Labor supply responses of same-sex couples due to changing health insurance law in the US

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1 Introduction

This paper examines labor supply decisions of individual agents and households, focusing on same-sex couples in the US. I exploit a quasi-natural experiment, when Federal States introduced legal changes for same-sex couples concerning health insurance law throughout the last decades. In the US, most health insurance providers offer dependent health coverage and long-term care insurance for spouses. In addition, spousal insurance is subject to tax exemptions. However, prior to 2013, Federal Law did not acknowledge same-sex marriage. Most same-sex couples could not rely on dependent health care benefits or were only provided with rudimentary access while facing federal tax disadvantages. They were under pressure to receive employer-sponsored health insurance individually. If only one member of a same-sex couple was employed, the other person had to resort to less comprehensive public insurance programs or more costly privately purchased insurance programs. Hence, same-sex couples have been facing obstacles when it comes to deciding on their labor supply, as they did not benefit from the same legal and institutional setting as different-sex couples do. Between 2013 and 2015, legal changes led to comprehensive and non-discriminatory dependent care for same-sex couples, especially for employees in the public sector (Ranji, Beamesderfer, Kates, & Salganicoff, 2014; Kates, Ranji, Beamesderfer, Salganicoff, & Dawson, 2018).

Using a difference-in-difference (DiD) estimation, I examine possible effects of these policy changes on same-sex couples' labor supply [1]. The main question to be tested is if the probability that both individuals in a same-sex couple work decreases due to the legal changes. After gaining access to spousal health coverage, they can be insured as a couple even if only one person is employed - before the legal changes, individuals in a couple had to come up with employer-sponsored health insurance individually. I use data from the American Community Survey (ACS), where same-sex couples can be identified, and a rich set of variables is provided. In theoretical as well as empirical literature, access to spousal health coverage is mostly considered to affect household labor supply negatively (Chou & Staiger, 2001; Boyle & Lahey, 2010). The empirical results of this paper support existing empirical and theoretical work on the linkage between health insurance and labor supply while offering new insights on same-sex couples' labor supply decisions.

Apart from the scientific discourse, this research paper can be beneficial to recent societal debates. Firstly, in this quasi-experimental setting the role of social security in a modern society can be assessed in a unique way. What makes this setting so special is that private and public sphere of the social insurance system are fully developed and can be compared in a realistic manner. Hence, conclusions concerning the role of market-based and publicly financed insurance can be drawn for developed societies.

Secondly, this research paper gives an extensive overview on one of the most prominent emancipation movements in modern society: the LGBT rights campaign. It contributes to the un-

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[1]This paper explicitly focuses on same-sex couples where at least on person is employed in the public sector. Private sector employers are still not obliged to offer same-sex couples spousal health benefits (Zywave Inc., 2014).

derstanding of how emancipation works and can be organized in the institutional framework of developed societies. Reviewing achievements of the US LGBT community could provide impetus for similar emancipation movements all over the world.

Throughout this paper, the term "same-sex" couples is used, when actually referring to couples consisting of two individuals of the same gender. As the ACS data set only provides a variable called "sex", "same-sex" couples might be the more exact terminology - because the data set is based on couples where both individuals reported to be of the same "sex". Nevertheless, the reader should know that the term "same-gender" couples would be a more appropriate one.

2 Theoretical Background

Based on theoretical considerations, access to non-contributory health insurance is most commonly considered to affect labor supply negatively: Firstly, health insurance has a consumption smoothing effect. The risk of high expenses in case of sickness is reduced. When being able to rely on a safety net in case of medical needs, employment becomes less "attractive". This channel goes back to the static labor models (Chou & Staiger, 2001, p. 192f). Secondly, health insurance can be considered a positive income shock. Households do not have to privately invest in insurance plans if they are provided by employers. Again, employment becomes less "attractive" compared to leisure (Boyle & Lahey, 2010).

In theoretical economic models, labor supply choices of individual agents are interdependent with their decisions on leisure time. Individuals only have a restricted number of hours available and have to allocate them between working hours and free time. The more hours of labor supplied, the more income an individual earns, but the less hours remain for leisure. Based on these premises, individuals allocate their time between labor and leisure optimally by maximizing their utility (Gravelle & Rees, 2004, p. 82). The same setting also applies to households, but some additional considerations concerning the decisions of the individuals within a household and their interaction have to be taken into account. In household labor supply models, two working-age individuals constitute a household, and are hence considered agents in intra-household decision making on labor supply. Children or other dependent members in a household are included as household characteristics. They do not actively participate in the households' labor supply decisions but can still shape the decision-making process implicitly (Blundell & MaCurdy, 1999, p. 1658).

