 - 18.5)                         | 4.8 (1.8 - 11.7)          | 1.2 (2.4 - 3.0)         |
|                                      | English only                    | 13.4 (12.1 - 13.8)                   | 6.7 (5.9 - 7.6)                           | 3.6 (3.1 - 4.3)           | 2.6 (2.2 - 3.1)         |
| <b>Annual household income</b>       |                                 |                                      |   |                           |                         |
|                                      | Very low/ low                   | 12.7 (9.7 - 16.3)                    | 7.9 (5.5 - 11.3)                          | 4.3 (2.6 - 6.9)           | 2.4 (1.5 - 3.9)         |
|                                      | Middle                          | 12.5 (9.5 - 16.4)                    | 6.9 (5.0 - 7.3)                           | 2.5 (1.6 - 3.7)           | 1.8 (1.1 - 2.9)         |
|                                      | High                            | 11.6 (8.9 - 15.1)                    | 3.2 (2.2 - 4.8)                           | 1.2 (0.7 - 2.0)           | 0.7 (0.3 - 1.3)         |
|                                      | Very high                       | 9.4 (7.3 - 12.1)                     | 3.5 (2.4 - 5.2)                           | 2.0 (1.2 - 3.4)           | 1.4 (1.0 - 2.1)         |
| <b>Area of residence<sup>c</sup></b> |                                 |                                      |   |                           |                         |

|   |                         |                    |                    |                    |                    |
|---|-------------------------|--------------------|--------------------|--------------------|--------------------|
|   | Urban                   | 14.2 (12.6 - 16.0) | 7.0 (6.0 - 8.1)    | 4.1 (3.4 - 5.0)    | 2.8 (2.3 - 3.4)    |
|   | Regional/remote         | 11.9 (10.1 - 14.1) | 6.9 (5.6 - 8.6)    | 2.8 (2.1 - 3.7)    | 2.0 (1.4 - 2.8)    |
| <b>High alcohol consumption</b>               |                         |                    |                    |                    |                    |
|   | No                      | 13.5 (12.1 - 15.1) | 6.9 (6.0 - 7.9)    | 3.5 (2.9 - 4.3)    | 2.4 (2.0 - 2.9)    |
|   | Yes                     | 13.5 (11.1 - 16.5) | 7.2 (5.7 - 9.2)    | 4.3 (3.0 - 6.0)    | 2.9 (2.0 - 4.2)    |
| <b>Injected drugs in last year</b>            |                         |                    |                    |                    |                    |
|   | No                      | 13.4 (12.1-14.8)   | 6.8 (6.0 - 7.8)    | 3.6 (3.1 - 4.3)    | 2.5 (2.1 - 3.0)    |
|   | Yes                     | 18.0 (12.1 -25.9)  | 11.4 (7.3 -32.1)   | 5.5 (3.0 - 10.0)   | 4.4 (2.2 - 8.7)    |
| <b>Smoking status</b>                         |                         |                    |                    |                    |                    |
|   | Never smoked/<br>former | 12.0 (10.7 - 13.5) | 5.7 (4.9 - 6.7)    | 3.0 (2.4 - 3.6)    | 2.2 (1.8 - 2.7)    |
|   | Current smoker          | 19.9 (16.7 - 23.5) | 12.1(9.8 - 14.8)   | 6.6 (4.9 - 8.9)    | 4.0 (2.9 - 5.5)    |
| <b>STI testing in last year</b>               |                         |                    |                    |                    |                    |
|   | No test                 | 10.1 (8.7 - 11.6)  | 4.2 (3.5 - 5.2)    | 2.0 (1.6 - 2.6)    | 1.5 (1.1 - 1.9)    |
|   | STI test                | 30.9 (25.6 - 36.6) | 20.7 (16.6 - 25.5) | 4.9 (11.1 - 19.2)  | 11.0 (8.5 - 14.2)  |
|   | STI diagnosis           | 59.4 (40.2 - 76.0) | 40.0 (23.9 - 58.7) | 32.9 (18.9 - 50.8) | 30.1 (17.6 - 48.9) |
| <b>Condom use with most recent partner</b>    |                         |                    |                    |                    |                    |
|   |                         |                    |                    |                    |                    |
|   | Used condoms            | 19.6 (17.0 - 22.3) | 12.4 (10.5 - 14.5) | 7.7 (6.3 - 9.4)    | 5.9 (4.9 - 7.2)    |
|   | Did not use             | 10.2 (8.9 - 11.7)  | 4.0 (3.4 -4.9)     | 1.5 (1.1 - 2.0)    | 0.7 (0.4 - 1.1)    |
| <b>Number of sexual partners in last year</b> |                         |                    |                    |                    |                    |
|   | 1                       | 10.1 (8.8-11.5)    | 3.8 (3.0-4.7)      | 1.3 (0.9-2.0)      | 0.6 (0.4-0.9)      |
|   | 2-3                     | 35.4 (31.1-39.9)   | 26.8 (22.8-31.1)   | 16.3 (13.1-20.1)   | 11.8 (1.1-15.2)    |
|   | >3                      | 41.2 (35.6-47.1)   | 33.6 (38.4-39.3)   | 26.5 (21.7-32.0)   | 23.3 (18.8-28.5)   |

