

## Impact case study (REF3)

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| <b>Institution:</b> University College London   |   |  |
| <b>Unit of Assessment:</b> 2 - Public Health, Health Services and Primary Care  |   |  |
| <b>Title of case study:</b> The National Surveys of Sexual Attitudes and Lifestyles (Natsal): shaping sexual health policy and practice and enhancing public dialogue around sex.   |   |  |
| <b>Period when the underpinning research was undertaken:</b> Between January 2000 and December 2020   |   |  |
| <b>Details of staff conducting the underpinning research from the submitting unit:</b>  |   |  |
| <b>Name(s):</b>   | <b>Role(s) (e.g. job title):</b>                                | <b>Period(s) employed by submitting HEI:</b> |
| Professor Dame Anne Johnson   | Principal Investigator of Natsal-1-2-3                          | Between 1980s and present                    |
| Professor Cath Mercer   | Statistician for Natsal-2-3, Co-Principal Investigator Natsal-4 | Between 2012 and present                     |
| Professor Pam Sonnenberg  | Biobank lead for Natsal-3, Co-Principal Investigator Natsal-4   | Between 2008 and present                     |
| Professor Andrew Copas  | Lead statistician for Natsal-2-3-4                              | Between 2001 and present                     |
| Dr Nigel Field  | Research Associate for Natsal-3, Biobank lead for Natsal-4      | Between 2017 and present                     |
| <b>Period when the claimed impact occurred:</b> Between 29 November 2013 and August 2020  |   |  |
| <b>Is this case study continued from a case study submitted in 2014?</b> Yes  |   |  |
| <b>1. Summary of the impact</b>   |   |  |
| <p>Led by UCL, the National Surveys of Sexual Attitudes and Lifestyles (Natsal), established in the 1980s and carried out every decade since 1990, have made major contributions to sexual health policy and practice, and enhanced the public dialogue around sex. Since 2013, Natsal's impact has continued to expand, for example in shaping the UK's HPV vaccination policy, the National Chlamydia Screening Programme (NCSP), more effective HIV prevention and control, the statutory role of sex and relationship education (SRE) in schools, and other vital health promotion campaigns (including those addressing health inequalities), and public engagement activities.</p>  |   |  |
| <b>2. Underpinning research</b>   |   |  |
| <p>Natsal are large, probability-sample, bio-behavioural surveys representative of Britain's population. They are the first of their kind, the largest in the world, and the inspiration for many subsequent surveys.</p> <p>Professor Johnson et al. initiated Natsal in the 1980s in response to the emerging HIV epidemic and it has evolved to become internationally renowned in the population-based measurement of the social, behavioural and biological aspects of sexual health. Together, Natsal-1 (1990), Natsal-2 (2000) and Natsal-3 (2010) have interviewed &gt;45,000 men and women, spanning those born throughout much of the 20th Century. Natsal's repeat cross-sectional design has enabled the UCL-led research team to present a contemporary picture of sexual attitudes and lifestyles while also capturing generational changes and broad societal shifts through the measurement of both period and birth cohort effects.</p> <p>Natsal provides evidence of the context, influences and consequences of sexual lifestyles. It continues to be vital for informing national and international sexual health strategies and monitoring their impact. Natsal is widely used to: deliver and evaluate sexual and reproductive health interventions; inform clinical practice; provide population-level evidence on sexual health service use; and support the work of charities and professional bodies (e.g. British Association for Sexual Health and HIV (BASHH)). Key findings from Natsal-3 include evidence of:</p> |   |  |

Significantly increased uptake of sexual health clinic attendance and HIV testing between 2000 and 2010, especially among those at highest risk [R1] - in line with national strategies to improve access to services;

Human Papilloma Virus (HPV) being the most common STI in Britain, with certain high-risk HPV types, associated with an increased risk of cervical cancer, found in almost one in six women aged 16 to 44 [R1] – underpinning the need for a national HPV vaccination programme;

Young adults testing for chlamydia being more likely to report factors associated with chlamydia (e.g. more sexual partners), yet substantial proportions of those with risk factors reported not recently testing [R2] – important information for the evaluation of the NCSP;