To sum up, theoretical considerations imply that household labor supply would be affected negatively by a positive non-wage income shock, such as spousal health coverage. The literature mostly mentions four influencing factors concerning intra-household decisions and hence determining a couple's labor supply: (1) specialization due to comparative advantages, (2) different bargaining positions, (3) socially constructed gender norms and role models as well as (4) institutional and legal constraints (Schneebaum, 2013, p. 47). In different-sex couples, these factors are usually ascribed to gender-specific characteristics and preferences of the agents within a

couple. They provide possible explanations why it might be rational for households to reduce their allocation of labor and leisure by adapting women's labor supply. Nevertheless, it cannot be assumed that these influencing factors shape same-sex couples' labor supply decisions in the same manner as they do for different-sex couples.

3 Empirical Literature

In the US, employer-provided health insurance is the most important source of health coverage. For many individuals it is a more compelling type of insurance compared to more costly privately purchased insurance plans (Royalty & Abraham, 2006). Thus, it appears that health insurance plays an important role in individual and household decisions on labor supply and labor force participation. A systematic literature review reveals a broad field of empirical research assessing the effect of health insurance on retirement decisions, wages, self-employment, labor supply and labor force participation as well as labor mobility. The effects are assessed on an individual as well as on a household level (Le, Groot, Tomini, & Tomini, 2019). The literature overview presented in the following is focused on couples in the US.

There is a broad set of literature investigating the effect of spousal health coverage on married women's labor supply and labor force participation (Olson, 2000; Buchmueller & Valletta, 1999; Wellington & Cobb-Clark, 2000; Royalty & Abraham, 2006; Murasko, 2008; Kapinos, 2009; Cebi & Wang, 2013; Akosa Antwi, Moriya, & Simon, 2013; Hahn & Yang, 2016; Depew, 2015). These papers provide strong empirical evidence that access to non-contributory, e.g. spousal health insurance, negatively affects labor supply, full-time employment and labor force participation. Most commonly, women reduce their labor supply or do not even participate in the labor force anymore. Of course, the aforementioned literature assesses labor supply responses of different-sex couples and their results cannot be transferred to same-sex couples. Same-sex couples may have different attitudes concerning gender norms and relationships, experience different forms and levels of discrimination on the labor market and are less secured by alternative informal, e.g. familial, safety nets (Herek, 2006; Badgett, Lau, Sears, & Ho, 2007). These factors can influence intra-household decisions on labor supply and labor force participation. Unfortunately, there is only very limited literature assessing the relation between same-sex couples' labor supply and health insurance.

Buchmueller and Carpenter (2012) analyze the effects of a legal change in California in 2005, which made spousal health insurance and other health benefits available for same-sex couples. They use data from the California Health Interview Survey from 2001 to 2007 and apply a DiD-estimation in order to identify effects of the legal changes on labor outcomes. Buchmueller and Carpenter (2012) do not find significant results for gay men. Lesbian women are less likely to work full-time and more likely to have health insurance after the legal changes (Buchmueller & Carpenter, 2012).

Dillender (2015) assesses the introduction of same-sex marriage, civil unions and domestic part-

nerships across states and estimates the effect of these legal changes on labor force participation and health insurance. In other words, the paper investigates if legal recognition of same-sex couples affects their labor supply and health coverage. While male same-sex couples seem not to respond to the legal changes, female same-sex couples do respond and are less likely to both work if they have access to group health coverage (Dillender, 2015).

All in all, there is very little empirical evidence on the relationship between health insurance and labor supply of same-sex couples. Hence, this paper makes an important contribution to a largely unexplored field in labor economics. Although Dillender (2015) proposes a similar analysis to the one provided in this paper, his approach might have some methodological disadvantages and limitations that this paper does not face: (1) Literature up to now (e.g. Dillender 2015, Buchmueller and Carpenter 2012) was only able to assess legal changes in some states or imperfect access to health insurance. These legal changes might have affected same-sex couples' labor supply but did not result in non-discriminatory access to health coverage. Federal tax disadvantages still persisted after the legal changes analyzed in previous papers and the benefits offered to same-sex couples differed in quality and quantity from different-sex couples' health benefits in many sectors (Nelson, 2013). This paper makes it possible to assess changes in health insurance law for all states. Furthermore, different "degrees" of health insurance access can be compared and assessed in terms of labor supply responses: The effect of having access to group insurance can be compared to the effect of having comprehensive and non-discriminatory spousal health coverage (without tax disadvantages). (2) By restricting the sample to public sector employees only, more precise treatment effects can be estimated. Dillender (2015) faces some limitations in his results, because even if states enacted anti-discrimination policies and legally recognized same-sex relationships, private sector employers are not obliged to offer health benefits depending on the insurance plan they provide (Zywave Inc., 2014, p. 4f). By restricting the sample to public sector employees, whom the policy change affected directly, a more precise and possibly even larger labor supply response due to the introduction of spousal health coverage can be identified.

