Challenges for Measuring the LGBT+ Population and Homophobia in Mexico

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February 2023

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Abstract[*]

We contribute to understanding the challenges for estimating the size of the LGBTQ+ population and discriminatory sentiment against it by surveying 10,003 individuals, whom we randomize into a direct question or an Item Count Technique (ICT) elicitation group. The fractions of the population that self-identify as LGBTQ, that reports having had same-sex sexual experiences, and that has felt same-sex attraction are higher for our sample than those obtained from government surveys. However, the difference between estimates recovered from our direct questions and through the ICT does not always have the expected sign. The negative relationship between age and self-identifying as non-heterosexual is present both in the government survey and in our direct question sample but vanishes when measured with the ICT. The positive correlation between age and homophobic sentiment is present across samples and elicitation techniques. We find no significant variation in all measures for formal vs informal workers.

1. Introduction

Societal expectations about gender roles may impose relatively larger barriers for the personal and professional development of women (Jayachandran, 2015) and members of the LGBTQ+ population (Welle and Button, 2004).[1] In recent years, efforts have been made to compensate for these differential barriers by introducing and pushing for a large set of policies, with some success (King and Mason, 2001).

When addressing the challenges associated with the inclusion of the LGBTQ+ population, however, one obstacle may hinder these efforts' effectiveness. In many instances, the LGBTQ+ population must reveal their identity in order to be validated, included, and respected. But showing one's identity may also come at a cost. Homophobia, the source of the very same barriers that may discourage the LGBTQ+ population from some personal and professional paths, makes it costly for them to publicly reveal their identity.[2] This may be an additional obstacle for the LGBTQ+ population to benefit from any possible policy aimed at offering them equal opportunities similar to their heterosexual, cis-gender colleagues. Moreover, the efficient allocation of resources to combat homophobia also requires precise measures of its prevalence across settings.[3]

In this paper, we contribute to documenting the difficulty in measuring both the size of the LGBTQ+ population and homophobia, for different age groups and how they vary by age, gender, and across formal and informal labor markets in Mexico. To do so, we compare measures of LGBTQ+ self-identification and explore its relationship with age and labor market choices through both direct questions and an item count technique (ICT) experimental setting, and we contrast these estimates with those reported in an official, nationally representative survey.

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[1] Over the last decades, as a society we have come to learn about and recognize the wide diversity of sexual identities and gender identities and expressions. As we evolve in our understanding of human sexuality, so too has our language. In particular, the term LGBT has been broadened to LGBTQ, LGBTQQIA, LGBTQ+ and LGBTQIA+. In this paper, we use the terms LGBT+ and LGBTQ+ indistinctly as umbrella terms to refer to non-heteronormative identities. We fully recognize that these terms are *not* equivalent and are not implying that they are. However, given certain limitations in our survey instrument, we feel that the use of these terms is adequate in this study.

[2] We use the term homophobia to refer to prejudice, intolerance, bias or hatred toward *any* member of the LGBTQ+ community. Although more precise terms exist (such as, for instance, biphobia to refer to prejudice against bisexual people), we use homophobia as an umbrella term for any LGBTQ+ phobia. This is in line with definitions and usage indicated by organizations such as the United Nations and GLAAD. While we recognize the power of language, we believe that, in the context of this study, the word homophobia is a sufficiently accurate description of all types of negative attitudes and actions towards members of the LGBTQ+ community.

[3] In development economics, there is a long-standing literature asking similar questions regarding how to better measure poverty in order to better target resources and policies. See, for instance, Alatas et al. (2016).

Mexico is an interesting setting for exploring these questions for various reasons. First, the advancement of LGBTQ+ rights has followed very heterogeneous paths across the country, given that legislation of rights is decided at the state level. Some of the recent advances in equal rights in Mexico include same-sex marriage, adoption of children by same-sex couples, allowing gender changes on official documents, and prohibiting gay conversion therapies. However, not all states have adopted these protections, which have only been implemented in the most liberal states, such as Mexico City. Second, Mexico is a culturally diverse country, with large regional and national inequalities that may map differently into acceptance and homophobia than in developed nations. And lastly, aware of these challenges, during 2021, the government conducted, for the first time, a nationally representative survey aimed at measuring the size of the LGBTQ+ population and the societal changes they face. The results of this unique exercise, released in the summer of 2022, are aimed at informing policy design. Contributing to better understanding the challenges faced by this survey (and policymakers) to recover truthful estimates of the size of the LGBTQ+ population is of utmost importance.

We contribute to understanding these challenges for measurement by developing an instrument and surveying 10,003 employed individuals between the ages of 20 and 64; the survey was implemented online with the assistance of a market research company.[4] We first ask general sociodemographic questions and questions about work characteristics that allow us to identify whether each respondent's current job is in the formal or informal sector. We then randomize respondents into a direct question or ICT elicitation group. We seek to measure eight sensitive topics: three related to respondents' own sexuality, three related to homophobia, and two related to feeling of inclusion in the workplace.

The literature has typically reported the ICT share as the "true" prevalence of the sensitive item. This may hold under the assumption that respondents interpret the ICT as a more private elicitation technique than direct questions, and as long as this added level of privacy leads to a higher (average) probability of truth-telling. A related but alternative interpretation is that direct questions are more likely to be contaminated by social desirability bias. Some studies have questioned whether the estimates obtained through ICT techniques should be interpreted as more truthful measures (Chuang et al., 2021). In this paper, we avoid taking a stance on which of the estimates presented may be closer to the truth. We believe that simply documenting differences in

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[4] The company, Netquest, is a global company with vast experience running surveys for market research purposes.

the estimates illustrates the challenges of estimating the size of LGBTQ+ population and the prevalence of homophobia.

Our results suggest that the answers to questions related to sexual orientation, gender identity and homophobic sentiment differ greatly depending on elicitation methods and survey characteristics, while some patterns are consistent across them. In particular, the fraction of the population that self-identifies as LGBTQ, that reports having had same-sex sexual experiences, and that has felt same-sex attraction are higher for our sample when recovered through our survey (regardless of the elicitation method) than those obtained from a nationally representative survey concurrently conducted by the National Statistics Office (*Instituto de Estadística y Geografía*, INEGI).

Surprisingly, focusing on the results from our survey, self-identification as LGBTQ+ is lower when recovered from the ICT. However, anti-gay sentiment (such as being opposed to same-sex marriage) is higher when recovered through the veiled method. The negative relationship between age and self-identifying as non-heterosexual documented both in the national survey and in our direct questioning sample vanishes when the question is asked through the veiled methodology. The positive correlation between age and homophobic statements is present across samples and elicitation techniques. We do not find any differential levels or patterns in any questions by type of labor market (formal vs informal). Obtaining precise measures of the size of the LGBTQ+ population and discriminatory sentiment seems a rather difficult empirical task.

The paper is presented as follows. The next section describes the context. Section 3 discusses our survey. Section 4 describes our empirical strategy. Section 5 presents the results. Section 6 provides a discussion and concludes.

2. Background

2.1 LGBTQ+ Population and Measurement in Mexico

On June 28th, 2022, INEGI released the results of the National Survey on Gender and Sexual Diversity (*Encuesta Nacional sobre Diversidad Sexual y de Género*, ENDISEG), a nationally representative survey conducted between August 23, 2021, and January 16, 2022, aimed at measuring the size of the LGBTQ+ population and the prevalence of discriminatory practices against them. This is the first systematic effort made by INEGI to measure these issues. The information retrieved by this survey is thus of incredible importance for the visibility of the

LGBTQ+ population, and for identifying the challenges faced by these groups in Mexico. The main objectives were to determine the size of the LGBTQ+ population, document the prevalence of social stigma against these groups, and the differences in access to different government policies between the LGBTQ+ individuals and the rest of the population, and provide statistical information that will facilitate the design and targeting of policies aimed at reducing these inequalities and social barriers.[5]

The design of ENDISEG seems to have taken into consideration that the questions asked could be deemed sensitive, threatening the ability to recover truthful responses. While the survey was conducted in-person, the mechanism through which individuals answered the questions regarding their sexual orientation and gender identity attempted to provide them as much privacy as possible. In particular, after responding to the basic demographic questions directly to the surveyor, participants were handed a tablet and a set of headphones. Each of the sensitive questions' statements was pre-recorded and only heard by the respondents, who then answered directly on the tablet.

Table 1 shows some of the statistics reported by ENDISEG. We highlight that 14.5 percent of women and 10.1 percent of men declare having felt attracted to individuals of their same sex, 4.3 percent of women and 5.7 percent of men report having had a same-sex sexual encounter, and 5.7 percent of women and 4.6 percent of men identify as non-heterosexual.

These numbers are higher than those recovered from similar exercises in developed countries. For instance, results from the United Kingdom's Annual Population Survey report that 3.1 percent of the population identifies as lesbian, gay or bisexual.[6] Likewise, 4 percent of the Canadian population aged 18 or older identifies as LGBTQ+.[7] Unfortunately, ENDISEG's design does not allow for testing whether these differences are truly due to differences in the size of the LGBTQ+ population in each country, or to differential incentives for truthful reporting in the surveys from which these numbers were recovered. However, ENDISEG does provide evidence in support of the hypothesis that revealing sexual orientation and gender identity is socially costly: 13 percent of respondents who declare being non-heterosexual also report not having shared their sexual orientation with anyone else.

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[5] https://www.inegi.org.mx/contenidos/programas/endiseg/2021/doc/endiseg_2021_nota_tecnica.pdf
[6] https://www.ons.gov.uk/peoplepopulationandcommunity/culturalidentity/sexuality/bulletins/sexualidentityuk/2020
[7] https://www150.statcan.gc.ca/n1/daily-quotidien/210615/dq210615a-eng.htm

This last fact is not surprising given the opposition to the recognition of equal rights to LGBTQ+ groups, also documented in ENDISEG. Only 54.9 percent of self-declared heterosexual respondents agree that same-sex couples should be affectionate in public, 41 percent oppose same-sex marriage, and 56 percent disagree with the statement that same-sex couples should be allowed to adopt children.

