

A Service of

ZBW

Leibniz-Informationszentrum Wirtschaft Leibniz Information Centre for Economics

Mann, Samuel

Working Paper

The Labour Force Status of Transgender People and The Impact of Removing Surgical Requirements to Change Gender on ID Documents

GLO Discussion Paper, No. 670

Provided in Cooperation with: Global Labor Organization (GLO)

Suggested Citation: Mann, Samuel (2020) : The Labour Force Status of Transgender People and The Impact of Removing Surgical Requirements to Change Gender on ID Documents, GLO Discussion Paper, No. 670, Global Labor Organization (GLO), Essen

This Version is available at: https://hdl.handle.net/10419/224276

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



WWW.ECONSTOR.EU

<u>The Labour Force Status of Transgender People and The Impact</u> of Removing Surgical Requirements to Change Gender on ID <u>Documents</u>

Samuel Mann¹

Abstract

This paper uses data from the BRFSS over the period 2014-2019 to analyse the impact of removing surgical requirements to change legal gender. In many states transgender people are forced to undergo surgical procedures if they wish to change their gender on ID documents, which can be invasive, expensive, and is not always desired. In the present work state variation in the timing of the removal of surgical requirements is exploited within a triple difference framework to analyse the causal impact of these removals on the labour force participation and employment of transgender people. The findings highlight the detrimental economic impact of surgical requirements for transgender people to be able to reassign gender on birth certificates, especially for those individuals that are least likely to be able to afford surgical treatment.

Keywords; Gender Identity, Trans, Employment, Self-Employment, Discrimination, Law, Birth Certificates.

JEL Codes: J15, J16, J71, J78, K31, K38

Acknowledgements; I thank the Global Labour Organisation for their support, comments, and advice throughout this project. I thank attendees of a Global Labour Organisation webinar who offered advice on earlier drafts. I am deeply indebted to Nick Drydakis for his support on this project and invaluable advice. I also thank Ian Burn, and Nigel O'Leary for comments on earlier drafts.

1. Introduction

Around 1.4 million Americans identify as trans (Flores et al, 2016), and it is well documented that these individuals face prolific transphobia and bias in the labour market, resulting in harassment, exclusion, and poverty (Kollen, 2016; Leppel, 2016; 2019; Carpenter, 2020). However, economic research relating to trans-experience is limited, mainly due to a dearth of data on trans identities. Of the limited research that has been completed, economists have generally documented that trans people are less likely to be employed than cisgender people (Leppel, 2016; 2019; Carpenter et al, 2020) and face discrimination (Van Borm & Baert, 2018; Van Borm et al, 2020; Granberg et al, 2020).

¹ School of Management, Swansea University, UK; Wales Institute of Social and Economic Research, Data & Methods, UK; Global Labor Organization Fellow, Germany.

Email: samuel.mann@swansea.ac.uk

Trans people face serious exclusions when their ID documents do not reflect their gender identity (Drydakis, 2017a; Centre for American Progress, 2014). The process of obtaining ID documents that reflect gender identity differs significantly across US states (Centre for American Progress, 2014). In many states trans people are only allowed to amend their birth certificates if they have undergone surgical treatment, which involves changing the genitalia of an individual to reflect their gender identity. In recent years, 23 states have removed the sex reassignment surgical requirements to change the gender on a birth certificate (National Centre for Transgender Equality, 2020). For many trans people an amended birth certificate is required to be able to change the gender marker on other ID documents (Movement Advancement Project, 2020). For many trans people sex reassignment surgery may not be affordable, or even desired (Drydakis, 2017a). Not only has descriptive evidence highlighted the impact of incongruent documents on the discrimination faced by transgender people in the workplace (James et al, 2016), but the labour market consequences of incongruent documents have a theoretical underpinning.

Incongruent documents signal to potential employers that an individual is transgender, and as such, this increases the possibility of discriminatory employers discriminating against individuals with incongruent documents. However, the effect of surgical restrictions to change the gender marker on ID documents on the labour market outcomes of trans people are yet to be explored. These may have serious impacts considering that the removal of these restrictions increases access to congruent documents, especially for those transgender workers that may choose to not undergo surgical treatment or cannot afford to do so.

In the current work variation in the timing of the removal of surgical restrictions to change legal gender on a birth certificate is exploited in a triple difference framework to explore the impact of the removal of these restrictions on the labour force participation and employment of transgender people, for the first time. This paper focuses on laws relating to changing gender markers on birth certificates for two key reasons. Firstly, changing the gender marker on a birth certificate is the key change that is associated with a legal change of gender. Indeed, the first legal case to consider a legal gender change in the US (*Mtr. of Anonymous v. Weiner (1966)*) was based on changing a birth certificate. Secondly, in several states people can only change the gender maker on their driving license if they have an amended birth certificate (or proof of sex reassignment surgery, or a court order). The analysis presented in the current work is important for policy makers as it highlights the negative impact that surgical restrictions to change legal gender have on the labour market outcomes of trans people.

The remainder of this article is structured as follows. In Section 2 a background to the current work and discussion of the related literature is provided, while the data used in the current work and the empirical approach are presented in Section 3. Results are presented in Section 4, which is followed by a discussion and concluding remarks.

2. Background and Related Literature

2.1. Literature Review

Academic interest in LGBT economics has grown substantially since Badgett's (1995) seminal work on the sexual orientation based earnings differential. However, much of this work has focused on lesbians and gays, and to a lesser extent, bisexuals (Ozeren, 2014). In

fact, very little work has analysed the labour market outcomes of trans individuals, mainly due to a lack of data on gender identity in nationally representative surveys, which hinders empirical analyses.

Studying the labour market outcomes of trans people is important for several reasons. Firstly, according to Flores et al (2016) around 0.6% of Americans identify as trans, which translates into around 1.4 million individuals. Secondly, studying the labour market outcomes of trans populations is important considering its policy relevance. In the US, trans legislation varies across states, and as such empirical analysis can evaluate what policies have the best traction in improving the labour market outcomes of trans people, as well as informing economists and policy makers of what works for LGBT+ workers. Finally, empirical analysis of trans populations offers new insights into the broader effects of gender in the labour market, enabling an analysis of the differential effects of presentation, identity, and sex.