4 Legal Changes and Institutional Setting

Same-sex couples are especially at risk of being inadequately covered by health insurance compared to opposite-sex couples. Obstacles concerning health care coverage for same-sex couples include more complicated access, higher costs and lower quality of healthcare services than different-sex couples (Ranji et al., 2014, p. 1). The US does not have universal health insurance coverage – in 2017 91 % of US population was covered by some kind of insurance (OECD, 2017, p. 2).

The US health care system is based on a highly fragmented set of federal as well as state laws. On the one hand, laws at the federal level provide a general legal framework for health insurance plans. In the US, employers are not obligated to offer health insurance, but if they do, they must

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comply to the federal legal framework. On the other hand, laws at the state level regulate employment, taxation and insurance law which can affect employers' provision of health insurance. State level laws differ across states and can lead to diverse health benefits across the US – not only for same-sex couples (Arthur J. Gallagher Co., 2018, p. 3).

Prior to recent legal changes, same-sex couples were more likely to be inadequately covered by health insurance because they were discriminated based on pre-existing conditions and did not have access to spousal coverage. They were less likely to get employer-sponsored coverage and might have had to resort to more costly privately-purchased insurance plans or to less comprehensive publicly financed insurance. They also had to deal with financial drawbacks due to tax disadvantages. Beyond that, same-sex couples have an increased risk to suffer from certain medical conditions. Consequently, fair access to health care for same-sex couples is of great importance, not only to combat health problems on a societal level, but especially in terms of a safety net on the individual level (Ranji et al., 2014; Kates et al., 2018).

The legal framework concerning health insurance coverage underwent significant changes during the last decades resulting in better access to coverage for same-sex couples. Step by step, same-sex couples were granted more rights and protection concerning health insurance, one of which was the access to same-sex spousal coverage. The most important drivers of these changes were the Supreme Court rulings in United States v. Windsor in 2013 and Obergefell v. Hodges in 2015. Prior to 2013, DOMA determined that "[...] the word 'marriage' means only a legal union between one man and one woman as husband and wife, and the word 'spouse' refers only to a person of the opposite sex who is a husband or a wife (U.S. Congress, 1996)."

In 2013, the Supreme Court ruling in United States v. Windsor lead to significant changes concerning health benefits for same-sex couples as DOMA (Defense of Marriage Act) was declared unconstitutional and federal law since then recognizes legally married same-sex couples. Thereby, all married federal and state employees gained access to comprehensive spousal coverage (including dental and vision insurance), long-term care insurance and tax exemptions on spousal health insurance. All same-sex couples employed by federal agencies were granted spousal health care benefits, if they were legally married - in any state. Although some state government employees already had access to spousal health coverage to some degree before 2013, after the Supreme Court ruling those couples were granted comprehensive and non-discriminatory health benefits. Private employers were still not obliged to offer comprehensive health benefits to same-sex couples, depending on the type of insurance plan provided (Ranji et al., 2014; Kates et al., 2018).

The Supreme Court Ruling also had implications concerning tax filing. Same-sex couples could now file their federal taxes jointly as a married couple. Before 2013, spousal health benefits were considered taxable income: Employees had to pay additional federal income tax and employers paid higher payroll tax (Macdonald, 2013). To sum up, after the Supreme Court ruling in 2013 same-sex couples who are employed by public agencies can rely on spousal health care coverage – but only in states where same-sex relationships are acknowledged before the law (17 States at that time) (Ranji et al., 2014; Kates et al., 2018).

In 2015, the Obergefell v. Hodges ruling finally required all states to recognize same-sex marriage. Its most important implication concerning the identification strategy of this paper regards taxation of health-related spending. The Supreme Court ruling ended the very fragmented pattern of rights for same-sex couples and guaranteed a uniform legal framework for same-sex couples, also concerning spousal health benefits. All federal and state employees in a same-sex marriage are now granted the same health benefits as opposite-sex married couples, all across the US (Kates et al., 2018, p. 18ff).