Analyzing this survey in more detail, other interesting patterns arise. As Figure 1 shows, the fraction of (male and female) respondents who self-report being non-heterosexual is steeply decreasing with age, more so for women. The fraction of respondents who agree that adoption by same-sex couples should be allowed is higher among women, but also decreases with age, regardless of respondents' gender. Very small differences arise when comparing the share of respondents self-identifying as part of the LGBT+ population between the formal and informal sectors.

These patterns could suggest a number of things and will potentially inform policy design. Given the possibility of misreporting, however, it is unclear how they should be interpreted if used with this objective. For instance, the growing share of self-identified LGBTQ+ individuals among younger groups could shift resources away from older age groups and towards the design and implementation of inclusive policies in schools and entry-level jobs. However, if these differences are driven by differences in the *perceived* costs of truthful reporting in these surveys for older generations (as suggested by the larger fraction of respondents in those age groups opposing LGBTQ rights), policies fostering inclusion may be more urgent among older age groups. A clearer sense of the degree of misreporting is thus crucial for the picture painted by surveys of this kind to be informative enough for policy makers.

2.2 Measurement and ICT Elicitation

In order to shed light on the potential difficulties at precisely measuring the size and stigma against the LGBTQ+ population, we conduct a list experiment or ICT. There is a vast literature that has used this method. It has been argued that, by allowing greater privacy, the ICT is more likely to recover truthful answers (Blair and Imai, 2012; Glynn, 2013). However, recent literature has also questioned whether the results obtained from ICT instruments should actually be considered closer to the truth (Chuang et al., 2021; Simpser, 2017).

List experiments have been used in a large variety of topics that researchers have deemed sensitive. When the experimental design has allowed for comparing the recovered estimates from ICTs and those from direct questions, the change in prevalence has not always gone in the expected direction. Jamison et al. (2013) recover measures of condom use, number of sexual partners and unfaithfulness through both direct questioning and an ICT. For the full sample, they find no significant difference in the fraction of respondents reporting condom usage, a larger fraction of self-reported unfaithfulness through the ICT, and a smaller number of sexual partners through the ICT than from direct questions, especially among female respondents. Agüero and Frisancho (2022) find no difference between methods in self-reported intimate partner violence. Rosenfeld et al. (2016) find closer-to-the-truth estimates of anti-abortion support when using indirect methods. Similarly, Karlan and Zinman (2012), recover larger shares of non-entrepreneurial loan proceeds.

The work closest to this paper is Coffman et al. (2017), which compares self-reported identification as LGB in the United States and antigay sentiment recovered from direct questions and through an ICT. The ICT delivers larger estimates for identifying as non-heterosexual, having had a same-sex experience, not considering it illegal to discriminate against the LGB population, and declaring a preference for having a non-LGB manager. However, the ICT also delivers no statistically significant differences for supporting same-sex marriage, and a significantly smaller fraction of respondents who believe that sexual orientation in changeable. Guarin et al. (2023) also conduct an ICT to recover measures of self-identification as LGBTQ+ in Bogota, finding important differences between their recovered measures and those obtained from a government survey that uses direct questions.

In light of the conflicting evidence, in this paper we do not attempt to interpret the estimates recovered from the ICT as strictly more truthful. Instead, we argue that the documented differences between the estimates obtained from direct questions and the ICT stress the difficulty for identifying the LGBTQ+ population and the challenges they face across genders, generations, and in different professional environments.

3. Experimental Design

3.1 Survey

We designed and implemented an online survey with the help of a market research company in Mexico. We did not gather any individually identifying information from respondents and provided a data privacy agreement before presenting the questions. We imposed quotas for our sample, requiring 50 percent female respondents, an age distribution that follows that of the Mexican population from the 2020 census, and location requirements as follows: 35 percent of respondents in Mexico City, 7.5 percent each in Guadalajara and Monterrey, and the rest in other metropolitan areas. Our final sample consists of 10,003 individuals between the ages of 20 and 64 years old that are currently employed. Due to the nature of the market research company's respondent database, we consider that this sample is skewed towards respondents in a middle and high socioeconomic level, with internet access, who feel comfortable and have experience answering online surveys, and (perhaps) individuals who are interested in earning additional income by taking these types of market research surveys.

Apart from the differences in the sample's composition, the level of privacy and the incentives for truthful reporting may differ substantially in our survey from those in ENDISEG. First, our instrument was fully conducted online, and participants could respond in complete privacy. Second, participants were aware of the fact that the company with which we partnered was the one inviting them to take the survey. The extent to which respondents inferred that the surveyor's objectives were different from those of an INEGI surveyor may also have implied different incentives for truth-telling in this context. For instance, one may conjecture that some participants inferred that self-identifying as LGBTQ+ in a marketing survey could imply a higher (or lower) likelihood of being invited to participate in future surveys.

The survey instrument consisted of two parts. In the initial section, we asked about sociodemographic characteristics: binary gender (as this is how the market research company recruits and registers individuals), age group, city of residence, education, marital status, and various work characteristics. In order to measure labor market formality, we consider two alternatives. First, we asked whether respondents had access to social security through their current job. Second, we asked whether respondents had a boss or supervisor at their current job. If they said yes, then we asked whether they had a contract and what type (short-term, long-term/undefined, or by project). If they said no, we asked whether they reported income directly to

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the government. We consider workers to be formal if they have a boss and a contract or if they do not have a boss but do report income to fiscal authorities. We obtained respondents' socioeconomic status (SES) from a classification made by the market research company.

In the second part of the survey, we were interested in measuring participants' responses to eight sensitive topics related to their own sexuality, homophobia, and inclusion at work. Table 2 shows these questions as well as our assessment of which answers (yes or no) would constitute a sensitive response (one that respondents would be more likely to give if privacy was guaranteed) and which would be most likely considered the socially conservative response. Although there are many ways to measure a person's sexuality, given that our survey required binary gendered respondents, we chose to use whether a person self-identifies as part of the LGBT+ community, whether they have ever had a same-sex sexual encounter, and whether they have ever felt attracted to a person of the same sex. For homophobic sentiment, we asked if they consider gay people can change with therapy, if they consider gay couples should be allowed to adopt children, and if they would rather work with a straight person (if they only had one co-worker).[8] Lastly, for inclusion at work we asked if they felt socially included at work and if they had made any friends at work.

Respondents were randomly assigned to a direct elicitation (N=5,005) or ICT (N=4,998) group.[9] In each case, participants were first shown instructions and an example for how to answer the following questions. Then, for each of the eight sensitive topics, respondents were shown a group of statements from which they had to tell us how many of them were true for them, without stating which ones. Respondents in the direct question group were shown four (unrelated) statements in this exercise and were then asked the sensitive question directly. Respondents in the ICT group saw the same four statements plus the sensitive question in statement format. They were not asked any questions directly. Figure 2 shows an example, while the full survey instrument is included in the supplementary materials. Note that we actually implemented four treatment arms in this survey by varying the level of sensitivity included in the four unrelated statements (sensitive vs "vanilla" statements). We do not leverage this variation here but note that all results are robust to including a control for this variation. Lastly, we also included a question aimed at measuring

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[8] Note that the actual text in the questions uses the terms "homosexual couples" and "homosexual people." We recognize this is different from using the term LGBT+ but believe that in the context of the survey was the only way to avoid desirability bias in responses.

[9] We used Qualtrics as the platform for programming and running the survey. The randomization was done automatically using the Qualtrics software features.

whether respondents were paying attention to the instructions. All findings are robust to restricting to respondents that passed the attention test.

3.2 Summary Statistics

Table 3 presents a balance test for respondents' characteristics by treatment. The first column shows means and standard deviations for respondents assigned to the direct questions group, the second column restricts to those in the ICT group, and the last column shows the difference and whether it is statistically significant. Overall, we find that our randomization was successful: most differences are small and insignificant. The only difference that is highly significant corresponds to the attention test: respondents in the ICT group were two percentage points more likely to have failed this test. However, as noted above, results hold for the attentive only sample, indicating that this difference is not driving our estimations.

Restricting to respondents who were asked the questions of interest directly, Figures 3, 4 and 5 show that some of the patterns observed in ENDISEG are similar to those recovered from our survey, although with important differences in the levels. As stated, this could be due both to the fact that ENDISEG is a nationally representative survey while our sample likely skews toward more middle- and high-income respondents, and to the incentives for truthful reporting being different across surveys.

According to Figure 3, even though among our survey respondents the share who self-identifies as LGBT+, the share who reports having had a same-sex encounter, and the fraction who declares having felt same-sex attraction are larger than for the ENDISEG sample (on average), all three measures decrease steeply with age. Notably, the negative correlation between same-sex attraction and age is much larger among female respondents.

Figure 4 shows that, on average, self-reported homophobia is lower among our survey respondents with a larger fraction considering that adoption by same-sex couples should be allowed than in ENDISEG. We similarly find that there is a clear pattern of increasing self-reported homophobic attitudes in older generations for both the questions on adoption by same-sex couples and whether they would prefer working with a straight person. However, we find no clear age gradient for the likelihood of believing gay people can change their sexual orientation with therapy. As in ENDISEG, male respondents are more likely to report homophobic stances than females.

Finally, Figure 5 shows no clear patterns by age and gender for feelings of inclusion at work or for working in the formal sector. We do see, however, that women are more likely to report working in the informal sector, as expected.

4. Empirical Strategy

For participants randomly assigned to the direct question version of the survey, we observe the number of yes statements s_{ij}^D for respondent i from the four statements associated with sensitive question j. We also observe their direct response to the sensitive question d_{ij}. For the rest of the participants assigned to the ICT version of the survey, we simply observe the number of yes statements $s_{ij}^{ICT} \in \{0, 1, 2, 3, 4, 5\}$.