Some early work has investigated the relationship between trans identities and a series of labour market outcomes. Indeed, the report from the 2015 US Transgender Survey (James et al, 2016) indicates that around a third of trans individuals live in poverty and that trans people are three times more likely to be unemployed than the general US population.

Additionally, economists have used observational data to analyse the labour force status of transgender people. Leppel (2016, 2019) focussed on the labour force status of trans individuals using data from the National Transgender Discrimination Survey (NTDS) and the US Transgender Survey. Leppel (2016, 2019) documented higher unemployment and labour force participation rates of trans people, and that the proportion of trans men employed was greater than the proportion of trans women. Her results are qualitatively similar to those reported by Carpenter et al (2020) in their analysis of the nationally representative Behavioural Risk Factor Surveillance Survey (BRFSS). Carpenter et al (2020) examined the socio-economic outcomes of trans people in the US, compared to cisgender men. Their analysis documented that trans people have lower employment rates, lower household incomes, higher poverty rates, and worse self-rated health compared to otherwise similar cisgender men.

Experimental evidence has analysed causal pathways. Schilt & Wiswall (2008) for example, used data obtained from attendees at three trans conferences and users of a trans focussed internet site to analyse the earnings of trans individuals. Their findings indicated that MtF trans individuals that had undergone sex reassignment surgery saw a significant decline in earnings following transition (of around 30%), while FtM trans individuals saw a slight increase in earnings following transition.

Using Dutch administrative data Geijtenbeek and Plug (2018) documented a similar qualitative pattern. They used gender changes in registry data to identify trans individuals and documented that pre-transition trans workers earn more than cisgender women but less than cisgender men. Like Schilt & Wiswall (2008) they documented that MtF trans individuals saw a significant decrease in earnings following transition.

In addition to research documenting the earnings effects of transitioning Drydakis (2017b) has documented wellbeing effects. Using UK longitudinal data Drydakis (2017b) documented that sex reassignment surgery was associated with improvements in job satisfaction, life satisfaction, and mental health.

While the above studies are important, one must consider that many trans individuals may not decide or be able to afford to medically transition (James et al, 2016), but may still change their name to reflect their gender. In line with this, Granberg et al (2020) completed a correspondence study in Sweden to analyse hiring discrimination associated with gendered name changes. The authors sent over 2,000 fictitious applications to 12 low-skilled occupations. All CV's documented that the fictitious applicant had changed their name, for cis-gender fictitious applicants this name change was consistent with the original gender (e.g. male name to male name), while for fictitious trans applicants there was inconsistency in the gendered name (e.g. female name to male name). The results highlighted that while transgender people were less likely to receive positive employer responses, this was not robust to the Heckman-Siegelman critique. However, the results were robust to this critique in male-dominated occupations. But, one must consider the high levels of LGBT acceptance in Sweden (Flores & Park, 2018).

From a theoretical viewpoint there are several reasons why trans people may differ from their cisgender counterparts in terms of employment propensities. According to taste-based models of discrimination (Becker, 1957) transphobia can result in employers, customers, and co-workers having a distaste in employing, purchasing from, or working alongside trans individuals. Even if employers are not transphobic, they may not employ trans individuals if they believe that the presence of trans employees will negatively impact profitability or productivity (due to customer or co-worker distastes). This is particularly pertinent considering that Van Borm & Baert (2018) and Van Borm et al (2020) found evidence of customer and co-worker discrimination towards trans men and women in their experimental analyses in Belgium, but not employer discrimination.

Arrow (1973) and Phelps (1973) instead discuss the concept of statistical discrimination, whereby employers use observable characteristics (here, being trans) to infer productivity, as information asymmetries prevent employers from being able to observe productivity before hiring individuals. In the case of trans people employers may assume for example, worse health or a lower likelihood of going on parental leave (as documented by Van Borm & Baert (2018) and Van Borm et al (2020) in their experimental analyses), thus trans people may face either positive or negative effects of statistical discrimination.

However, for employers to discriminate (according to either model) they would need to be aware that individuals are transgender. From a theoretical standpoint incongruent documents could impact the labour market outcomes of transgender people as they act as a signal to employers that an individual is transgender, and as such, transgender people with incongruent documents may be more likely to face discrimination, as their minority status becomes more visible.

In addition, congruent documents offer a different signal to an employer about an individual's gender. When transgender people have congruent documents there is an increased likelihood that their treatment in the labour market will reflect their gender, rather than their trans status. In line with this, congruent documents may have particularly beneficial impacts on female to male (FtM) transgender workers, as they may be able to capitalise on the well documented preference for males in the labour market, as was observed in Schilt & Wiswall (2008) and Geijtenbeek & Plug's (2018) analysis, which highlighted that transitioning (either surgically or through changing name) was associated with an increase in earnings for FtM transgender

workers. As such, making the process of gaining documents that reflect an individual's gender presentation and lived experience may be particularly beneficial in improving the labour market outcomes of FtM transgender workers.

Changing legal gender, and ID documents is however a burdensome process for many transgender people, especially in states that require surgical treatment in the form of sex reassignment surgery. Figure 1 highlights that in more than half of American states transgender people are still required to undergo surgery if they wish to change their gender marker on their birth certificate. In fact, only 23 states do not require transgender people to undergo surgical treatment².

<<Insert Figure 1 Here>>

Mottet (2013) highlights that laws relating to changing the gender marker on birth certificates were historically fairly uniform across US states, largely due to most states adopting the 1977 revision of the Model State Vital Statistics Act, which asserted that the gender marker on ID documents could be granted following applicants undergoing surgical treatment to change their sex. However, over the past three decades there has been significant progress in both transgender rights and transgender medicine. As such, policies that require surgical treatment do not take consideration of the fact that many trans people may choose to not undergo sex reassignment surgery. Given that incongruent documents are associated with transgender people reporting discrimination in employment (James et al, 2016), laws that require surgical treatment for workers, especially those that cannot afford or choose to not undergue treatment for being transgender.