Nevertheless, neither the Windsor nor the Obergefell ruling are binding for private employers. Despite all these legal changes, whether a private sector employer is obligated to offer the same benefits for all married couples, depends on its health plan. Only fully-insured health plans have to offer the same benefits for same-sex and different-sex married couples. Self-insured health plans are not regulated by state insurance laws, which means that employers can still withhold spousal coverage from same-sex couples. However, they might risk a non-discrimination lawsuit (Zywave Inc., 2014, p. 4f).
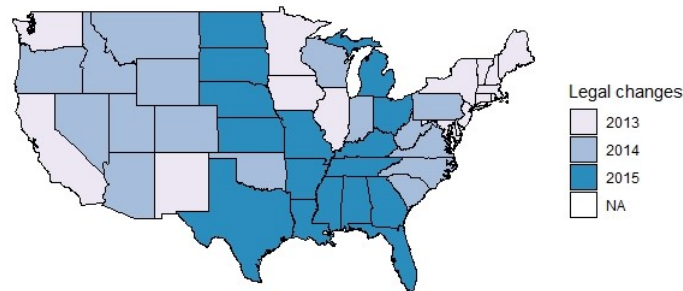
5 Method and Data

Figure (1)   Timing of legal changes across States

The aim of this paper is to exploit the quasi-natural experiment of the legal changes concerning health insurance for same-sex couples in the US, in order to identify causal responses in

their labor supply. Using a difference-in-difference approach, same-sex couples with and without access to spousal health coverage are compared, before and after the legal change. Figure 1 shows at which point in time different states granted non-discriminatory and comprehensive health insurance to all of the public sector employees. In order to find out how same-sex couples respond to changes in health insurance law, I use the ACS (American Community Survey) which provides data on a household as well as on an individual level. Since 2005 - the year of its full implementation - the annual samples include 1 % of the US population (ca. 2.8 million individuals) and a rich set of socio-economic and demographic variables. Since 2013, it is even featuring explicit information on same-sex couples. Since 1990, the Census Bureau allows people to identify as couples in their data, regardless of their gender (Black, Sanders, & Taylor, 2007, p. 54f). In general, three variables enable researchers to identify same-sex couples and same-sex marriages in the ACS data: "sex", "relationship to the householder" and "marital status". Individuals can be linked to their partners in the data, which is essential in order to identify labor supply changes not only on an individual but also on a household level. In order to include some information on state level, additional data from the FRED (Federal Reserve Bank of St. Louis Database) has been obtained. State level GDP per capita and state level unemployment rates complement the ACS data (FRED, 2019).

$$Y_{ist} = \alpha + \beta healthbenefits + \beta_{X1} X_{ist} + \beta_{X2} X_{st} + \beta_t I_t + \beta_s I_s + \epsilon_{ist} \tag{1}$$

In order to identify labor supply responses of same-sex couples due to the changes in health insurance law, I propose a difference-in-difference estimation and run equation (1) separately for male and female same-sex couples. As a dependent variable (Y_{ist}) I look at the probability that both individuals in a couple work and at hours worked per household in order to identify changes in their labor supply. Changes in the total hours worked and the probability that both work give an insight, whether improved access to health insurance influences the overall labor supply of same-sex couples or their labor force participation. The probability that both individuals in a couple work can also be understood as the probability that a public sector employee's spouse or partner works. Logit models are used in order to estimate changes in the probability that both individuals in a couple work - before and after the legal changes. Based on these logit models, average marginal effects can be calculated by computing an average across marginal effects for individual observations (Hanmer & Ozan Kalkan, 2013). All outcomes of logit estimations are displayed in terms of average marginal effects throughout this paper. The subscripts in the regression equation describe an individual/a household "i" living in a state "s" in a year "t". The variable "healthbenefits" is a dummy variable and takes on the value 1 if an individual/a household has access to comprehensive health insurance during the observation period. The coefficient β identifies the average treatment effect of the legal changes in insurance law on households' labor supply.

Literature suggests including demographic and income control variables, as well as state-specific

and year specific fixed effects (Genadek, Stock, & Stoddard, 2007, p. 254f) (Sansone, 2018, 7f). On an individual level, control variables for race, education, working experience, age, the type of occupation, the type of public sector employment, the number of children as well as the highest income earned by one of the individuals in a couple will be taken into account. In the equation individual level control variables are represented by a vector X_{ist}. State level control variables vary annually and include real GDP per capita, unemployment rate and if a state has additional non-discrimination laws. The vector X_{st} represents state level control variables in equation (1). Furthermore, a dummy variable will account for states which offered rudimentary health benefits for same-sex couples before being actually "treated" by more comprehensive legal changes. By including all these control variables, I can identify sharp treatment effects of legal changes in health insurance law on households' and individuals' labor supply.