We therefore calculate our dependent variable of interest as:

$$y_{ij} = \begin{cases} s_{ij}^D + d_{ij} & \textit{if assigned to direct elicitation} \\ s_{ij}^{ICT} & \textit{if assigned to ICT elicitation} \end{cases}$$

We define the following estimating equation for each sensitive question j:

$$y_{ij} = \Delta_j ICT_i + \varepsilon_{ij}$$

where $ICT_i \in \{0, 1\}$ is an indicator variable that takes a value of one if participant i was randomly assigned to the ICT group and a value of zero otherwise, and ε_{ij} is the error term.

From this equation, we recover a measure $\widehat{\Delta}_j$ of the difference in reporting under each technique. Assuming that respondents acknowledge that the ICT provides them with more privacy, which in turn lowers the cost of revealing truthful responses, then the size of $\widehat{\Delta}_j$ may be interpreted as a measure of the social cost of revealing truthful responses to sensitive question j. However, we only interpret it as a difference in the estimates of the sensitive question by elicitation method, regardless of what drives it.

We then build a measure of the prevalence of sensitive question j under the ICT and compare it to the prevalence under direct elicitation. For this, we estimate a similar equation on the direct question sample of respondents only:

$$d_{ij} = \alpha_j + \nu_{ij}$$

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where v_{ij} is the error term. Here, α_j denotes the share of respondents in the direct elicitation group answering yes to sensitive question j. The corresponding share for the ICT group is simply given by $\hat{\alpha}_j + \hat{\Delta}_j$.

Given that we are interested in heterogeneity along certain dimensions (namely, age, gender and between formal and informal sectors), our estimations will include the relevant interactions between the treatment indicator ICT_i and each heterogeneity dimension. Therefore, for example, our main estimating equation for exploring heterogeneity by age groups is given by:

$$y_{ij} = \sum_{g=1}^{5} \Delta_{jg} I[A_i = g] ICT_i + + \varepsilon_{ij}$$

where A_i denotes respondent i's age group (from one to five), and I[.] is the indicator function.

5. Results

We begin by showing the distribution of "yes" responses in both the direct question and ICT elicitation groups for each of the eight sensitive items in Figure 6. This corresponds to the definition of y_{ij} above. We first note that our ICT approach worked in the sense that we do not detect a high mass in zero or five, indicating that very few individuals said yes to everything or yes to nothing. This is a key requirement of the ICT since it may imply that respondents infer that for most people the number of statements will not be at either extreme, potentially providing them with more privacy.

For our main results, we follow the empirical strategy outlined above and present all estimates in graphical format. For each of the following plots, we show the share of respondents answering yes to each of the sensitive items when asked directly (restricting evidently to this sample). This corresponds to $\hat{\alpha}_j$ in the notation above. We then show the same share as revealed under the ICT by presenting the sum of the direct share and the difference in reporting between ICT and direct elicitation $\hat{\alpha}_j + \hat{\Delta}_j$. Standard errors for $\hat{\alpha}_j$ are robust to heteroskedasticity and the standard errors for $\hat{\alpha}_j + \hat{\Delta}_j$ are bootstrapped over 100 repetitions.

Figure 7 compares the results obtained through direct and indirect questioning for our eight outcomes of interest by age groups. The first three graphs show our measures of own sexuality. Surprisingly, the shares of respondents who self-identify as LGBT+, that have ever had a same-

sex encounter, and that have ever felt attracted to someone of their same sex are slightly lower when recovered through the ICT. Note, however, that within age groups the difference between shares recovered through direct vs ICT elicitation is not significantly different from zero. We do not necessarily interpret these results as evidence of over-reporting through direct questioning, particularly since we cannot reject that they are equal. Rather, we see this as evidence of the difficulty in measuring the size of the LGBTQ+ population through survey methods.

In terms of the age gradient, we do observe some interesting differences between elicitation techniques. In particular, the negative relationship between age and identifying as LGBTQ+ or ever having had a same-sex encounter practically vanishes when measured via the ICT. In contrast, the negative relationship between age and having felt attraction to same-sex individuals is similar across methods. This may suggest that older individuals are more reluctant or face a higher cost of revealing their own sexuality when it does not conform to heteronormative conventions.

For our measures of homophobia, we turn to the next three plots in Figure 7. First, we see no clear relationship between age and the likelihood of believing that gay people can change their sexual orientation with therapy and no stark differences between elicitation methods. However, a much smaller fraction of respondents express that same-sex couples should be allowed to adopt children when this question is asked through the veiled method. Across both methods, older respondents are less likely to agree with adoption by same-sex couples. Lastly, although there is no clear age gradient in the share of respondents who would rather work with a straight person if they only had one co-worker, the fraction of respondents agreeing with this statement is surprisingly lower when obtained through the ICT. However, given the wording of this statement, we are cautious in over-interpreting this particular difference.[10]

The last two plots correspond to our measures of inclusion at work. Across both questions, self-reported feelings of feeling included are much lower when recovered through the veiled method across age groups. However, we do not detect any age gradient in either of the elicitation methods.

Figure 8 further explores these same relationships separately for respondents who identify as male and female. Broadly speaking, we find similar patterns between subsamples. We do see,

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[10] It is unclear to us what was the relevant alternative in the question given our wording (Table 2). Some participants may have interpreted a negative response as equivalent to saying they would prefer to work with an LGBTQ+ colleague, while others may have interpreted a negative answer as simply meaning that they do not care about their co-workers' sexuality.

however, that the age gradient for identifying as LGBTQ+ that we observe in direct questions for men and women actually disappears under the ICT for both of them. In contrast, the age gradient for ever felt attraction to the same sex only disappears with the ICT for men but is still evident for women.

Figure 9 next explores the age gradient between formal and informal workers, defined based on access to social security through their job. No clear differential patterns arise along this dimension. We present similar results using an alternative definition of formality that leverages questions on whether respondents have a boss, the type of contract, and whether they report income to fiscal authorities in Figure S1 in the supplementary materials.

Finally, Figures 10 and 11 replicate this analysis restricting to female and male respondents, respectively. No further clear differences are observed. Once again, we show similar patterns using our alternative definition of formality in Figures S2 and S3.

6. Discussion

Measuring both the size of the LGBTQ+ population and homophobia is important for policy design and implementation. However, it is a difficult empirical task. In this paper, we compare measures of LGBTQ+ self-identification and homophobia-related stances and explore its relationship with age and labor market choices, through both direct questions and an ICT experimental setting.

Our results highlight not only the difficulty in estimating the share of the population that self-identifies as non-heterosexual and/or has homophobic opinions about different issues, but also how these shares vary with survey respondents' age and gender. When asked directly, younger people are more likely to self-identify as non-heterosexual. When asked indirectly, the share who self identifies as LGBTQ+ varies considerably less across age groups. However, regardless of the elicitation method, older respondents are significantly less likely to agree with the statement that same-sex couples should be allowed to adopt, and all age groups' disagreement with this statement is higher when it is asked through the veiled method. Lastly, while estimates of inclusion at the workplace are significantly lower when measured through the ICT, we document no differential presence of LGBTQ+ individuals in formal vs informal jobs, regardless of the definition of formality employed and of the elicitation method.

In sum, our results may suggest a negative relationship between self-identification as LGBTQ+ and homophobic stances within age groups. Combating homophobia will likely not only

benefit the share of the LGBTQ+ population living their identity freely, but also an unknown number of people who are still (understandably) afraid to reveal their orientation in public. Getting a better grasp of the age gradient in all these measures may contribute to better policy design and implementation.