3. Data and Empirical Approach

3.1. Data Description

In the current work data from the Behavioural Risk Factor Surveillance Survey (BRFSS) covering the period 2014 to 2019 is used to analyse the impact of the removal of surgical restrictions when changing the gender marker on birth certificates. The BRFSS is a telephone interview that is conducted by health departments at the state level. The Centre for Disease Control and Prevention (CDC) compile the state level data annually into an individual-level cross-sectional data set. The survey primarily collects health related information but does also ask participants a plethora of demographic questions.

Since 2014 the BRFSS has included a Sexual Orientation and Gender Identity (SOGI) optional module. States can choose on a yearly basis whether to include this module as part of the surveillance survey. If administered participants are asked "do you consider yourself to be transgender?" Non-cisgender people are asked to specify if they are trans male to female (MtF), female to male (FtM), or gender nonconforming (GNC). Over the five-year period covered by the dataset 39 states administered the question in at least one year³.

² Of these 23 states, 13 require "appropriate treatment", but this does not include surgical procedures.

³ In 2014 the question was administered in Delaware, Hawaii, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Minnesota, Montana, Nevada, New York, Ohio, Pennsylvania, Vermont, Virginia, Wisconsin, Wyoming, Guam. In 2015, Colorado, Connecticut, Delaware, Georgia, Hawaii, Idaho, Illinois, Indiana, Kansas, Maryland, Massachusetts, Minnesota, Missouri, Nevada, New York, Ohio, Pennsylvania, Texas, Virginia, West Virginia, and Wisconsin administered the question. In 2016, the question was included in

In the current work the sample is limited to the working age population, who are not students. The sample is also limited to those states that have specific policies or practices with regards to legal gender changes, as such, data from 7 states are omitted from the analysis⁴ After excluding any individuals who have missing data for the outcome variable, their gender identity, or any control variables, the remaining sample is comprised of 265,074 cisgender males, 309,478 cisgender females, 1,197 MtF trans people, 843 FtM trans people, and 571 GNC trans people.

3.2. Empirical Approach

Following Carpenter et al (2020) a linear probability model⁵ of the following form is used to first understand the labour market outcomes of trans people compared to their cis-gender counterparts;

$$Y_{i,s,t} = \beta_0 + \beta_1 F t M_{i,s,t} + \beta_1 M t F_{i,s,t} + \beta_1 G N C_{i,s,t} + \beta_1 C F_{i,s,t} \beta_2 Indiv_{i,t}$$
(1)
+ $\beta_3 state_{s,t} + \beta_4 I_s + \beta_5 I_t + \beta_6 (I_s \times I_t) + \varepsilon_{i,s,t}$

Where the outcome variable, Y, is the outcome of interest (labour market participation or employment) of individual i, in state s, at time t. FtM is a dummy variable that takes the value 1 if the individual indicated that they are transgender, female to male, and 0 otherwise. MtF is a dummy variable that takes the value 1 for male to female transgender people, GNC is a dummy variable that take the value 1 if the individual is transgender, gender nonconforming, and CF is a binary variable that takes the value 1 if the individual is a cis-gender female, each of these take the value 0 otherwise. The primary coefficients of interest are β_1 , β_2 , and β_3 . Indiv is a vector of individual characteristics that are included as controls. Specifically, controls for age (and its square), marital status, parenthood, race, and education are included. state is a vector of state level policy controls. The state level policy controls included are a series of binary variables that take the value 1 if the state that the individual

California, Connecticut, Delaware, Georgia, Guam, Hawaii, Idaho, Illinois, Indiana, Iowa, Kentucky, Louisiana, Massachusetts, Minnesota, Mississippi, Missouri, Nevada, New York, Ohio, Pennsylvania, Rhode Island, Texas, Vermont, Virginia, Washington, Wisconsin. In 2017, California, Connecticut, Delaware, Florida, Georgia, Guam, Hawaii, Illinois, Indiana, Iowa, Louisiana, Massachusetts, Minnesota, Mississippi, Montana, Nevada, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Texas, Vermont, Virginia, Washington, Wisconsin, included the module. While in 2018 the module was included in Connecticut, Delaware, Florida, Guam, Hawaii, Idaho, Illinois, Kansas, Louisiana, Maryland, Minnesota, Mississippi, Missouri, Montana, Nevada, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Ohio, Oklahoma, Pennsylvania, Maryland, Minnesota, Mississippi, Missouri, Montana, Nevada, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Vermont, Virginia, Washington, West Virginia, Wisconsin. In 2019, Alaska, Arizona, Colorado, Connecticut, Delaware, Florida, Georgia, Guam, Hawaii, Idaho, Iowa, Kansas, Louisiana, Maryland, Minnesota, Mississippi, Montana, New York, North Carolina, Ohio, Oklahoma, Rhode Island, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, and Wisconsin included the module. Data from Guam is excluded from the analysis, as this is a territory rather than a state. Additionally, data from Indiana, Mississippi, Oklahoma, South Carolina, Texas, Utah, and Wyoming is not included, as there is no clear policy with regards to legal gender change in these states.

It should be noted that some states include questions on sexual orientation and gender identity but did not include the module specified by the CDC, this data is excluded. Other states ask similar questions in alternative surveys, this data is not included here. Some states also included the module but did not give permission to the BRFSS to include this information in the public use data file, this data is not included here. Finally, while data was collected for Guam this data is not included. Being a territory rather than a state, state level data that is included in the methodological approach is unavailable, thus data for individuals in Guam was excluded. ⁴ Data from Indiana, Mississippi, Oklahoma, South Carolina, Texas, Utah, and Wyoming are not included, as there is no clear policy with regards to legal gender change in these states.

⁵ In additional results not presented here but available on request, all models have been estimated using probit models. The same qualitative pattern occurs in all specifications.

lives in has the policy in that state – year cell, and 0 otherwise. The policies controlled for are, the removal of surgical requirements to change gender on birth certificates, employment non-discrimination acts, credit non-discrimination acts, public accommodation nondiscrimination acts, private medical insurance non-discrimination acts and whether Medicaid policies cover trans-related care. This data comes from the Movement Advancement project (2020), Lambda Legal (2020) and the National Centre for Transgender Equality (2020). State (I_s) , year (I_t) , and state by year $(I_s \times I_t)$ fixed effects are also included. Standard errors are clustered at the state level. Variable descriptions can be found in appendix Table A1.