The analysis presented in the following chapters is based on data from 2008 until 2016. There is no data on health insurance available before 2008. Hence, the sample used in this paper is restricted to the aforementioned years, simply because earlier years lack crucial variables and an analysis would not be feasible. Since 2008, there is not only information on whether an individual has any health coverage, but also more detailed data on the kind of insurance. As it cannot be assured which employees in the private sector were affected by the legal changes and all further analysis will focus on public sector employees (Ruggles et al., n.d.).

6 Results

6.1 Main Results

Theory and empirical evidence on different-sex couples suggests that access to spousal health insurance has a negative impact on household labor suppy and labor force participation. Therefore it should be expected that public sector employees' spouses or partners are less likely to work after a couple gained access to spousal health coverage. This adaption of household labor supply could translate to a reduction in overall household labor supply in terms of hours worked. The estimations in Table 1 and Table 2 use the full sample of all public sector employees and their partners or spouses. The treatment refers to getting full access to dependent health insurance coverage and not suffering from tax disadvantages if choosing spousal coverage. Different timing of the legal changes for federal and state employees in some states are being accounted for.

Table (1)   Regression Results (public sector)

	Dependent variable:	
	both work	
	(1)	(2)
	female	male
Health benefits	−0.005	−0.079***
	(0.025)	(0.026)
Year FE	Yes	Yes
State FE	Yes	Yes
Individual Controls	Yes	Yes
State Controls	Yes	Yes
Observations	13,504	9,156

Note: *p<0.1; **p<0.05; ***p<0.01

Author's calculations based on ACS Data 2008-2016. Estimations include all same-sex couples where at least one person is employed in the public sector. The table shows the effect of non-discriminatory access to spousal health insurance on the probability that both individuals in a couple work. Standard errors are clustered at state level (in parenthesis). Average marginal effects of the logit estimations are displayed.

Table 1 shows the output of logit regressions based on a dummy variable, taking the value 1 if both individuals in a couple are employed in order to receive health insurance individually, as a dependent variable. This dummy variable can also be understood as the probability that a public sector employee's spouse works. Male and female same-sex couples respond negatively to getting access to comprehensive and non-discriminatory health benefits: On average, having

access to health insurance for spouses yields a 7.9 percentage points (male couples), respectively 0.5 percentage points (female couples) decrease in the probability that both individuals in a couple are working. Individuals who have the possibility to be covered by their partner's insurance are less likely to work themselves, in comparison to couples who do not have access to spousal coverage.

Nevertheless, only the coefficient for male same-sex couples is statistically significant. This could have various explanations: Gay men are especially at risk for certain medical conditions, and face a lot of discrimination on the insurance market (Kates et al., 2018, p. 6ff). They might react more sensitively to receiving access to non-discriminatory health insurance than female same-sex couples. Furthermore, existing empirical literature investigating same-sex couples' labor supply responses due to receiving health insurance found that especially female couples tend to adapt their working situation, while male same-sex couples did not respond. These papers evaluated access to health insurance while same-sex couples still faced tax disadvantages and had restricted access to benefits. It might be that female couples already adapted their labor supply when receiving rudimentary access to health benefits, while male same-sex couples only respond to non-discriminatory benefits. Moreover, we have seen that men tend to work for the federal government, while women more often work for state and local governments. Federal, state and local government employees differ in terms of the legal changes: While some state and local employees had partial access to health care benefits and spousal coverage (still facing major federal tax disadvantages) prior to getting non-discriminatory access, federal government employees did not. A step-by-step introduction of spousal health benefits could lead to higher levels of uncertainty than a one-time legal change like it was experienced by federal employees. The distinct proportions of state, federal and local government employees among female and male same-sex couples could also be an explanation why female couples do not show any statistically significant responses.