Some STIs, e.g. *Neisseria gonorrhoeae*, being relatively rare in the British population [R1], and *Mycoplasma genitalium* (MGen) as an emerging STI [R3] - with implications for clinical practice and public health screening;

Ethnic inequalities in sexual health markers that are not fully explained by differences in their broader determinants [R4] - requiring complex interventions that address modifiable risk factors and target ethnic groups at risk of poor sexual health;

Men who have sex with men (MSM) being disproportionately affected by a range of harmful health behaviours and poor health outcomes, with health inequalities often seen in combination [R5] - calling for a holistic approach to improve the health and well-being of MSM, as now reflected in national guidelines;

Young people's sex education needs continuing to be unmet with most reporting not knowing enough when they first felt ready for sexual experience - leading to a call for resources to enable educators to address a broader range of topics when delivering sex and relationship education [R6].

A broadening of sexual repertoires between 2000 and 2010, including an increase in the proportion of women reporting same-sex activity, and the reporting of more varied sexual practices [R7] - consistent with rising incidence of sexually transmitted infections (STIs).

### 3. References to the research

The outputs from the three Natsal surveys are multidimensional in line with the San Francisco Declaration on Research Assessment. Several peer-reviewed publications (including two series in the *Lancet*) have resulted from the primary research underpinning Natsal (see: <https://www.natsal.ac.uk/publications>) in addition to numerous scientific papers that have used Natsal data (e.g. mathematical models) and which have informed recommendations and policy briefings.

[R1] Sonnenberg, P., Clifton, S., Beddows, S., et al. (2013). 'Prevalence, risk factors, and uptake of interventions for sexually transmitted infections in Britain: findings from the National Surveys of Sexual Attitudes and Lifestyles (Natsal)'. *Lancet*, **382**, 1795-1806. DOI: [http://doi.org/10.1016/S0140-6736\(13\)61947-9](http://doi.org/10.1016/S0140-6736(13)61947-9)

[R2] Woodhall, S.C., Soldan, K., Sonnenberg, P., et al. (2016). 'Is chlamydia screening and testing in Britain reaching young adults at risk of infection? Findings from the third National Survey of Sexual Attitudes and Lifestyles (Natsal-3)'. *Sexually Transmitted Infections*. **92**(3), 218-227. DOI: <http://doi.org/10.1136/sextrans-2015-052013>

[R3] Sonnenberg, P., Ison, C.A., Clifton, S., et al. (2015). 'Epidemiology of *Mycoplasma genitalium* in British men and women aged 16-44 years: Evidence from the third National Survey of Sexual Attitudes and Lifestyles (Natsal-3)'. *International Journal of Epidemiology*. **44**, 1982-94. DOI: <http://doi.org/10.1093/ije/dyv194>

[R4] Wayal, S., Hughes, G., Sonnenberg, P., et al. (2017). 'Examining ethnic inequalities in sexual behaviours and lifestyles: evidence from a British national probability sample survey'. *Lancet Public Health*. **2**, e458-472. DOI: [http://doi.org/10.1016/S2468-2667\(17\)30159-7](http://doi.org/10.1016/S2468-2667(17)30159-7)

[R5] Mercer, C.H., Prah, P., Field, N., et al. (2016). 'The health and well-being of men who have sex with men in Britain: Evidence from the third National Survey of Sexual Attitudes and Lifestyles (Natsal-3)'. *BMC Public Health*. **16**, 525. DOI: <http://doi.org/10.1186/s12889-016-3149-z>

[R6] Tanton, C., Jones, K.G., Macdowall, W., et al. (2015). 'Patterns and trends in sources of information about sex among young people in Britain: evidence from three National Surveys of Sexual Attitudes and Lifestyles'. *BMJ Open*. **5**, e007834. DOI: <http://doi.org/10.1136/bmjopen-2015-007834>

[R7] Mercer, C.H., Tanton, C., Prah, P., et al. (2013). 'Changes in sexual attitudes and lifestyles in Britain through the life course and over time: findings from the National Surveys of Sexual Attitudes and Lifestyles (Natsal)'. *Lancet*. **382**, 1780-1794. DOI: [http://doi.org/10.1016/S0140-6736\(13\)62035-8](http://doi.org/10.1016/S0140-6736(13)62035-8)

#### 4. Details of the impact

Natsal is the primary source of information about sexual behaviour and sexual health service use in Britain, and has influenced the design and delivery of other national sex surveys, including those in Ireland, Germany, Slovenia, Australia, New Zealand, and the US. Natsal's international impact has been recognised by its choice as an example in the World Health Organization's development of a standardised, population-representative sexual health survey instrument [S1].