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Figure 1. Summary Statistics of Own Sexuality and Homophobia from ENDISEG by Age and Gender
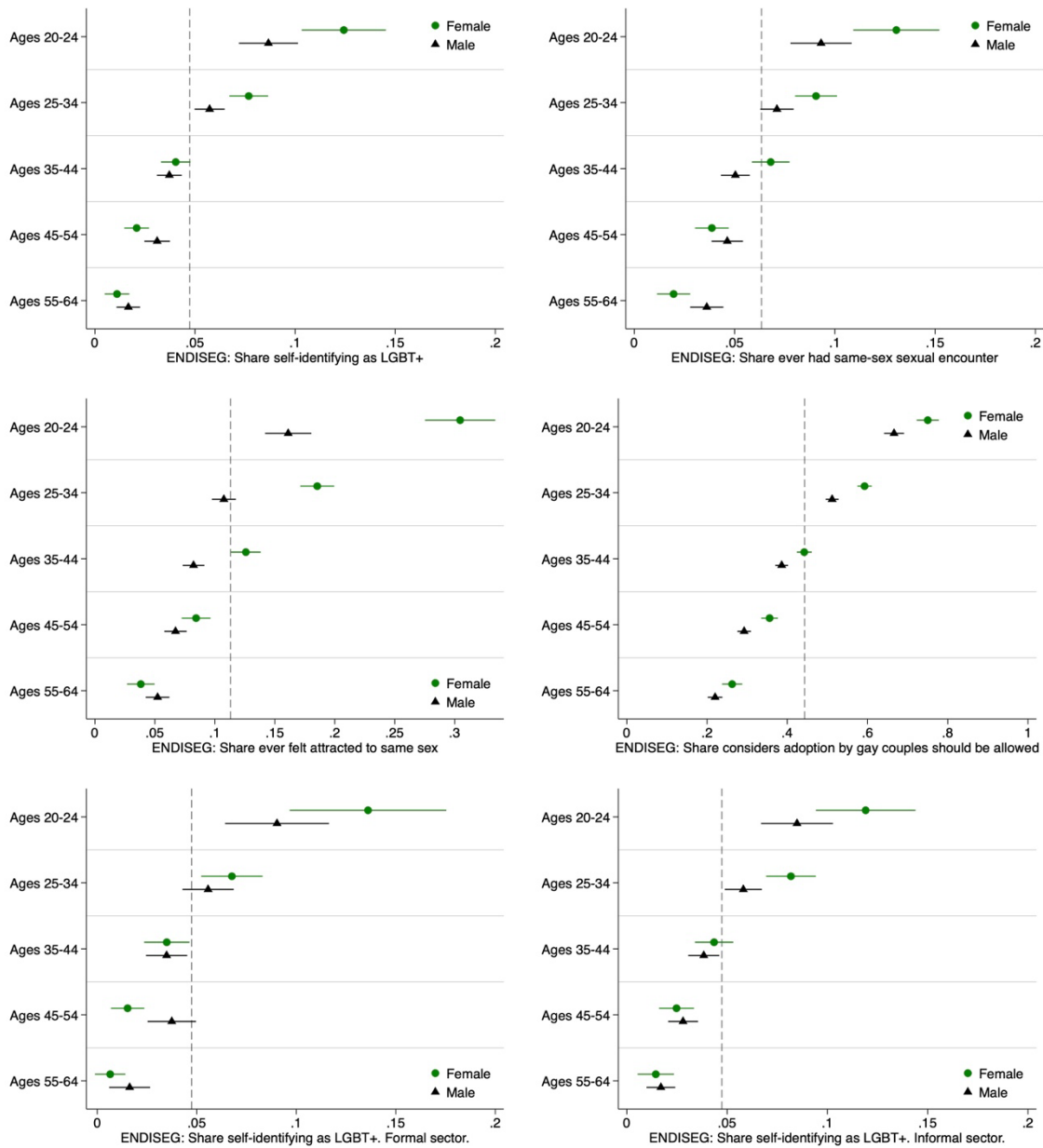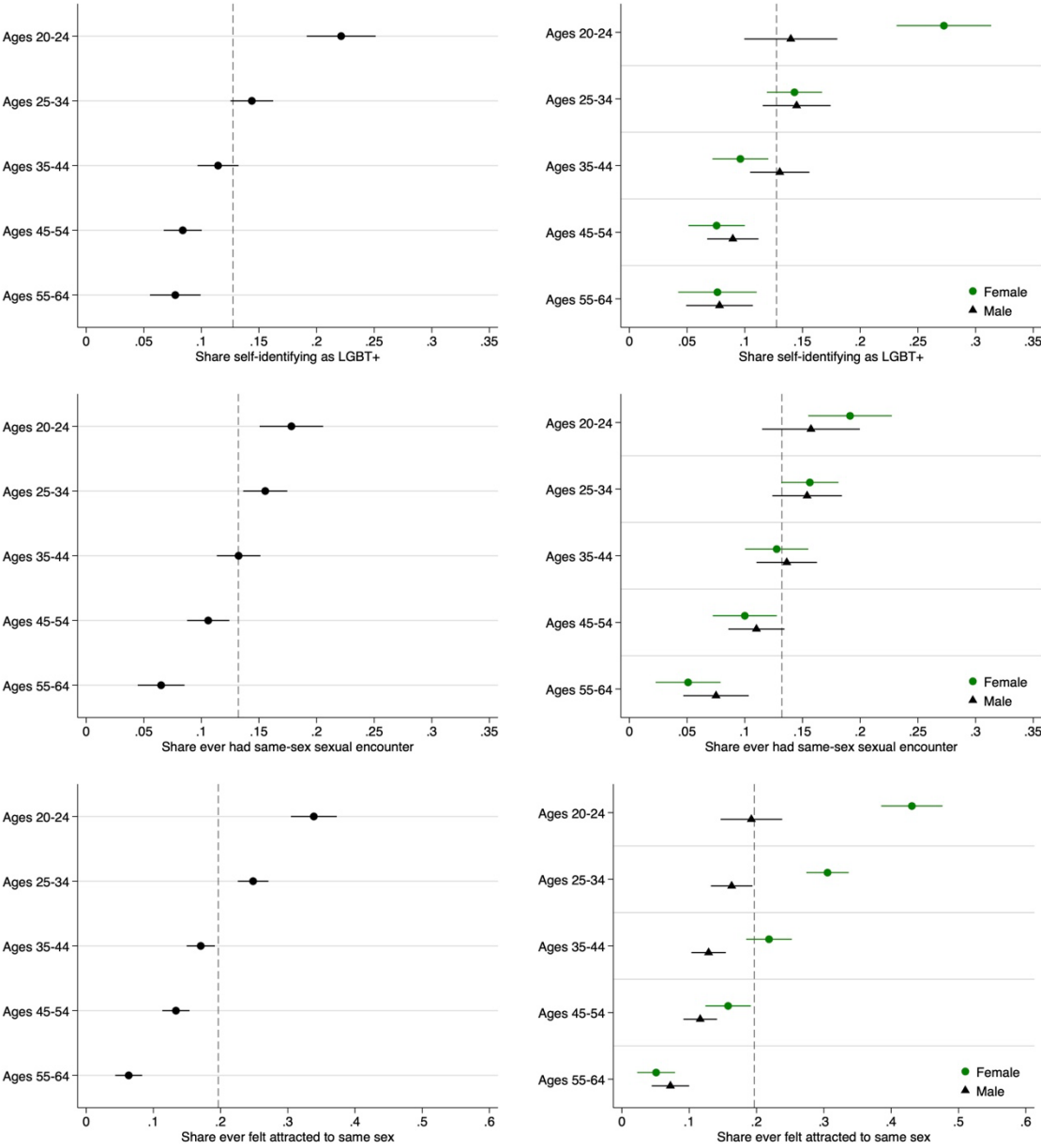

Notes: These plots show summary statistics for the own sexuality and homophobia questions asked in the ENDISEG survey by age groups and gender. We restrict the sample to individuals ages 20-64 participating in the labor market. The bottom two plots distinguish between workers in the formal and informal sector based on whether they use social security services when sick. Markers denote coefficients from a regression of the direct question on indicators for each category. Bars denote 95% confidence intervals from heteroskedasticity-robust standard errors. Dashed vertical line denotes the overall sample average.

Figure 2. Experimental Design Example

	DIRECT-SENSITIVE	ICT-SENSITIVE	DIRECT-VANILLA	ICT-VANILLA
Q14	**Indicate how many of the following statements you consider to be true for yourself:** I believe that the poor make little effort to get out of poverty. I have a valid driver's license. I believe that women should be responsible for the care of their children. I have little confidence in political parties. **Number of true statements:** [ ] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4	**Indicate how many of the following statements you consider to be true for yourself:** I believe that the poor make little effort to get out of poverty. I have a valid driver's license. I believe that women should be responsible for the care of their children. I have little confidence in political parties. I identify as part of the LGBT+ population. **Number of true statements:** [ ] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5	**Indicate how many of the following statements you consider to be true for yourself:** I believe that the poor make little effort to get out of poverty. I have a valid driver's license. I am taller than the average person in the country. I have little confidence in political parties. **Number of true statements:** [ ] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4	**Indicate how many of the following statements you consider to be true for yourself:** I believe that the poor make little effort to get out of poverty. I have a valid driver's license. I am taller than the average person in the country. I have little confidence in political parties. I identify as part of the LGBT+ population. **Number of true statements:** [ ] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5
Q15	Do you identify as part of the LGBT+ population? [ ] yes [ ] no	-	Do you identify as part of the LGBT+ population? [ ] yes [ ] no	-

Figure 3. Summary Statistics of Own Sexuality from Direct Questions by Age and Gender

Notes: These plots show summary statistics for the own sexuality questions asked directly by age groups and gender (N=5,005). Markers denote coefficients from a regression of the direct question on indicators for each category. Bars denote 95% confidence intervals from heteroskedasticity-robust standard errors. Dashed vertical line denotes the overall sample average.