While Table 1 shows that couples are less likely to work both in order to receive health insurance separately, it is not clear yet how this affects household labor supply in general. Couples might shift hours worked towards the person who is provided with employer-sponsored insurance (while holding the overall household labor supply constant) or the effect could translate to a reduction in hours worked per household. Table 2 shows regression outputs for female and male couples separately and assesses the effect of legal changes in health insurance law on the total hours worked of a household. The introduction of comprehensive health benefits is negative for all same-sex couples, but only statistically significant for men. This supports the results from the logit estimations presented in Table 1. Male couples work on average 3 hours less per week after the treatment, while female couples work 0.5 hours less per week. They can now rely on comprehensive and non-discriminatory spousal health coverage and are not obliged to get employer-sponsored health care by each having their own job. Overall, same-sex couples reduce their labor supply in response to gaining access to spousal health coverage. This conforms with

Table (2)　Regression Results (public sector)

	Dependent variable:	
	Hours worked per household	
	(1)	(2)
	female	male
Health benefits	−0.511	−3.037***
	(1.177)	(1.103)
Year FE	Yes	Yes
State FE	Yes	Yes
Individual Controls	Yes	Yes
State Controls	Yes	Yes
Observations	13,504	9,156
R^2	0.1891	0.1658

Note:　　　　　　　　　　　　　*p<0.1; **p<0.05; ***p<0.01

Author's calculations based on ACS Data 2008-2016. Estimations
include all same-sex couples where at least one person is employed
in the public sector. The table shows the effect of non-discriminatory
access to spousal health insurance on hours worked per household.
Standard errors are clustered at state level (in parenthesis).

theoretical considerations as well as with empirical evidence.

6.2　State and Local Government Employees in Detail

Due to different timing of legal changes for federal and state employees within some states, some
state and local government employees had access to dependent health coverage or certain health
benefits (while still facing significant tax disadvantages) before the Supreme Court Ruling in
2013. As they could not file their taxes jointly as a couple, spousal health benefits (if offered
by the employer) were considered taxable income (Macdonald, 2013): Badgett (2007) finds that
on average, same-sex couples paid $ 1,069 more per year than different-sex couples for the same
health coverage.

Therefore, in Table 3 labor supply responses of state and local government employees are assessed
in detail. These estimations investigate not only the effect of non-discriminatory access, but also
the impact of having rudimentary access to spousal health benefits. Thus, different "degrees" of
access to spousal benefits can be evaluated. "Rudimentary access" can have different meanings
across states: facing tax disadvantages, no right to familial leave and visitation in the hospital or
very complicated eligibility criteria in order to receive spousal coverage (e.g. proof of a minimum
of 12 months of partnership, shared residence and expenses, etc.) (Nelson, 2013). Rudimentary

access could have been an incentive for same-sex couples to adjust their labor supply, but it cannot be compared to the kind of spousal coverage married different-sex couples received at the time.

Table (3)   Regression Results (State and local govt. employees)

	Dependent variable:	
	both work	
	(1)	(2)
	female	male
Rudimentary benefits	−0.025**	0.007
	(0.013)	(0.038)
Non-discriminatory benefits	0.022	−0.076**
	(0.028)	(0.036)
Year FE	Yes	Yes
State FE	Yes	Yes
Individual Controls	Yes	Yes
State Controls	Yes	Yes
Observations	11,288	7,342

Note: *p<0.1; **p<0.05; ***p<0.01

Author's calculations based on ACS Data 2008-2016. Estimations include all same-sex couples where at least one person is employed by a local or state government. The table shows the effect of different "degrees" of access to spousal health insurance on the probability that both individuals in a couple work. Standard errors are clustered at state level (in parenthesis). Average marginal effects of the logit estimations are displayed.

Table 3 shows the results of logit regressions only including same-sex couples where at least one person is employed by a state or local government (and not those employed by the federal government). The findings suggest that female couples reacted to the introduction of rudimentary health care access, while men reacted only when they had access to non-discriminatory group health insurance plans. For both, the effect is negative and statistically significant. Calculating the average marginal effects yields a 2.5 percentage points decrease in the probability that both individuals of a female same-sex couples work after getting any access to health benefits. Male same-sex couples show a 7.6 percentage points decrease in the probability that both work, as a response to getting access to non-discriminatory health care benefits. This also confirms findings by Dillender (2015) and Buchmueller and Carpenter (2012), who find that especially female same-sex couples adapt their labor supply downwards as a consequence of receiving rudimentary access to spousal health coverage, while male same-sex couples do not. Moreover, the findings

are in accordance with earlier findings for the whole sample of same-sex couples (including all kinds of public sector employment), where only men react to legal changes granting them non-discriminatory access to group health benefits.