In Britain, Natsal is used widely by policymakers, clinicians and service planners to design, deliver and monitor a number of sexual and reproductive health strategies. For example, Natsal was recognised in the House of Commons' Health and Social Care Committee's Inquiry into Sexual Health in 2019, which sought to identify priority areas for the next national strategy to help both providers and commissioners deliver sexual health services to a high quality and consistent level [S2]. Natsal's submission cited evidence from 37 peer-reviewed articles (including [R1] to [R7]) to inform this prioritisation exercise. Impacts since 2013 include:

**Evidence to inform HPV vaccination policy:** As the world-leading research resource on sexual health, due to its unique size, detail and quality, Natsal provides the underlying population behavioural and biological parameters (e.g. sexual mixing patterns by age and gender at a population level) that are essential for transmission models of the impact and cost-effectiveness of HPV vaccination programmes in the UK and internationally. These are repeatedly used by the Department of Health's Joint Committee on Vaccination and Immunisation's (JCVI) to model effectiveness and cost-effectiveness and recommend (i) extending vaccination to men who have sex with men (MSM) in JCVI's 2015 statement on HPV vaccination in MSM [S3], and (ii) in its July 2018 statement recommending extending the HPV vaccination programme to adolescent boys [S3]. The reach of this impact extends to a number of countries that use these parameters to inform decision-making, for example 2016 research led by the International Agency for Research on Cancer used Natsal's HPV transmission model to show links between age-specific sexual patterns and HPV vaccination effectiveness, considering rural India and the USA as examples of two heterosexual populations with tradition and gender-similar age-specific sexual behaviour [S4].

**Contributing to the National Chlamydia Screening Programme (NCSP):** Public Health England (PHE) delivers the NCSP and relies on Natsal to understand the risk of chlamydia infection within the general population; co-infection with other STIs; knowledge of risk; and the factors associated with risk; as described in its 2017 evidence pack for external peer reviewers [S5]. This intelligence has contributed, for example to the 2020 'State of the nation' report by the Terrence Higgins Trust, which cites Natsal evidence alongside its recommendations to reduce societal inequalities in levels of chlamydia infection: "*research using the Natsal-3 survey highlighted the potential impact of poverty. It found higher prevalence of chlamydia among women living in deprived areas despite testing rates not being any higher*" [S6].

**Shaping screening and clinical guidelines for (other) STIs and sexual health service delivery:** Importantly, Natsal captures those who do - as well as those who do not - attend services, which is especially important as STIs can be asymptomatic and stigmatised. For cases diagnosed in sexual health clinics, Natsal provides the population-based perspective and informs appropriate screening strategies. For example, the low prevalence of gonorrhoea in the general population raises the issue of false positives, as outlined in PHE's national guidance on the management of gonorrhoea (2014): "*A recent population-based survey [Natsal] detected gonorrhoea only in those aged 20-24 years; in this age group the prevalence was 0.1% in men and 0.2% in women.....despite excellent specificity, high rates of false positive tests can occur*

due to low gonorrhoea prevalence in the population tested and the potential for cross reaction with non-gonococcal neisseria species" [S7]. Also, Natsal's evidence that there are differences in the age- and sex-specific prevalences of chlamydia and *M. Genitalium* (MGen), with higher prevalence in older age groups than those targeted in the NCSP, has formed the basis for the BASHH's 2018 national guidelines for the management of infection with MGen, which recommends the management of patients who are symptomatic and attend services, rather than a population-based MGen screening programme in young people [S7].