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## 474 Appendix 2

475 Prevalence of looking for potential partners online and having sex with these partners

476 among females, N=9637 (4,294)<sup>a</sup>

477

| Characteristic                 |                                 | Searched for potential partner- ever | Searched for potential partner- last year | Met in person - last year | Had sex- last year      |
|--------------------------------|---------------------------------|--------------------------------------|---|---------------------------|-------------------------|
|                                |                                 | % <sup>b</sup> (95% CI)              | % <sup>b</sup> (95% CI)                   | % <sup>b</sup> (95% CI)   | % <sup>b</sup> (95% CI) |
| <b>All participants</b>        |                                 |                                      |   |                           |                         |
| <b>Age group (years)</b>       |                                 |                                      |   |                           |                         |
|                                | 16-29                           | 11.0 (8.6 - 14.1)                    | 5.8 (2.4 - 7.9)                           | 3.2 (2.4 - 4.3)           | 2.0 (4.1 - 2.9)         |
|                                | 30-39                           | 13.5 (10.9 - 16.6)                   | 3.7 (2.8 - 5.0)                           | 2.5 (1.7 - 3.6)           | 1.6 (1.0 - 2.6)         |
|                                | 40-49                           | 11.1 (9.0 - 13.7)                    | 3.4 (2.4 - 4.8)                           | 1.7 (1.1 - 2.7)           | 1.2 (0.6 - 2.1)         |
|                                | 50-59                           | 9.4 (7.5 - 11.7)                     | 2.3 (1.4 - 3.7)                           | 1.8 (1.0 - 3.2)           | 0.8 (0.3 - 2.3)         |
|                                | 60-69                           | 6.4 (4.7 - 8.6)                      | 1.8 (1.1 - 2.7)                           | 0.9 (0.4 - 1.9)           | 0.4 (0.1 - 1.7)         |
| <b>Sexual identity</b>         |                                 |                                      |   |                           |                         |
|                                | Heterosexual                    | 9.9 (8.8 - 11.1)                     | 3.3 (2.7 - 4.0)                           | 2.0 (1.6 - 2.4)           | 1.2 (0.9 - .16)         |
|                                | Homosexual/lesbian/<br>bisexual | 29.9 (24.1 - 36.5)                   | 13.4 (9.6 - 8.5)                          | 7.9 (5.1 - 12.0)          | 4.6 (2.6 - 8.0)         |
| <b>Language spoken at home</b> |                                 |                                      |   |                           |                         |
|                                | Other                           | 8.5 (3.7 - 18.2)                     | 4.9 (1.4 - 15.3)                          | 1.7 (0.6 - 4.6)           | 0.7 (0.1 - 3.0)         |
|                                | English only                    | 10.7 (9.6 - 12.0)                    | 3.7 (3.1 - 4.3)                           | 2.2 (1.8 - 2.7)           | 1.4 (1.0 - 1.8)         |
| <b>Annual household income</b> |                                 |                                      |   |                           |                         |
|                                | Very low/ low                   | 11.3 (9.4 - 11.8)                    | 5.4 (4.1 - 7.2)                           | 3.7 (2.6 - 5.4)           | 2.5 (1.6 - 4.0)         |
|                                | Middle                          | 8.5 (6.4 - 11.2)                     | 2.4 (1.6 - 3.6)                           | 1.3 (0.8 - 2.2)           | 0.5 (0.2 - 1.2)         |
|                                | High                            | 7.4 (5.4 - 10.2)                     | 1.6 (0.7 - 3.7)                           | 0.7 (0.3 - 1.3)           | 0.4 (0.2 - 1.0)         |
|                                | Very high                       | 10.2 (7.5 - 11.9)                    | 1.6 (0.9 - 2.8)                           | 1.0 (0.6 - 1.7)           | 0.5 (0.2 - 1.0)         |