Table (4) Regression Results (State and local govt. employees)

	Dependent variable:	
	Hours worked per household	
	(1)	(2)
	female	male
Rudimentary benefits	−0.396	1.242
	(1.393)	(2.429)
Non-discriminatory benefits	1.520	−4.220**
	(1.095)	(1.828)
Year FE	Yes	Yes
State FE	Yes	Yes
Individual Controls	Yes	Yes
State Controls	Yes	Yes
Observations	11,288	7,342
R^2	0.1891	0.1856

Note: $^*p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

Author's calculations based on ACS Data 2008-2016. Estimations include all same-sex couples where at least one person is employed by a local or state government. The table shows the effect of different "degrees" of access to spousal health insurance on hours worked per household. Standard errors are clustered at state level (in parenthesis).

In addition, Table 4 assesses if the decrease in the probability that both individuals in a couple work in order to receive health insurance translates to a reduction in the number of hours worked per couple. Only for male same-sex couples a statistically significant result can be found, but the effect is negative also for female same-sex couples (when receiving access to rudimentary benefits). On average, male same-sex couples (where at least one person is employed by a local or state government) work 4.2 hours less per week in response to receiving access to comprehensive health benefits.

6.3 Federal Government Employees in Detail

After looking at state and local employees in detail, also federal government employees will be assessed separately. While state and local employees were subject to some legal changes and partial access to health insurance already before 2013, federal government employees were exclusively affected by the Supreme Court ruling in 2013. After the Supreme Court ruling in 2013, the federal government was obliged to extend health benefits to all married same-sex couples. As federal employees faced a really sharp treatment effect without facing any minor legal changes or rudimentary benefits beforehand that could have led to insecurity and confusion, I would expect to find the strongest responses for this group of public sector employees.

Table (5)   Regression Results (Federal govt. employees)

| | Dependent variable: | |
| | both work | |
	female	male
Health benefits	-0.052^{*}	-0.072^{**}
	(0.028)	(0.036)
Observations	2,604	2,016
Year FE	No	No
State FE	No	No
Individual Controls	Yes	Yes
State Controls	Yes	Yes

Note: *p<0.1; **p<0.05; ***p<0.01

Author's calculations based on ACS Data 2008-2016. Estimations include all same-sex couples where at least one person is employed by the federal government. The table shows the effect of non-discriminatory access to spousal health insurance on the probability that both individuals in a couple work. Standard errors are clustered at state level (in parenthesis). Average marginal effects of the logit estimations are displayed.

Table 5 shows logit estimations using only couples where at least one person is employed by the federal government. As the relevant legal change affected all federal employees at the same time, neither state fixed effects nor year fixed effects are included. The dependent variable - once again - indicates if both individuals in a couple work in order to get health insurance. Statistically significant results can be found for male and female same-sex couples. The average marginal effects yield a 5.2 percentage points decrease in the probability that both individuals in a couple work for female couples and a 7.2 percentage points decrease for male same-sex couples. Although the other estimations suggested that only male couples respond to comprehensive

Table (6)   Regression Results (Federal govt. employees)

	Dependent variable:	
	Hours worked per household	
	(1)	(2)
	female	male
Health benefits	−2.570*	−4.976***
	(1.457)	(1.890)
Observations	2,604	2,016
R^2	0.214	0.170
Year FE	No	No
State FE	No	No
Individual Controls	Yes	Yes
State Controls	Yes	Yes

Note: *p<0.1; **p<0.05; ***p<0.01

Author's calculations based on ACS Data 2008-2016. Estimations include all same-sex couples where at least one person is employed by the federal government. The table shows the effect of non-discriminatory access to spousal health insurance on hours worked per household. Standard errors are clustered at state level (in parenthesis).

access to spousal coverage, among federal employees also female same-sex couples adapt their labor supply. This does not stand in any contrast to earlier findings: Female state and local government employees in same-sex couples already respond to getting rudimentary access to health benefits. This is also confirmed by empirical findings by Dillender (2015) and Buchmueller and Carpenter (2012). As federal employees did not have the possibility to react to any earlier legal changes, female same-sex couples could not have adapted their labor supply yet in response to getting access to spousal coverage. Federal employment makes up only a very small part of public sector employment among female same-sex couples, and hence no statistically significant results could be found when running regressions based on the complete sample, where all kinds of public sector employment are included.

The reduction in the probability that spouses of federal employees work after getting access to spousal health coverage translates to a reduction in hours worked per household. Table 6 presents regression outcomes for couples of federal employees: Statistically significant and negative results can be found for female and for male same-sex couples. In response to the legal changes in 2013, female same-sex couples work 2.6 hours less per week and male same-sex couples work 5.0 hours less per week.