**Impact on HIV prevention, control and service provision:** Natsal data are essential for use in mathematical models used by PHE for estimating the national burden of HIV. The models combine anonymous prevalence surveillance data with Natsal's estimates of the size of the population at risk to estimate the number infected and the proportion who remain undiagnosed [S8]. In addition, Natsal parameters and data have been used to evaluate the cost-effectiveness of key interventions, including the roll-out of pre-exposure prophylaxis (PrEP) for HIV, as described in an NIHR-funded analysis published in *Lancet Infectious Diseases* which showed that introduction of PrEP could result in a GBP1bn cost saving and prevent 25% of HIV infections within 15 years [S8]. Natsal also continues to inform national HIV prevention efforts by providing robust underpinning evidence, for example those run by charity the National AIDS Trust in its 2015 report 'Preventing HIV in the UK heterosexual population': "*HIV transmission studies and prevention interventions for heterosexuals are mainly built on an assumption of vaginal sex as the primary route of transmission. The most recent Natsal survey has found an increase in the number of respondents reporting anal sex. In 2010-12, 15% of women reported anal sex, compared with 11% in 1999-2001...HIV prevention efforts should consider specific behavioural risks and prevention needs of heterosexuals, for example anal sex and partner numbers, just as we do for MSM.*" [R7], [S8].

**Evidence to address health inequalities:** Natsal-3 demonstrated how MSM are disproportionately affected by a range of harmful health behaviours and poor health outcomes, and this contributed to the evidence base informing national guidelines to identify problematic recreational drug and alcohol use among MSM as a marker for increased STI risk [S9]. Similarly, Natsal-3's evidence of a greater burden of poor sexual health among ethnic minorities is recognised by BASHH and the Terrence Higgins Trust in their 2020 'State of the Nation' report, leading them to call commissioners to translate the evidence into effective targeted prevention interventions as part of their provision of sexual health services [S6].

**Impact on Sex and Relationship Education (SRE):** Natsal informs the content and delivery of evidence-based SRE, including in public-facing resources disseminated by sexual health charities e.g. Brook, Relate, PSHE Association, and the Sex Education Forum (SEF). According to SEF's Director, Lucy Emmerson: "[we] quote [Natsal] [in everything we do and we have made it accessible for approximately 100 partner organisations and network of hundreds of schools]" [S10]. In November 2014, Natsal collaborated with the SEF to deliver 'SRE: Coming of Age', a conference to pre-release Natsal-3's SRE-related findings to those involved with the (then) Education Select Committee Inquiry into SRE, and those working in local authorities who received SEF's 'A briefing for local councillors on Relationships and Sex Education'. This included bespoke infographics created from Natsal-3 data to share with and inform their Directors of Public Health. According to the SEF, Natsal research played a key part in the Education Select Committee concluding that SRE should be statutory [S10].

**Contribution to public engagement activities on sexual health:** Natsal has played a key role in contributing to public conversations about sex (for example Mercer's 2014 TEDx talk about the realities of people's sex lives; >250,000 views; 1,700 likes [S11]) and promoting the public's understanding of sex research. Natsal was the inspiration for the Wellcome Collection's highly successful 'Institute of Sexology' exhibition in 2015, which was accompanied by 117 live events and 82 workshops, attended by 8,600 participants. This was accompanied by a book named after the exhibition, and also Professor Sir David Spiegelhalter's book 'Sex by numbers', that showcased Natsal as one of the few examples of high-quality research into sexual behaviour.

## 5. Sources to corroborate the impact

[S1] Surveys influenced by Natsal [Ireland](#) (ISSHR), [Germany](#) (GeSiD), [Slovenia](#), [Australia](#), [New Zealand](#), and [the US](#) ; WHO [Sexual Health Survey Instrument open call](#)

[S2] <https://publications.parliament.uk/pa/cm201719/cmselect/cmhealth/1419/report-summary.html> - see submission number 50.