To assess the impact of removing the surgical restriction to change legal gender on birth certificates on the labour market outcomes of trans people, a triple difference model is estimated. The model therefore compares cisgender and transgender people in the same states, over time. The model exploits variation in the timing of the removal of surgical restrictions to change legal gender across states to analyse the causal impact of the removal of these restrictions on the labour market outcomes of trans people. The model can be specified as;

$$Y_{i,s,t} = \beta_{0} + \beta_{1}FtM_{i,s,t} + \beta_{2}MtF_{i,s,t} + \beta_{3}GNC_{i,s,t} + \beta_{4}CF_{i,s,t}$$
(2)
+ $\beta_{5}FtM \ x \ RSR_{i,s,t} + \beta_{6}MtF \ x \ RSR_{i,s,t} + \beta_{7}GNC \ x \ RSR_{i,s,t}$
+ $\beta_{8}CF \ x \ RSR_{i,s,t} + \beta_{9}Indiv_{i,t} + \beta_{10}state_{s,t} + \beta_{11}I_{s} + \beta_{12}I_{t}$
+ $\beta_{13}(I_{s} + I_{t}) + \varepsilon_{i,s,t}$

FtM x RSR, MtF x RSR, and *GNC x RSR* are interactions between the transgender dummy variables and laws relaxing the requirement to change gender on a birth certificate by removing surgical requirements. This allows the relationship between the removal of surgical restrictions and the labour market outcomes of trans people to be estimated. As such, the primary coefficients of interest are β_5 , β_6 , and β_7 , which quantify the impact of the removal of surgical restrictions to change legal gender on FtM, MtF and GNC transgender people, correspondingly. Standard errors are clustered at the state level following Bertrand et al (2004).

It should be highlighted that this triple difference model estimates the impact of the removal of surgical requirements to change the gender on a birth certificate, not the impact of changing the gender marker on a birth certificate. That is, the model can estimate an intention-to-treat (ITT) not an average treatment effect. This ITT is relevant for policy makers as it quantifies the impact of the policy change, rather than the effect of people changing their gender marker.

When interpreting the estimates from difference-in-difference-in-differences estimates as causal one key concern if whether the timing of reforms reflects pre-existing differences. However, in the case of the removal of surgical restrictions to change legal gender it was not the most liberal states (e.g. New York (2014) or California (2014)) that changed their policies regarding the requirements to change the gender marker on birth certificates first, nor was is those states with the largest proportions of transgender people (e.g. Hawaii (2015), California (2014), or New Mexico (2019); Flores et al (2016)). In fact, the first states to remove surgical restrictions were Iowa (2004) and Rhode Island (2004)⁶

⁶ Appendix Table A2 documents the removal dates of surgical restrictions, by state.

In addition, to assess the parallel trends assumption an event study is estimated. Event studies allow an investigation of the timing of any changes in outcomes around the policy change. Furthermore, they facilitate an assessment of the parallel trends assumption, by analysing whether trends in outcomes were the same for cis-gender and trans-gender people prior to the policy change. An event study of the following form is estimated;

$$y_{ict} = \alpha + \sum_{k=\underline{T}}^{\overline{T}} \beta_1 (FtM \ x \ RSR)_{ict}^k + \sum_{k=\underline{T}}^{\overline{T}} \beta_2 (MtF \ x \ RSR)_{ict}^k + \sum_{k=\underline{T}}^{\overline{T}} \beta_3 (GNC \ x \ RSR)_{ict}^k + \sum_{k=\underline{T}}^{\overline{T}} \beta_4 (CF \ x \ RSR)_{ict}^k + \sum_{k=\underline{T}}^{\overline{T}} \beta_5 (RSR)_{ict}^k + \beta_6 X'_{ict} + \beta_7 I_c + \beta_8 I_t + \beta_9 (I_c \ x \ I_t) + \varepsilon_{ict}$$
(3)

Where *RSR* is an indicator variable equal to one if individual *i*, lives in state *s*, at time *t*, when surgical restrictions were removed, and zero otherwise (even in years after the policy change). RSR_{ict}^k are the lead (k > 0) and lag (k < 0) operators. Results are plotted with endpoints $\overline{T} = 3$ and $\underline{T} = 3^7$. The same controls as before X', are also included, as are country, year, and country by year fixed effects. The sample consists of all states that changed their policy during the sample period. Following Sansone (2019), the year just prior to the policy change policy is excluded and used as the reference period.

3.3. Summary Statistics

Summary statistics for cisgender males, cisgender females, and trans people (FtM, MtF, and GNC) are presented in Table 1. Column (1) presents the sample means for cisgender males, while the sample means for cisgender females are presented in column (2). The MtF trans sample means are presented in column (3), the FtM trans sample means are presented in column (5).

<<Insert Table 1 Here>>

In terms of labour force status, cisgender males are statistically significantly more likely than all other groups to be in employment, with 75.4% of cisgender males being employed, compared to 65.6% of cisgender females, 61.5% of MtF trans people, 59.3% of FtM trans people, and 59.7% of GNC trans people. Around 5% of cisgender people are unemployed, compared to 9.1% of MtF trans people, 6.5% of FtM trans people, and 7.7% of GNC trans people. Cisgender males have the smallest proportion that are out of the labour force, with 19.4% of cisgender men being out of the labour force. 29.4% of cisgender females are out of the labour force. Trans people are more likely to be out of the labour force than cisgender men. 29.4% of MtF trans people are out of the labour force, while 34.2% of FtM and 32.6% of GNC trans people are. The employment summary statistics clearly indicate that the labour market prospects of cisgender and trans people differ.

⁷ Unfortunately, the event study could not be estimated with earlier or later end points due to data restrictions.

In terms of demographics transgender people are significantly longer than cisgender people. A smaller proportion of transgender people than cisgender people are married, and transgender people are less likely to have children. A significantly greater proportion of the transgender population are people of colour. Transgender people also have significantly lower levels of education and are significantly smaller proportion have graduated from college.