Figure 4. Summary Statistics of Homophobia from Direct Questions by Age and Gender
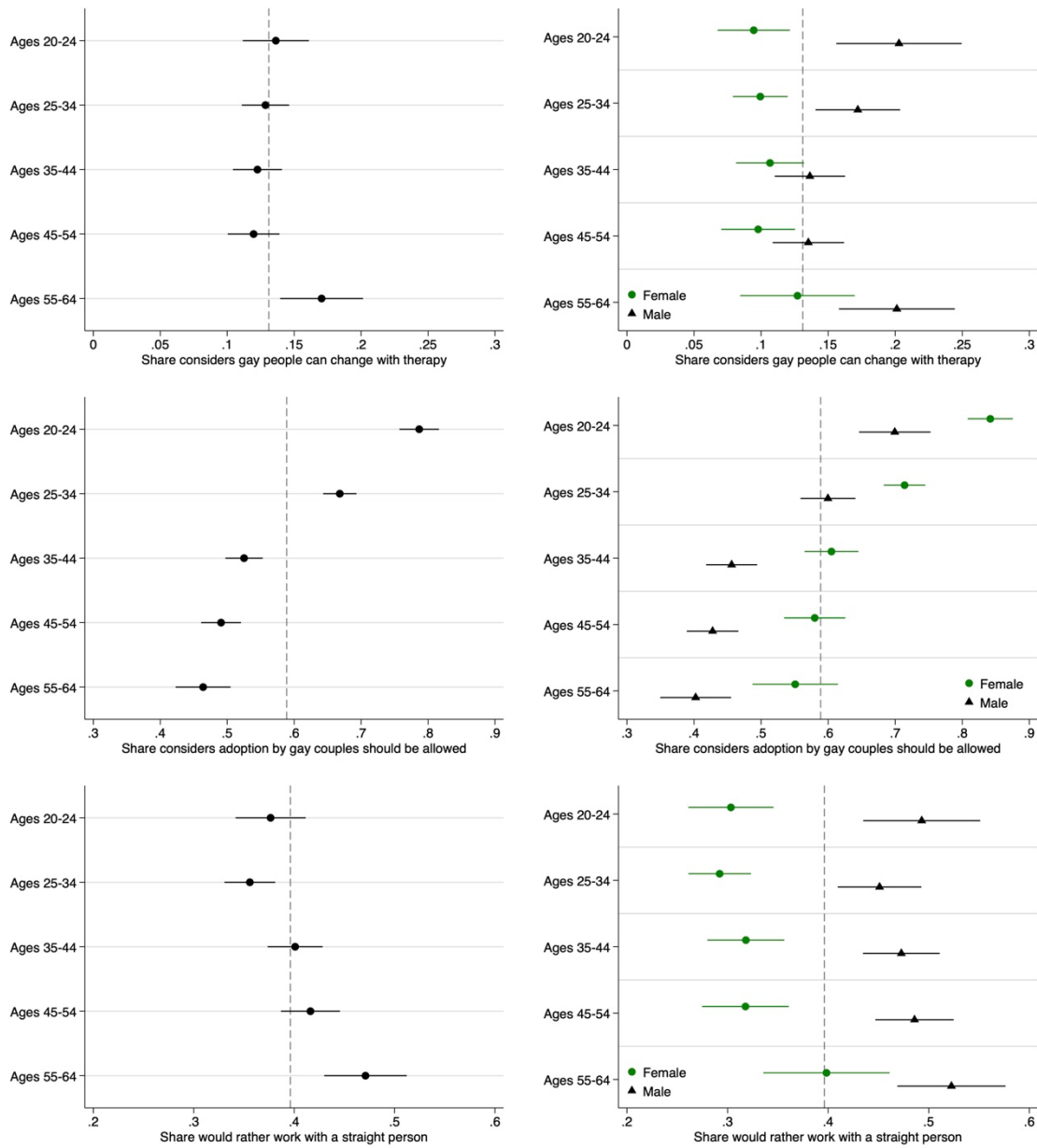
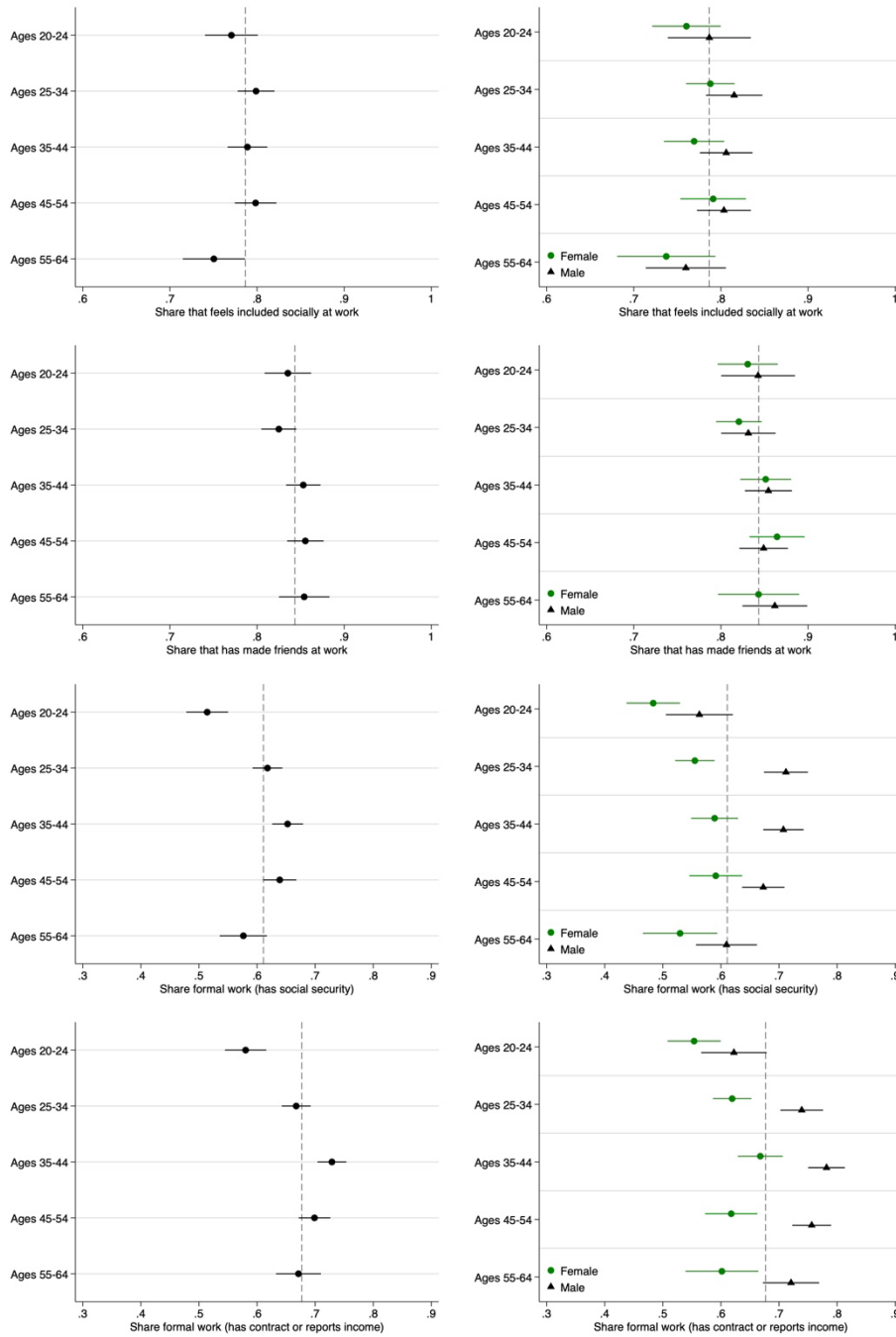*Notes:* These plots show summary statistics for the homophobia questions asked directly by age groups and gender (N=5,005). Markers denote coefficients from a regression of the direct question on indicators for each category. Bars denote 95% confidence intervals from heteroskedasticity-robust standard errors. Dashed vertical line denotes the overall sample average.

Figure 5. Summary Statistics of Work Characteristics from Direct Questions by Age and Gender

Notes: These plots show summary statistics for the inclusion at work questions asked directly by age groups and gender (N=5,005). We also include our two measures of formality for the same subsample. Markers denote coefficients from a regression of the direct question on indicators for each category. Bars denote 95% confidence intervals from heteroskedasticity-robust standard errors. Dashed vertical line denotes the overall sample average.

Figure 6. Distributions of Total Number of "Yes" Responses to Each Question
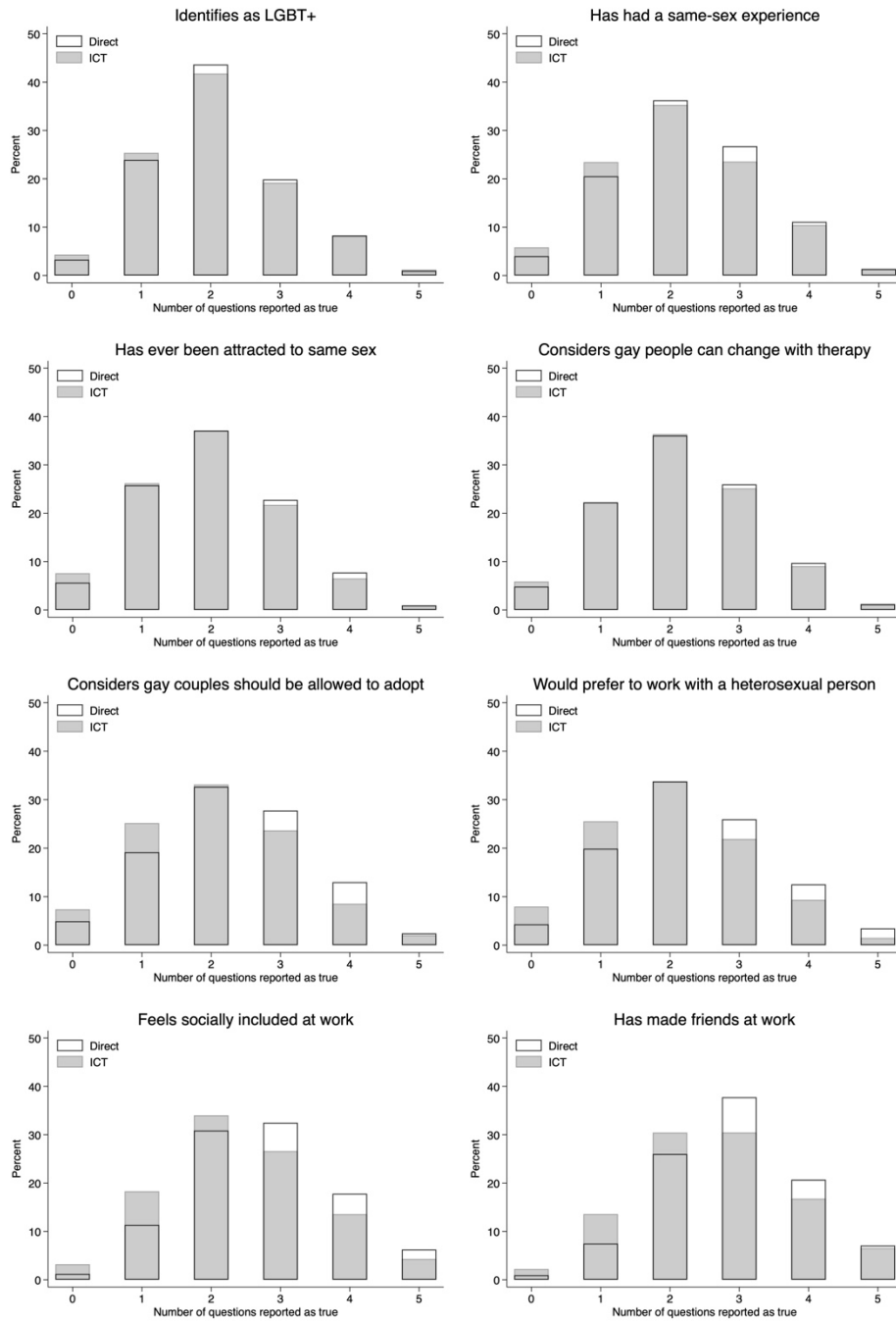
Notes: The x-axis shows the number of "yes" responses reported across both elicitation techniques. For the ICT group we simply take the number of truthful statements reported. For the direct questions group, we take the number of truthful statements plus the response to the sensitive item. The y-axis shows the percentage of the sample that reported that number of "yes" responses. ICT = item count technique.