[S3] [JCVI statement on HPV vaccination of men who have sex with men](#), November 2015. with subsequent publication: Allen L, Ong KJ, Hobbelen P, King E, Mesher D, Edmunds WJ, Sonnenberg P, Gilson R, Bains I, Choi YH, Tanton C, Soldan K, Jit M. (2018). 'Impact and Cost-effectiveness of Selective Human Papillomavirus Vaccination of Men Who Have Sex With Men'. *CID*, **64**. DOI: [doi.org/10.1093/cid/ciw845](https://doi.org/10.1093/cid/ciw845); and [JCVI statement on extending the human papillomavirus infection \(HPV\) vaccination programme to adolescent boys in the UK](#). July 2018. with subsequent publication: Datta S, et al. (2019). 'Assessing the cost-effectiveness of HPV vaccination strategies for adolescent girls and boys in the UK'. *BMC Infect Dis*, DOI: [10.1186/s12879-019-4108-y](https://doi.org/10.1186/s12879-019-4108-y)

[S4] Baussano I, Lazzarato F, Brisson M, Franceschi S. Human Papillomavirus Vaccination at a Time of Changing Sexual Behavior. (2016). *Emerg Infect Dis*. **22**(1):18- 23. DOI: [10.3201/eid2201.150791](https://doi.org/10.3201/eid2201.150791)

[S5] SJ Migchelsen, GS Davis, et al. (2017). [National Chlamydia Screening Programme External Peer Review: Evidence Pack](#). London: Public Health England. Natsal cited >30 times

[S6] [BASHH/THT State of the Nation – Sexually Transmitted Infections in England](#). Terrence Higgins Trust, 2020 – Natsal cited on pages 19, 28, 30, and 49

[S7] Guidelines including: [Hughes G, Ison C, Field N, et al. \(2014\). Guidance for the detection of gonorrhoea in England. London: Public Health England](#) and Soni S, Horner P, Rayment M, et al. British Association for Sexual Health and HIV national guideline for the management of infection with *Mycoplasma genitalium* (2018). *Int J STD AIDS*. 2019;30(10):938-950. DOI: [10.1177/0D56462419825948](https://doi.org/10.1177/0D56462419825948)

[S8] Impact on HIV policy including: PHE '[Progress towards ending the HIV epidemic in the United Kingdom 2018 report](#)' (Natsal provided the underlying papers for the mathematical modelling of the impact of increased testing and earlier ART on HIV transmission (refs 7 and 8 in the report); Cambiano V, Miners A, Dunn D, et al. (2016). 'Cost-effectiveness of pre-exposure prophylaxis for HIV prevention in men who have sex with men in the UK: a modelling study and health economic evaluation'. *Lancet Infect Dis*. DOI: [doi.org/10.1016/S1473-3099\(17\)30540-6](https://doi.org/10.1016/S1473-3099(17)30540-6); National AIDS Trust: [Preventing HIV in the UK heterosexual population](#). – Natsal cited on pages 7 and 9.

[S9] Clutterbuck D., Asboe D., Barber T., et al. (2018). 'United Kingdom national guidelines on the sexual health care of men who have sex with men'. *Int J STD & AIDS*. DOI: [doi.org/10.1177/0956462417746897](https://doi.org/10.1177/0956462417746897) – Natsal cited on page 4.

[S10] Public-facing resources disseminated by sexual health charities on SRE with content and delivery informed by Natsal evidence:

<https://www.brook.org.uk/about-brook/our-beliefs/> - Natsal cited under RSE 'Factual briefing, useful links and resources'; <https://www.relate.org.uk/all-together-now-stronger-relationships-stronger-society> - Natsal cited on page 31; [Sex and Relationships Education \(SRE\) for the 21<sup>st</sup> century. Supplementary guidance developed by the PSHE Association, Brook, and Sex Education Forum. PSHE Association, 2014; Sex Education Forum's Letter of Support for Natsal \(as submitted to Wellcome Trust\) for funding Natsal Resource \(see attached PDF\); \[https://www.sexeducationforum.org.uk/sites/default/files/field/attachment/RSE\\\_Hub%20briefing%20document\\\_Final.pdf\]\(https://www.sexeducationforum.org.uk/sites/default/files/field/attachment/RSE\_Hub%20briefing%20document\_Final.pdf\) - Natsal data presented on page 12.](#)

[S11] Natsal-informed public engagement activities on sexual health:

<https://www.youtube.com/watch?v=SLy9bDayMJY>; Wellcome press release and blog: <https://wellcomecollection.wordpress.com/2015/10/07/sexology-season-2015/> <https://wellcome.org/press-release/sex-numbers-wellcome-collection-launches-national-sexology-season>