|   |                         |                    |                    |                    |                    |
|---|-------------------------|--------------------|--------------------|--------------------|--------------------|
| <b>Area of residence <sup>c</sup></b>         |                         |                    |                    |                    |                    |
|   | Urban                   | 11.6 (10.2 - 13.2) | 4.1 (3.3 - 5.1)    | 2.5 (2.0 - 3.2)    | 1.5 (1.1 - 2.0)    |
|   | Regional/remote         | 8.5 (6.9 - 10.4)   | 2.9 (2.2 - 3.9)    | 1.4 (1.0 - 2.0)    | 1.0 (0.7 - 5.1)    |
| <b>High alcohol consumption</b>               |                         |                    |                    |                    |                    |
|   | No                      | 11.2 (9.8 - 12.8)  | 3.8 (3.1 - 4.7)    | 2.1 (1.7 - 2.7)    | 1.2 (0.9 - 1.7)    |
|   | Yes                     | 9.6 (7.8 - 11.6)   | 3.6 (2.7 - 4.7)    | 2.3 (1.7 - 3.1)    | 1.5 (1.0 - 2.3)    |
| <b>Injected drugs in last year</b>            |                         |                    |                    |                    |                    |
|   | No                      | 10.1 (9.4 - 11.7)  | 3.6 (3.0 - 4.3)    | 2.2 (1.8 - 2.6)    | 1.3 (1.0 - 1.7)    |
|   | Yes                     | 20.9 (13.3 - 31.2) | 8.8 (5.1 - 14.8)   | 3.8 (1.8 - 8.2)    | 2.2 (0.8 - 6.1)    |
| <b>Smoking status</b>                         |                         |                    |                    |                    |                    |
|   | Never smoked/<br>former | 10.2 (8.9 - 11.6)  | 3.4 (2.8 - 4.3)    | 2.2 (1.7 - 2.7)    | 1.4 (1.0 - 1.9)    |
|   | Current smoker          | 12.8 (10.3 - 15.6) | 5.1 (3.9 - 6.7)    | 2.5 (1.7 - 3.8)    | 1.4 (0.9 - 2.4)    |
| <b>STI testing in last year</b>               |                         |                    |                    |                    |                    |
|   | No test                 | 8.1 (6.9 - 9.5)    | 2.2 (1.7 - 3.0)    | 1.3 (0.9 - 1.8)    | 0.9 (0.6 - 1.3)    |
|   | STI test                | 18.4 (14.1 - 23.8) | 7.8 (5.4 - 11.2)   | 5.3 (3.8 - 7.3)    | 4.3 (3.0 - 6.2)    |
|   | STI diagnosis           | 25.9 (16.3 - 38.4) | 19.0 (11.3 - 30.4) | 15.3 (8.6 - 25.9)  | 9.8 (4.9 - 18.9)   |
| <b>Condom use with most recent partner</b>    |                         |                    |                    |                    |                    |
|   | Used condoms            | 14.6 (12.0 - 17.7) | 7.0 (5.5 - 8.9)    | 4.8 (3.8 - 6.1)    | 3.5 (2.6 - 4.7)    |
|   | Did not use             | 9.1 (8.0 - 10.4)   | 2.4 (1.9 - 3.1)    | 1.2 (0.9 - 1.6)    | 0.5 (0.3 - 0.9)    |
| <b>Number of sexual partners in last year</b> |                         |                    |                    |                    |                    |
|   | 1                       | 9.3 (8.1 - 10.5)   | 2.4 (1.8 - 3.0)    | 1.0 (0.7 - 1.4)    | 0.4 (0.2 - 0.7)    |
|   | 2-3                     | 31.5 (26.2 - 27.3) | 23.0 (18.4 - 28.3) | 17.8 (13.8 - 22.8) | 13.4 (9.9 - 17.8)  |
|   | >3                      | 33.9 (24.7 - 44.6) | 31.1 (22.3 - 41.6) | 28.2 (19.8 - 38.5) | 25.7 (17.6 - 25.9) |

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