Figure 7. Sensitive Responses for ICT vs Direct by Age Groups
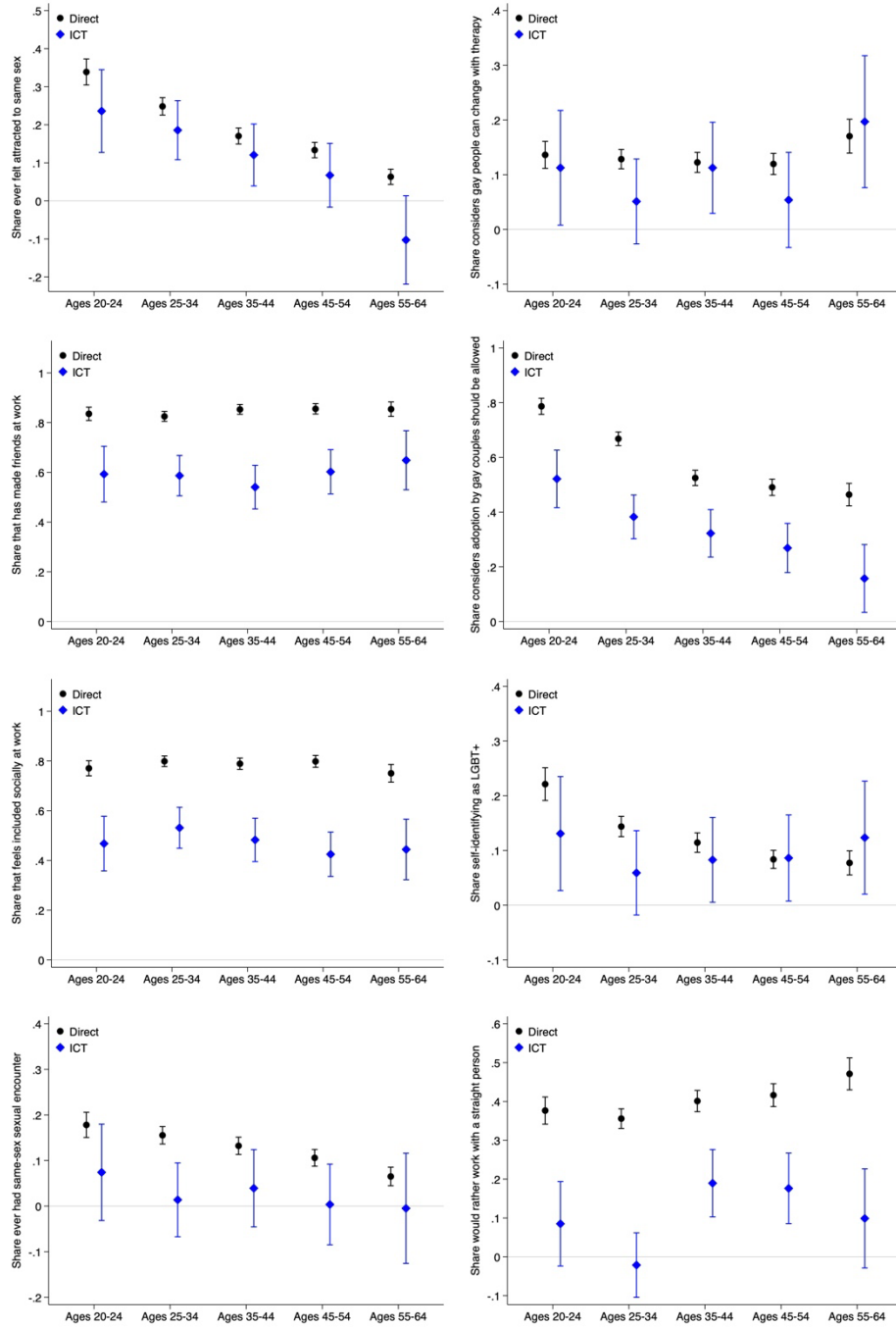
Notes: These plots show estimates of the prevalence of each sensitive question under each elicitation technique. Prevalence from direct questions obtained from a regression of the sensitive question on indicators for each group in the direct question sample. Prevalence from ICT obtained from the sum of direct question prevalence plus the difference in reporting Δj (see text for details). Markers denote coefficients and bars denote 95% confidence intervals from heteroskedasticity-robust standard errors (direct elicitation) and bootstrapped standard errors (ICT). ICT = item count technique.

Figure 8. Sensitive Responses for ICT vs Direct by Age-Gender Groups
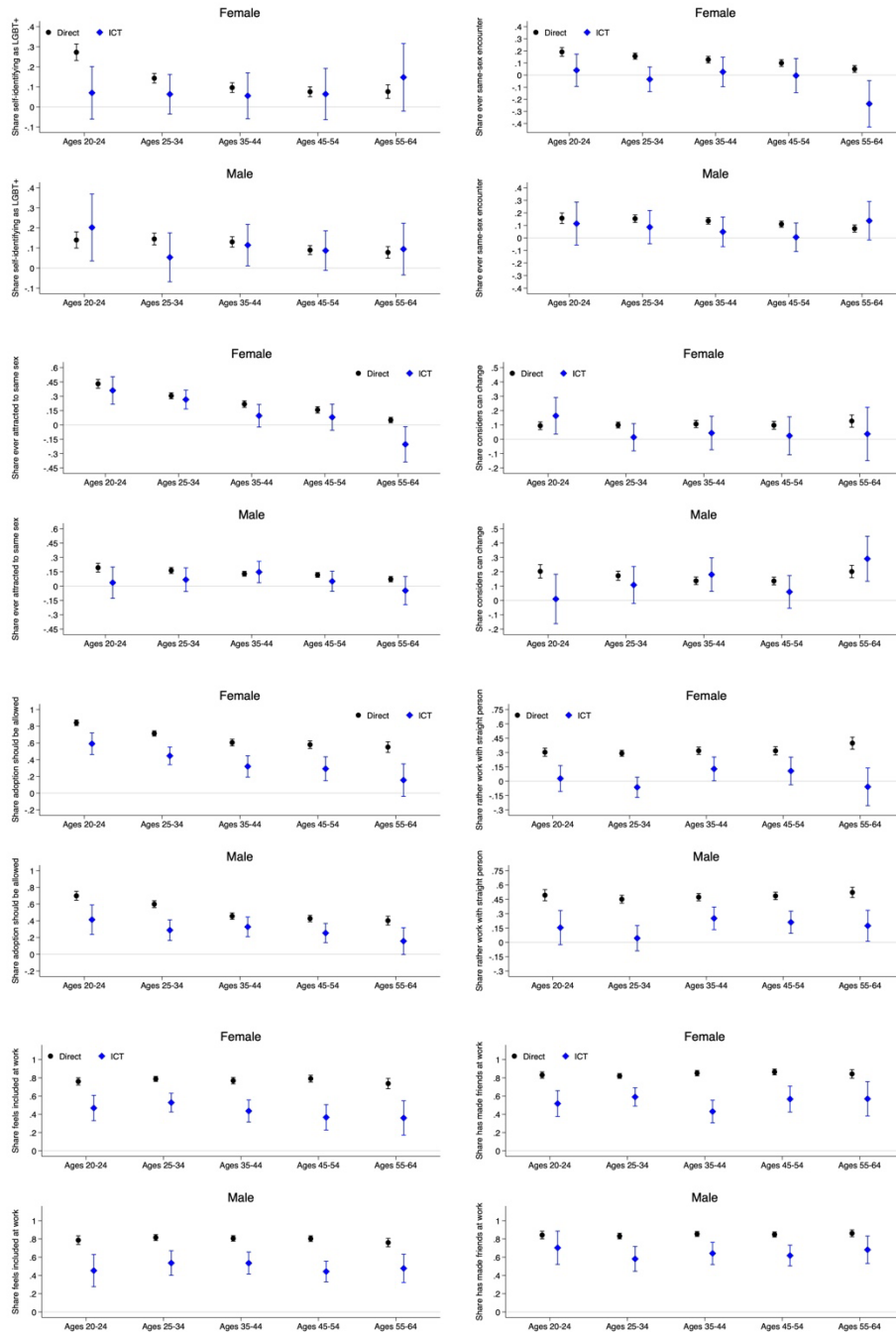
Notes: These plots show estimates of the prevalence of each sensitive question under each elicitation technique. Prevalence from direct questions obtained from a regression of the sensitive question on indicators for each group in the direct question sample. Prevalence from ICT obtained from the sum of direct question prevalence plus the difference in reporting Δj (see text for details). Markers denote coefficients and bars denote 95% confidence intervals from heteroskedasticity-robust standard errors (direct elicitation) and bootstrapped standard errors (ICT). ICT = item count technique.
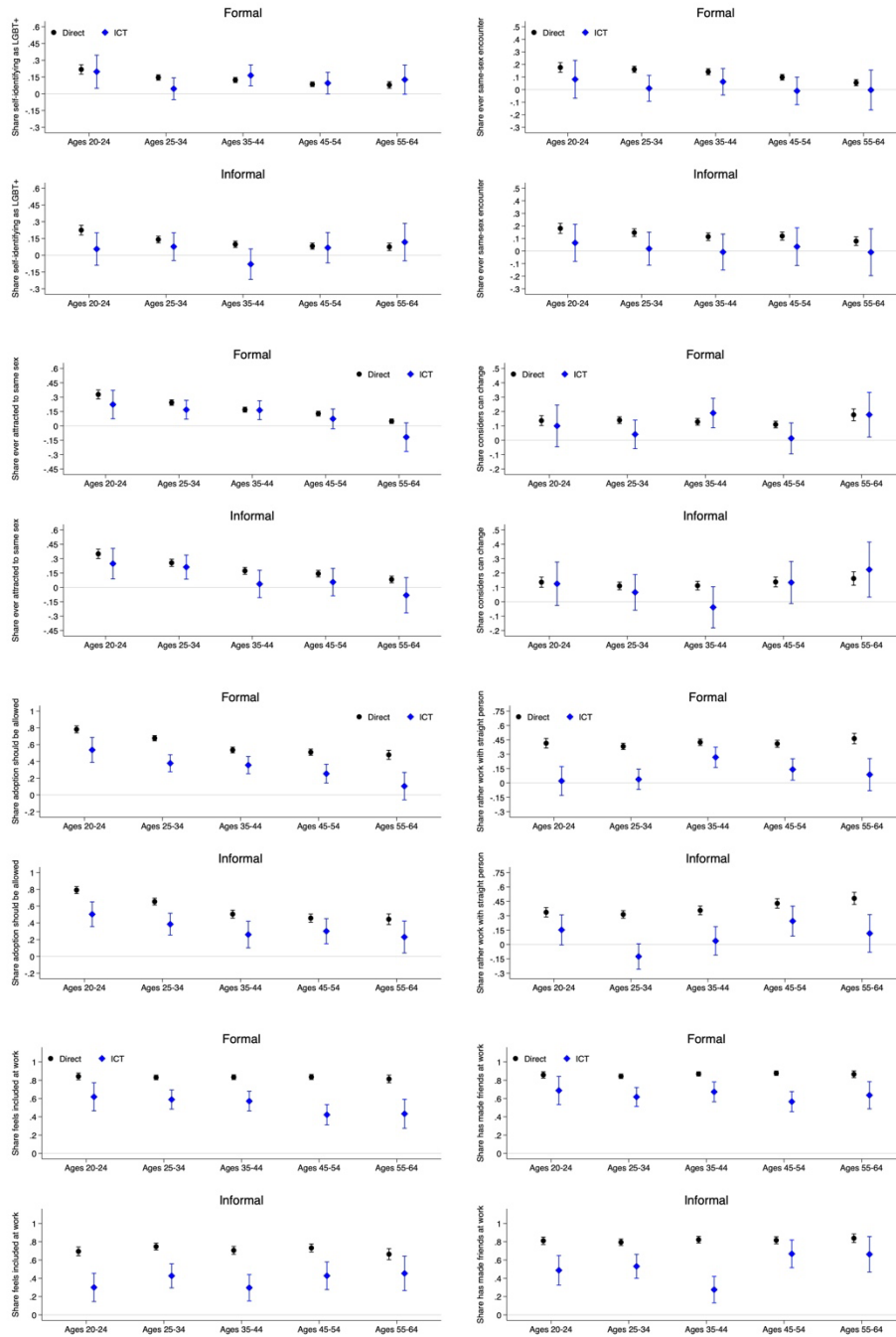
Figure 9. Sensitive Responses for ICT vs Direct by Age-Formal Groups