As previously mentioned, trans progressive laws differ by state, and as such one may expect that trans people are more likely to reside in a state that has a legal framework that supports their gender identity. The summary statistics presented in Table 1 however indicate that, for the most part, this is not the case. Around the same proportion of FtM and MtF transgender people as cisgender people live in states that have removed the surgical requirements to change legal gender (around 50% of the population). A significantly greater proportion of gender non-conforming transgender people live in states that have removed the surgical restrictions top change legal gender. Transgender people are no more likely to live in a state that offers employment protection, a credit non-discrimination act, or public accommodation non-discrimination laws. Gender non-conforming transgender people are significantly more likely to live in a state that has a private healthcare non-discrimination act or that include transgender care as part of Medic Aid, however, this is not the case for MtF or FtM transgender people.

4. Results

4.1. Labour Market Differentials

Table 2 presents the regression results from Equation (1). The results in this table ask whether trans people are less likely to be employed than cisgender people, even after controlling for a plethora of observable characteristics that are associated with employment. The results are presented for labour market participation in Column (1). The results in Column (2) present the results for employment, compared to being unemployed or out of the labour force, while the results for employment, restricting the sample to people that participate in the labour market are presented in Column (3).

<<Insert Table 2 Here>>

Similar to Carpenter et al (2020), the results indicate that transgender people and cis-gender women are significantly less likely to participate in the labour market and have lower employment propensities compared to their male cis-gender counterparts. However, in Column (3), the sample is restricted to only those individuals that participate in the labour market, thus the coefficients for the transgender (and female cis-gender) dummy variables represent the difference between transgender (and female cis-gender) people being employed, conditional on labour market participation, compared to otherwise comparable cis-gender men. In doing so, this highlights that the employment gap that is documented in Carpenter et al (2020) in fact reflects lower participation rates. The coefficients in Column (3) indicate that MtF transgender people are 7.3% (p <0.001) less likely to be employed that otherwise comparable cis-gender men. The coefficients for FtM and GNC transgender people are negative, but statistically insignificant. As such, this provides the first evidence that, while transgender people (regardless of whether they are FtM, MtF, or GNC) are significantly less likely to participate in the labour market, it is only MtF transgender people that are significantly less likely to be employed⁸.

In line with prior research, it is the findings in Columns (1) and (3) that are important. The results in Column (2) are bias as they do not take consideration of participation decisions. Indeed, when analysing unemployment (or employment) gaps scholars generally limit the sample to those individuals that participate in the labour market. Subsequently, in what follows the participation gap is estimated following Column (1), and the employment gap is estimated following Column (3).

4.2. The Impact of Removing Surgical Restriction to Change the Gender Marker on ID Documents

Table 3 presents the results from Equation (2). The results document the causal impact of the removal of surgical restrictions to change the gender marker on birth certificates on the labour force participation and employment rates of transgender people.

<<Insert Table 3 Here>>

The results reported in Table 3 indicate that while transgender people and cis-gender women are significantly less likely to participate in the labour market, the removal of surgical requirements to change the gender marker on a birth certificate does not impact the participation rates of cis-gender women or transgender people. In terms of employment (Column (2)), a different picture arises. For MtF a positive, but statistically insignificant coefficient is documented, while a negative and statistically insignificant coefficient is documented, while a negative and statistically insignificant coefficient is documented. This indicates that the removal of surgical restrictions to change the gender marker on ID documents has a significant positive impact on the likelihood of FtM transgender people being employed. It should be noted that this increase in employment is a reflection of movements from unemployment to employment, rather than from an increase in the labour market participation of FtM transgender people; the coefficient for participation for FtM transgender people is statistically insignificant.

This positive coefficient for FtM transgender people may reflect two different channels⁹. Firstly, as discussed in Section 2 of this paper, incongruent documents are associated with discrimination, including discrimination in employment (James et al, 2016). The removal of surgical restrictions to change the gender marker on an ID document makes the process of changing a gender marker, and the process of obtaining congruent ID documents easier, and more obtainable. As such, the positive coefficient may reflect this reduction in discrimination.

⁸ In additional results, not presented here, but available on request, it is documented that when comparing MtF transgender people to cis-gender females, a negative and significant coefficient is documented.

⁹ A third potential channel is migration. It may be the case that removing surgical restrictions to change legal gender encourages transgender people to migrate to a state. However, in additional results not presented here, but available on request it is documented that the likelihood of identifying as MtF or FtM does not significantly increase following the removal of surgical restrictions to be change gender on a birth certificate. There is a slight increase in the likelihood of identifying as transgender, gender non-conforming (coef. 0.0002; p<0.001), however, the increase is very small. Given that the results do not document a significant impact on gender non-conforming transgender people, the author does not deem migration as a potential concern with regards to the results reported and subsequent conclusions.

Alternatively, the positive impact may reflect a preference for males. A large literature has documented a preference for men in the labour market, and that men are more likely to be employed than women. As discussed by Guryan & Charles (2013), and Azmat & Petrongolo (2014) the experimental literature has highlighted that signalling that an individual is female reduces the likelihood of being interviewed or getting employed, and that employers prefer male candidates. The removal of surgical requirements to change the gender marker on ID documents, as aforementioned, makes changing gender markers easier. While incongruent documents signal transgender status to potential employers, congruent documents, in the case of FtM transgender people, signals that the individual is male to potential employers. As such, this positive impact may reflect preferences for men in the labour market, especially as the positive impact is in fact only for FtM transgender people.

The results from the event studies, as specified in Equation (3), are reported for participation rates in Figures (1) to (3) for MtF, FtM, and GNC transgender people, correspondingly. While the employment event studies are presented in Figures (4) to (6). In Figures (1) to (6) the dotted line refers to cis-gender men, the dashed line refers to cis-gender women, and the solid line refers to the transgender group of interest, MtF, FtM, or GNC¹⁰.