6.4 Incentive to Work in the Public Sector

Having access to spousal health insurance and other health benefits might not only influence labor supply of people working in the public sector, but could also be an incentive for gay and lesbian individuals to self-select into the public sector. Therefore, in the following regression I estimate if lesbian or gay individuals are more likely to work in the public sector after legal changes in the health insurance law. The corresponding regression output can be found in Table 7. I find highly significant and positive coefficients, suggesting that individuals in same-sex couples are more likely to be employed by a federal, state or local government after having access to spousal health coverage. Computing average marginal effects yield a 2.9 percentage points increase in probability for men and a 3.3 percentage points increase in probability for women to work in the public sector. After the introduction of spousal health insurance, individuals of same-sex couples are more likely to work in the public sector. One possible explanation could be that there is an incentive for individuals in same-sex couples to (self-)select into the public sector in order to receive spousal health coverage.

Table (7)   Incentive to work in the public sector

	Dependent variable:	
	Works in the public sector	
	(1)	(2)
	female	male
Health benefits	0.033***	0.029***
	(0.009)	(0.011)
Observations	49,310	46,666
Year FE	Yes	Yes
State FE	Yes	Yes
Individual Controls	Yes	Yes
State Controls	Yes	Yes
State pecific trends	Yes	Yes

Note: *p<0.1; **p<0.05; ***p<0.01

Author's calculations based on ACS Data 2008-2016. Estimations include all same-sex couples. The table shows the effect of access to spousal health insurance on the probability to work in the public sector. Standard errors are clustered at state level (in parenthesis). Average marginal effects of the logit estimations are displayed.

7   Conclusion

The main idea of this paper is to investigate if same-sex couples adapt their labor supply in response to getting access to spousal health coverage. Prior to recent legal changes, same-sex couples suffered from very restricted and discriminatory entitlements to health benefits as a couple. While different-sex couples have always had the opportunity to receive spousal health insurance if only one individual of a couples works, same-sex couples did not. Therefore, they were forced to seek employment in order to receive employer sponsored health insurance individually. Same-sex couples are especially at risk of being inadequately covered by health insurance compared to opposite-sex couples, because they face barriers in the access health insurance coverage and run a higher risk to suffer from certain medical conditions (Kates et al., 2018, p. 1). Therefore, changes in health insurance law might have strong implications for intra-household decisions and alleviate restrictions concerning same-sex couples' labor supply.

Throughout the years 2013 until 2015, several legal changes affected same-sex couples' entitlement to health insurance. Step-by-step states started granting comprehensive spousal health benefits to same-sex couples, and since 2015 finally all same-sex couples can benefit from group health benefits in the US. This paper exploits the quasi-experimental setting of these changes in health insurance law in order to identify labor supply responses of same-sex couples.

Up to now, there is very little literature regarding the effect of health insurance on the labor sup-

ply of same-sex couples. In general, economic theory and empirical evidence suggest that access to non-contributory − e.g. spousal − health insurance affects couples' labor supply negatively. Access to health insurance has a consumption smoothing effect and can also be considered an increase in non-wage income. Therefore, labor becomes less "attractive" for households compared to leisure (Boyle & Lahey, 2010; Chou & Staiger, 2001). This paper aims at understanding labor supply decisions of same-sex couples and their responses to changes in health insurance law in more detail. For this purpose, a difference-in-difference estimation is conducted by exploiting variation in the timing of legal changes across states. All estimations are based on same-sex couples where at least one person is employed by the federal, state or local government. While all public sector employees were affected by the legal changes in health insurance law, private sector employers are still not obliged to offer same-sex couples spousal health coverage (Zywave Inc., 2014).

All in all, the empirical findings of this paper agree with theoretical and empirical literature on different-sex couples. In general, same-sex couples also seem to respond negatively to access to spousal health coverage, but the results are more ambiguous. Male and female same-sex couples differ in terms of their behaviour. While in different-sex couples mostly the women reduce their labor supply due to spousal health coverage, concerning same-sex couples, men seem to respond more strongly negatively. There could be multiple explanations: On average, ACS data of same-sex couples suggests that female couples earn less that male same-sex couples. Female same-sex couples might not be able to afford dropping out of their job or reducing the number of hours worked, because they depend on the foregone income. Furthermore, especially gay men are at risk to suffer from certain medical conditions and face discrimination on the private insurance market (Kates et al., 2018, p. 1). Therefore, in absence of alternatives, they might have been forced to take on jobs in order to receive employer-sponsored health insurance individually before the legal changes. After the legal changes they are not restricted in their labor supply decisions anymore and can adapt their labor supply according to their preferences.

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