Notes: These plots show estimates of the prevalence of each sensitive question under each elicitation technique. We consider here whether workers have a formal job based on whether they have access to social security at work. Prevalence from direct questions obtained from a regression of the sensitive question on indicators for each group in the direct question sample. Prevalence from ICT obtained from the sum of direct question prevalence plus the difference in reporting Δj (see text for details). Markers denote coefficients and bars denote 95% confidence intervals from heteroskedasticity-robust standard errors (direct elicitation) and bootstrapped standard errors (ICT). ICT = item count technique.

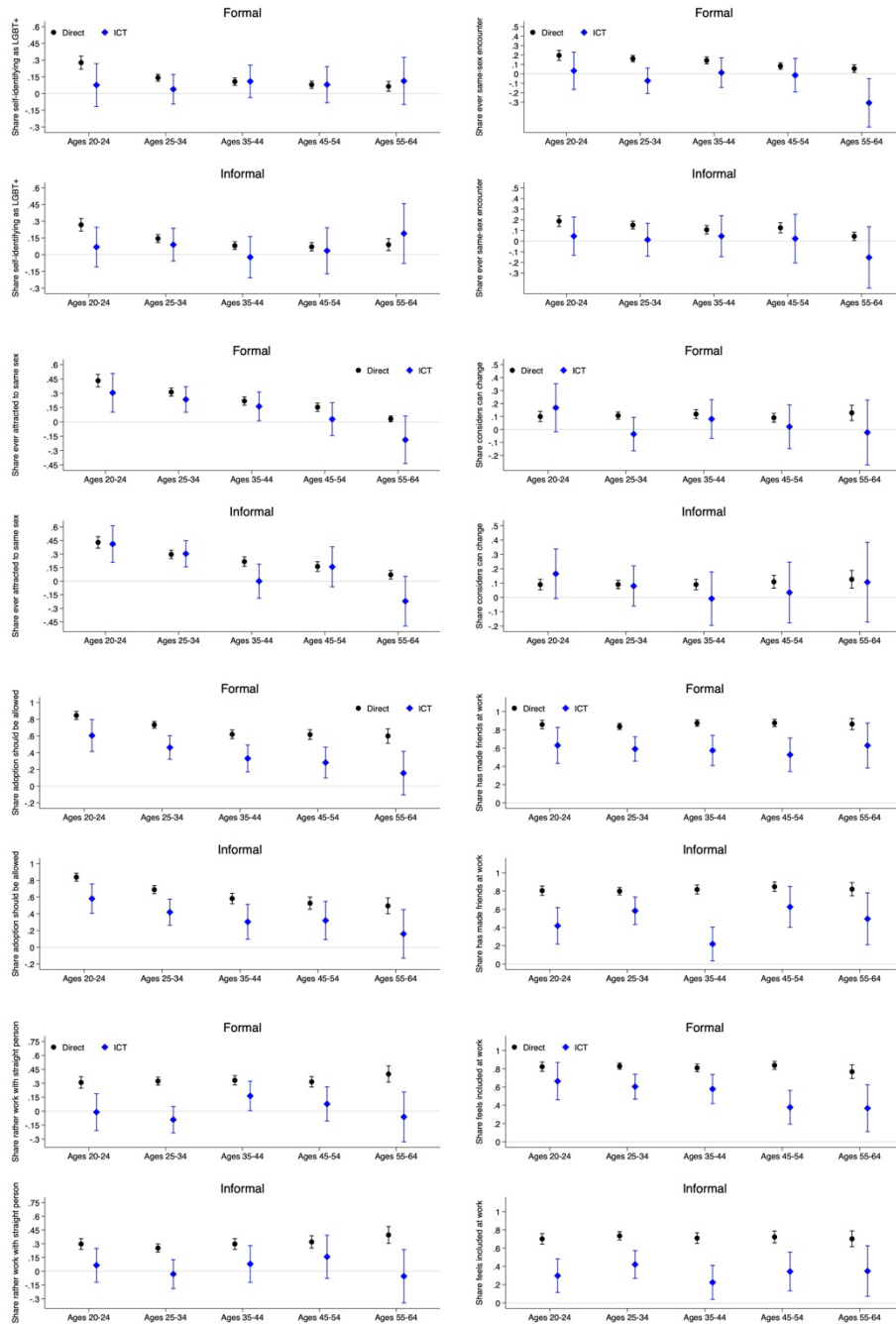**Figure 10. Sensitive Responses for ICT vs Direct by Age-Formal Groups for Females Only**

Notes: These plots show estimates of the prevalence of each sensitive question under each elicitation technique restricting to female respondents. We consider here whether workers have a formal job based on whether they have access to social security at work. Prevalence from direct questions obtained from a regression of the sensitive question on indicators for each group in the direct question sample. Prevalence from ICT obtained from the sum of direct question prevalence plus the difference in reporting Δj (see text for details). Markers denote coefficients and bars denote 95% confidence intervals from heteroskedasticity-robust standard errors (direct elicitation) and bootstrapped standard errors (ICT). ICT = item count technique.

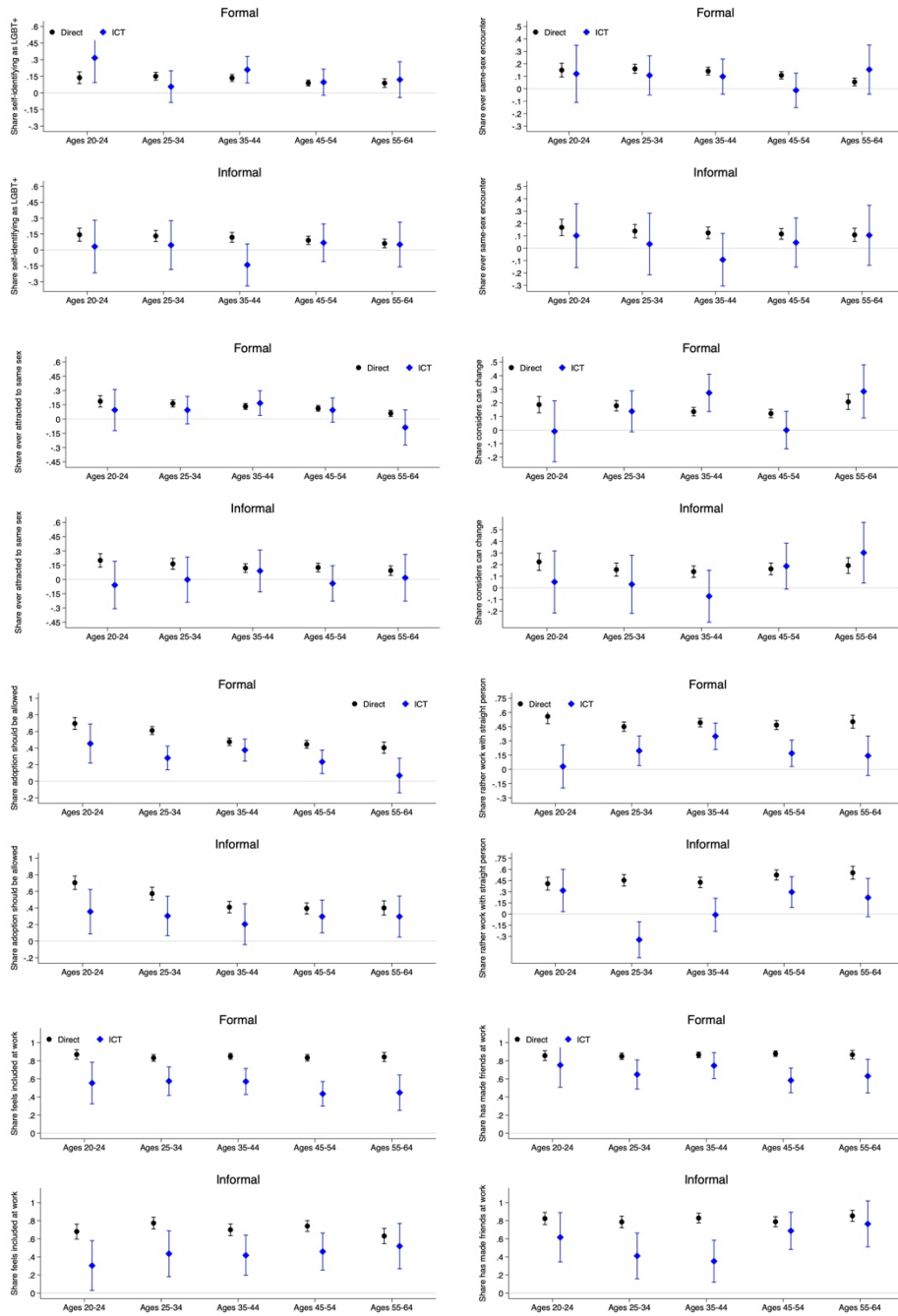# Figure 11. Sensitive Responses for ICT vs Direct by Age-Formal Groups for Males Only