<<Insert Figures 1 to 3 Here>>

The results reported in Figures 1 to 3 are suggestive that the difference-in-difference-indifference model does not violate the parallel trends assumption. The trends are similar prior to the year preceding the policy change. In addition, in all three figures the transgender coefficient is neither significantly different from zero, nor significantly different from the male cis-gender coefficients. That is, the cis-gender male coefficients are within the 95% confidence interval wrapped around the transgender coefficients.

The results reported in Figure (2) indicate that prior to the change in policy MtF transgender people did not significantly differ from either cis-gender females or cis-gender males in terms of their participation rate. Following the policy change the participation rate does fluctuate slightly, however, in all years after the policy change the coefficient is not statistically significantly different from zero. For FtM (Figure (3)), the results indicate that the participation rate of FtM transgender people did not significantly change prior to the change in policy. In the year of the policy change and the following two years the coefficient does not significantly differ from zero. In years t+3 or more a negative and statistically significant (P < 0.05) coefficient is documented. This reduction in participation is only seen in later years and suggests that the policy may have a delayed negative impact on the participation rate of FtM transgender people (Figure (4)), coefficients are negative, small, and statistically insignificant.

The event study results for labour market participation are like those reported in Table 3. There is little evidence that removing surgical restrictions to change the gender marker on ID documents impacts the labour force participation rate of transgender people. The only difference from Table 3 that is documented is a negative coefficient for the t+3 or more coefficient for FtM transgender people. There is some evidence of a negative impact of the

¹⁰ It should be noted that the results reported in Figures 1 to 3 come from a single estimation, however, the results are presented in a separate figure for each transgender category to aid readability. The same is also true for Figures 4 to 6. The results are available in table format on request.

removal of surgical restrictions on the labour force participation of FtM transgender people, though this impact is delayed by at least three years. This gives further credence to the positive employment impact documented for FtM transgender people in Table 3 not reflecting an increased participation, but instead, an increased employment (and decreased unemployment) rate.

<<Insert Figures 4 to 6 Here>>

The employment event studies are presented for MtF in Figure 4, FtM in Figure 5, and GNC in Figure 6. The results for MtF generally document that, like the results presented in Table 3, the removal of surgical restrictions to change gender on ID documents has little to no impact on the employment propensities of MtF transgender people. Coefficients are indeed negative, but are statistically insignificant in all time periods.

For FtM transgender people the results suggest that there is not a violation of pre-trends, that is, the transgender coefficient in periods prior to the policy change are statistically insignificant from zero, and statistically insignificant from both cis-gender male and cisgender female coefficients. Like the results reported in Table 3 a positive impact of the policy change is documented. Specifically, a positive and statistically significant coefficient is documented in the year that the policy changes and the following year, though coefficients do lose statistical significance in latter years. The results, like those reported in Table 3 indicate that removing surgical restriction to change legal gender has positive impacts on the employment propensities of FtM transgender people; the positive impact of the policy change does however disappear over time.

For GNC transgender people similar trends are observed prior to the policy changes, and the transgender coefficient does not significantly differ from zero, nor cis-gender male or cis-gender female coefficients in the years preceding the change in policy. In the year that states removed surgical restrictions to change gender markers a positive, small, but nonetheless, statistically significant coefficient is documented. The results suggest that the removal of surgical restrictions to changing gender on ID documents has a positive impact on the employment propensities of GNC transgender people, though this positive impact is short lived.

Throughout this work it has been highlighted that removing surgical restrictions to change the gender marker on ID documents may have significant impacts on the labour market outcomes of trans people as incongruent documents are associated with increased discrimination. Even if one assumes that all transgender people would like to have surgical treatment (though this is a strong and flawed assumption), this treatment comes at a financial cost, which some transgender people may not be able to afford, especially when one considers that around one third of transgender people live in poverty (James et al, 2016). In line with this, it could be assumed that the removal of surgical restrictions may have greater impacts on certain sub-populations of transgender people, especially those transgender people that are less likely to be able to afford the surgical treatment for being transgender. As such, in what follows an additional interaction term is included in in order to investigate heterogeneous effects across household income. Specifically, the transgender and removal of surgical restrictions interactions interacted with being in the lowest household income rank (less

than \$10,000), according to the BRFSS's income ranking¹¹. These individuals are less likely to have the finances to afford the surgical treatment for gender dysphoria.

<<Insert Table 3 Here>>

The results highlight that removing the surgical requirements to be able to change the gender marker on ID documents has significantly greater impacts on the employment and labour market participation of those transgender people that are least likely to be able to afford to undergo surgical treatment. The results highlight than the policy change has a greater positive and statistically significant impact on the employment propensities of both MtF and FtM transgender people. Furthermore, the policy change significantly increases the labour force participation of FtM transgender people. The results therefore highlight that policies that require surgical treatment to allow the changing of a gender marker have a negative impact on the labour market participation and employment rates of transgender workers in the poorest households. This is particularly concerning given that around a third of transgender people in the US live in poverty (James et al, 2016). Furthermore, the results here highlight that the removal of these surgical requirements may offer a route into employment for transgender people, and subsequently a route out of poverty.

5. Discussion and Conclusions

This paper explored the labour market participation and employment incidence of trans people in the US, as well as the causal impact of removing surgical requirements when transgender people change their gender on a legal document, a birth certificate. Like Carpenter (2020) negative labour market participation and employment gaps are documented for trans people, however, once the appropriate comparison group is used this employment gap only remains significant for MtF transgender people; FtM and GNC transgender people do not significantly differ from cisgender men in terms of their employment propensities.

Policy makers have generally focussed on ENDA's to improve the labour market outcomes of minorities. However, research has documented that these have relatively little impact on the employment outcomes of transgender people (Carpenter et al, 2020). Other policies must therefore be considered. In the current work a change in a social policy that impacts the ease of changing the gender marker on an ID document is considered. The results documented in this paper highlight that laws that prohibit gender changes without undergoing surgery have significant negative impacts on the employment outcomes of FtM transgender people. Removing these restrictions is associated with an increase in the employment rate of FtM transgender people. Furthermore, there is evidence that this policy change has a significantly greater impact on those individuals that are least likely to be able to afford surgery; a significant positive employment impact is documented for MtF and FtM transgender people that live in the poorest households. Given the findings in this paper policy makers should consider easing restrictions to changing legal gender. Prior research has documented the importance of congruent documentation for transgender people, and in the present work, it is shown that making the process of obtaining congruent documents easier is associated with improved economic outcomes.

¹¹ In additional results not presented here but available on request additional interactions between age, race, college education, and the existence of a state level ENDA were estimated. The results suggest that the removal of surgical requirements has heterogeneous effects across these groups.

The current paper is subject to several limitations, which are predominantly related to data. Firstly, being primarily a health survey, concerns about the quality of the economic outcome data in the BRFSS are acknowledged. The main data quality concerns relate to the income measures in the BRFSS, while the present work focuses purely on employment outcomes, which are less likely to face such issues (Carpenter et al, 2020). The analysis is also limited by questions that are included in the BRFSS. In the present work data on self-reported gender identity is used, and the BRFSS lacks data on if individuals are transitioning. While the results reported in this paper are informative, future work that explores further the role of transitioning in this context will be fruitful, as will research that uses longitudinal data to explore further the findings reported in this paper. Another concern with the BRFSS is that institutionalised adults, homeless adults, and adults in incarceration facilities are not surveyed. While data suggests that trans individuals report higher levels of incarceration and homelessness than the general population (Burwick et al, 2014; James et al, 2016).

References

Arrow, K. J. (1973) "*The Theory of Discrimination*", in Ashenfelter, O., Rees, A. (Eds.), *Discrimination in Labor Markets*, US: Princeton University Press.

Azmat, G., & Petrongolo, B. (2014) "Gender and the Labor Market: What Have We Learned from Field and Lab Experiments?" *Labour Economics*, 30: 32-40.

Badgett, M. L. (1995) "The Wage Effects of Sexual Orientation Discrimination." *Industrial and Labor Relations Review*, 48 (4): 726-739.

Becker, G. S. (1957) "The Economics of Discrimination." US: University of Chicago Press.

Bertrand, M., Duflo, E., & Mullainathan, S. (2004) "How Much Should We Trust Differences-in-Differences Estimates?" *The Quarterly Journal of Economics*, 119(1): 249-275.

Carpenter, C. S., Eppink, S. T., & Gonzales, G. (2020) "Transgender Status, Gender Identity, and Socioeconomic Outcomes in the United States." *Industrial and Labour Relations Review*, 73 (3): 573-599.

Centre for American Progress. (2015) "Paying an Unfair Price: The Financial Penalty for Being Transgender in America." US: Movement Advancement Project.

Drydakis, N. (2017a) "Trans People, Well-Being, and Labor Market Outcomes." Germany: IZA World of Labor.

Drydakis, N. (2017b) "Trans Employees, Transitioning, and Job Satisfaction." *Journal of Vocational Behaviour*, 98: 1,16.

Flores, A. R., Herman, J. L., Gates, G. J., & Brown, T. N. T. (2016) "How Many Adults Identify as Transgender in the United States?" Los Angeles, CA: The Williams Institute.

Flores, A,R., Park, A. (2018) "Polarized Progress: Social Acceptance of LGBT People in 141 Countries, 1981–2014." UCLA School of Law: The Williams Institute.

Geijtenbeek, L., & Plug, E. (2018) "Is There a Penalty for Registered Women? Is There a Premium for Registered Men? Evidence From a Sample of Transsexual Workers." *European Economic Review*, *109*: 334–47.

Granberg, M., Andersson, P, A., & Ahmed, A. (2020, forthcoming) "Hiring Discrimination Against Transgender People: Evidence from a Field Experiment." *Labour Economics*.

Guryan, J., & Charles, K. K. (2013) "Taste-Based or Statistical Discrimination: The Economics of Discrimination Returns to its Roots." The Economic Journal, 123 (572): 417-432.

James, S., Herman, J., Rankin, S., Keisling, M., Mottet, L., & Anafi, M. A. (2016). "*The Report of the 2015 US Transgender Survey*." US: National Centre for Transgender Equality.

Köllen, T. (ed) (2016) "Sexual Orientation and Transgender Issues in Organizations. Global Perspectives on LGBT Workforce Diversity." New York: Springer Publishing.

Lambda Legal. (2020) Available at: https://www.lambdalegal.org/know-your-rights/article/trans-changing-birth-certificate-sex-designations [Accessed: 18/09/2020]

Leppel, K. (2016) "The Labor Force Status of Transgender Men and Women." *International Journal of Transgenderism*, 17(3-4): 155-164.

Leppel, K. (2019) "Transgender Men and Women in 2015: Employed, Unemployed, or Not in the Labor Force." *Journal of Homosexuality*, 1-27.

Mottet, L. (2012) "Modernizing State Vital Statistics Statutes and Policies to Ensure Accurate Gender Markers on Birth Certificates: A Good Government Approach to Recognizing the Lives of Transgender People." *Michigan Journal of Gender & Law*, 19 (2): 373 – 470.

Movement Advancement Project. (2020) Available at: https://www.lgbtmap.org/ [Accessed: 18/09/2020].

National Centre for Transgender Equality. (2020) Available at: https://transequality.org/documents [Accessed: 18/09/2020]

Ozeren, E. (2014) "Sexual Orientation Discrimination in the Workplace: A Systematic Review of Literature." *Procedia-Social and Behavioral Sciences*, 109 (8): 1203-1215.

Phelps, E. S., (1973) "The Statistical Theory of Racism and Sexism." *American Economic Review*, 62 (4): 659-661.

Schilt, K., & Wiswall, M. (2008) "Before and After: Gender Transitions, Human Capital, and Workplace Experiences." *The BE Journal of Economic Analysis & Policy*, 8(1): 1 - 28.

Sansone, D. (2019) "Pink Work: Same-Sex Marriage, Employment and Discrimination." *Journal of Public Economics*, 180, 104086.

Van Borm, H., & Baert, S. (2018) "What Drives Hiring Discrimination Against Transgenders?" *International Journal of Manpower*, 39 (4): 581-599.

Van Borm, H., Dhoop, M., Van Acker, A., & Baert, S. (2020, forthcoming) "What Does Someone's Gender Identity Signal to Employers?" *International Journal of Manpower*.