Notes: These plots show estimates of the prevalence of each sensitive question under each elicitation technique restricting to male respondents. We consider here whether workers have a formal job based on whether they have access to social security at work. Prevalence from direct questions obtained from a regression of the sensitive question on indicators for each group in the direct question sample. Prevalence from ICT obtained from the sum of direct question prevalence plus the difference in reporting Δ_j (see text for details). Markers denote coefficients and bars denote 95% confidence intervals from heteroskedasticity-robust standard errors (direct elicitation) and bootstrapped standard errors (ICT). ICT = item count technique.

Table 1. Overview of Relevant Statistics in ENDISEG Survey

	Female	Male
Identify as LGBTQ+	5.7%	4.6%
Have ever had a same-sex sexual encounter	6.3%	5.7%
Have ever felt attracted to individuals of the same sex	14.5%	10.1%
	LGBTQ+	Non-LGBTQ+
OK for same-sex couples to display affection in public	81.4%	54.9%
Same-sex marriage should be allowed	83.7%	58.9%
Same-sex couples should be allowed to adopt children	76.1%	43.8%
Have not shared their sexual orientation with anyone	13%	

Notes: This table shows some relevant statistics presented in the nationally representative ENDISEG survey. The first part of the table distinguishes between respondents who self-identify as female or male. The second part distinguishes between self-reporting of LGBTQ+ identity.

Table 2. Sensitive Questions in the Survey Instrument

Question	Sensitive answer	Conservative answer
Own sexuality		
1 Do you identify as part of the LGBT+ population?	Yes	No
2 Have you ever had a sexual encounter with a person of the same sex?	Yes	No
3 Have you at one point been attracted to a person of the same sex?	Yes	No
Homophobia		
4 Do you believe that homosexual people can change their sexual orientation if they go to therapy?	Yes	Yes
5 Do you think homosexual couples should be able to adopt children?		No
6 If you had to work directly with just one person, would you rather they were straight?		Yes
Inclusion at work		
7 At your current job, do your coworkers include you or invite you to social activities, like eating or taking breaks with them?	No	
8 In your current job, have you been able to form close friendships with the people you interact with?	No	

Notes: This table shows the eight sensitive questions we included in our survey instrument. These questions are transformed to statement format for the ICT elicitation. We ask whether a yes or no would constitute a "sensitive" answer to the question, and whether a yes or no would constitute a "socially conservative" answer. A hyphen indicates a question for which it was not obvious which response would constitute a sensitive or conservative answer. ICT = item count technique.

Table 3. Balance Table

Variable	Direct	ICT	Diff.
Female	0.507	0.494	-0.013
	(0.500)	(0.500)	(0.204)
Ages 20-24	0.148	0.154	0.006
	(0.355)	(0.361)	(0.417)
Ages 25-34	0.275	0.273	-0.002
	(0.447)	(0.446)	(0.839)
Ages 35-44	0.246	0.232	-0.014*
	(0.431)	(0.422)	(0.095)
Ages 45-54	0.217	0.220	0.003
	(0.412)	(0.414)	(0.707)
Ages 55-64	0.114	0.121	0.007
	(0.317)	(0.326)	(0.266)
Mexico City	0.339	0.357	0.018*
	(0.473)	(0.479)	(0.055)
Guadalajara	0.079	0.072	-0.006
	(0.269)	(0.259)	(0.234)
Monterrey	0.076	0.074	-0.002
	(0.266)	(0.262)	(0.691)
Other	0.506	0.496	-0.010
	(0.500)	(0.500)	(0.322)
Single	0.308	0.311	0.003
	(0.462)	(0.463)	(0.727)
Unmarried, in a relationship	0.221	0.229	0.008
	(0.415)	(0.420)	(0.343)
Married	0.389	0.382	-0.006
	(0.487)	(0.486)	(0.507)
Divorced or widowed	0.082	0.078	-0.005
	(0.275)	(0.268)	(0.388)
At most secondary school	0.088	0.095	0.007
	(0.284)	(0.293)	(0.258)
High school	0.274	0.274	-0.001
	(0.446)	(0.446)	(0.927)
Technical school	0.116	0.117	0.001
	(0.321)	(0.322)	(0.905)
College	0.456	0.450	-0.006
	(0.498)	(0.498)	(0.576)
Graduate studies	0.065	0.064	-0.001
	(0.247)	(0.246)	(0.854)
SES: AB	0.238	0.234	-0.003
	(0.426)	(0.424)	(0.683)
SES: C+	0.202	0.209	0.007

	(0.401)	(0.407)	(0.367)
SES: C	0.298	0.300	0.002
	(0.457)	(0.458)	(0.809)
SES: C-	0.138	0.144	0.006
	(0.345)	(0.351)	(0.358)
SES: D+	0.089	0.081	-0.008
	(0.285)	(0.274)	(0.169)
SES: D	0.036	0.031	-0.005
	(0.187)	(0.174)	(0.189)
Has part-time job	0.288	0.293	0.006
	(0.453)	(0.455)	(0.537)
Informal sector (social security)	0.389	0.375	-0.014
	(0.488)	(0.484)	(0.148)
Informal sector (boss/contract)	0.323	0.308	-0.016*
	(0.468)	(0.462)	(0.094)
Has boss or supervisor	0.779	0.781	0.003
	(0.415)	(0.413)	(0.745)
Has long-term contract (cond. having boss)	0.618	0.629	0.011
	(0.486)	(0.483)	(0.326)
Has temporary contract (cond. having boss)	0.137	0.145	0.008
	(0.344)	(0.352)	(0.300)
Sometimes signs special contracts (cond. having boss)	0.015	0.016	0.001
	(0.122)	(0.127)	(0.658)
Does not have a contract (cond. having boss)	0.230	0.209	-0.020**
	(0.421)	(0.407)	(0.031)
Reports income to government (cond. not having boss)	0.348	0.342	-0.006
	(0.477)	(0.475)	(0.760)
Has access to social security through work	0.611	0.625	0.014
	(0.488)	(0.484)	(0.148)
Construction and real estate	0.057	0.053	-0.004
	(0.231)	(0.224)	(0.414)
Education	0.098	0.096	-0.001
	(0.297)	(0.295)	(0.804)
Government	0.072	0.075	0.003
	(0.258)	(0.263)	(0.552)
Health	0.078	0.080	0.002
	(0.268)	(0.271)	(0.723)
Manufacturing and production	0.126	0.121	-0.004
	(0.332)	(0.327)	(0.501)
Technology and IT	0.082	0.076	-0.005
	(0.274)	(0.265)	(0.309)
Retail	0.146	0.148	0.002
	(0.353)	(0.356)	(0.734)

Other sector	0.343	0.350	0.008
	(0.475)	(0.477)	(0.419)
Less than 6 months	0.172	0.166	-0.006
	(0.378)	(0.373)	(0.427)
6-12 months	0.142	0.133	-0.009
	(0.349)	(0.340)	(0.191)
1-2 years	0.131	0.142	0.010
	(0.338)	(0.349)	(0.138)
2-4 years	0.165	0.160	-0.005
	(0.371)	(0.366)	(0.466)
4-10 years	0.195	0.196	0.001
	(0.396)	(0.397)	(0.892)
More than 10 years	0.194	0.203	0.009
	(0.396)	(0.402)	(0.255)
1 person	0.102	0.108	0.006
	(0.302)	(0.310)	(0.316)
2-5 people	0.237	0.241	0.004
	(0.425)	(0.428)	(0.628)
6-10 people	0.191	0.190	-0.001
	(0.393)	(0.392)	(0.926)
11-20 people	0.183	0.174	-0.009
	(0.387)	(0.379)	(0.223)
21-50 people	0.148	0.141	-0.007
	(0.355)	(0.348)	(0.334)
51+ people	0.139	0.145	0.007
	(0.346)	(0.353)	(0.345)
Respondent was paying attention	0.774	0.751	-0.023***
	(0.418)	(0.432)	(0.008)
Observations	5,005	4,998	10,003

Notes: This table shows means and standard deviations for respondent characteristics in the direct question and ICT groups. The last column shows a difference in means test, with stars denoting significance. ICT = item count technique. *** $p<0.01$, ** $p<0.05$, * $p<0.1$