Tables

Table 1: Summary Statistics					
	(1)	(2)	(3)	(4)	(5)
	Cis-Gender	Cis-Gender	T: Male to	T: Female to	T: Gender Non-
	Males	Females	Female	Male	Conforming
Individual Characteristics					
Employed	0.754 ^b	0.656 ^a	0.615 ^{ab}	0.593 ^{ab}	0.597^{ab}
Unemployed	0.052 ^b	$0.050^{\rm a}$	0.091 ^{ab}	0.065 ^b	0.077^{ab}
Out of Labour	0.194 ^b	0.294 ^a	0.294 ^a	0.342^{ab}	0.326 ^a
Age	46.594 ^b	47.550 ^a	45.815 ^{ab}	43.543 ^{ab}	39.888 ^{ab}
Married	0.553	0.553	0.407^{ab}	0.418 ^{ab}	0.345 ^{ab}
Couple	0.045 ^b	0.041 ^a	0.054 ^b	0.054 ^b	0.108^{ab}
Children	0.346 ^b	0.394 ^a	0.274^{ab}	0.339 ^b	0.201 ^{ab}
White	0.762 ^b	0.756 ^a	0.656^{ab}	0.637 ^{ab}	0.634 ^{ab}
No Education	0.001 ^b	0.001 ^a	0.007^{ab}	0.004^{b}	-
Elementary	0.019 ^b	0.014 ^a	0.043 ^{ab}	0.027 ^b	0.054^{ab}
Some Higher	0.046 ^b	0.037^{a}	0.096^{ab}	0.081^{ab}	0.045
HS Grad	0.283 ^b	0.228 ^a	0.368 ^{ab}	0.339 ^{ab}	0.278^{b}
Some College	0.269 ^b	0.292ª	0.266	0.289	0.301
College Grad	0.382 ^b	0.429ª	0.220 ^{ab}	0.260 ^{ab}	0.320 ^{ab}
State Trans Progressive Laws					
Removal of Surgical Requirements	0.534 ^b	0.518ª	0.519	0.546	0.587^{ab}
ENDA	0.576 ^b	0.561 ^a	0.561	0.544	0.599
Credit	0.424 ^b	0.409 ^a	0.414	0.372^{ab}	0.392
Private Health	0.534 ^b	0.517^{a}	0.490^{a}	0.514	0.587^{ab}
Medic Aid	0.378 ^b	0.361 ^a	0.337 ^a	0.368	0.413 ^b
Public Accommodations	0.600 ^b	0.583ª	0.582	0.550 ^a	0.601
Observations	265,074	309,478	1,197	843	571

Notes: ^a Indicates that means are significantly different from those in column (1) at p<0.05. ^b Indicates that means are significantly different from those in column (1) at p<0.05.

			8
	(1)	(2)	(3)
	Participation	Employed	Employed
MtF	-0.060***	-0.108***	-0.074***
	(0.023)	(0.024)	(0.027)
FtM	-0.113***	-0.113***	-0.013
	(0.030)	(0.032)	(0.021)
GNC	-0.202***	-0.201***	-0.028
	(0.039)	(0.037)	(0.025)
Cis-Female	-0.131***	-0.132***	-0.015***
	(0.002)	(0.002)	(0.002)
Observations	577,163	577,163	433,989
R-squared	0.128	0.130	0.036

Table 2: Trans Labour Market Participation and Employment Regressions

Notes: Controls for age (and its square), children, ethnicity, educational attainment, trans-inclusive state policies, as well as year and state fixed effects are included. Full results are available on request. Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 3: Difference	ce-in-Difference-in-Differ	ence Estimations
	(1)	(2)
	Participation	Employed
MtF DDD	0.024	0.023
	(0.046)	(0.054)
FtM DDD	0.052	0.090**
	(0.061)	(0.042)
GNC DDD	-0.043	-0.021
	(0.074)	(0.047)
Cis-Female DDD	0.001	0.008**
	(0.004)	(0.003)
FtM	-0.139***	-0.059*
	(0.038)	(0.033)
MtF	-0.072**	-0.086***
	(0.031)	(0.033)
GNC	-0.175***	-0.015
	(0.052)	(0.030)
Cis-Female	-0.131***	-0.019***
	(0.003)	(0.002)
Observations	577,163	433,989
R-squared	0.128	0.036

Notes: Controls for age (and its square), children, ethnicity, educational attainment, marital status, trans-inclusive state policies, as well as year and state fixed effects are included. Full results are available on request. Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	
	Participation	Employed	
Lowest HH Inc * RSR*MtF	0.190	0.572***	
	(0.149)	(0.188)	
Lowest HH Inc * RSR *FtM	0.421**	0.692***	
	(0.173)	(0.204)	
Lowest HH Inc * RSR *GNC	-0.052	-0.118	
	(0.272)	(0.238)	
Lowest HH Inc * RSR *Cis - Female	0.209***	0.370***	
	(0.020)	(0.029)	
RSR *FtM	0.042	0.001	
	(0.045)	(0.058)	
RSR *MtF	0.031	0.083**	
	(0.065)	(0.035)	
RSR *GNC	-0.024	0.001	
	(0.076)	(0.041)	
RSR *Cis - Female	-0.008**	-0.003	
	(0.004)	(0.003)	
FtM	-0.116***	-0.040	
	(0.039)	(0.031)	
MtF	-0.049	-0.077**	
	(0.032)	(0.033)	
GNC	-0.194***	-0.017	
	(0.052)	(0.027)	
Cis-Female	-0.117***	-0.005**	
	(0.003)	(0.002)	
Observations	577,163	433,989	
R-squared	0.138	0.074	

Table 4: The Impact on Transgender People in the Lowest Household Income Bracket

Notes: Controls for age (and its square), marital status, children, ethnicity, educational attainment, transinclusive state policy, as well as year and state fixed effects are included. Full results are available on request. Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Figures



Figure 1: Laws Requiring Surgical Treatment to Reassign Gender on Birth Certificates



Figure 2: MtF Labour Market Participation Event Study

Figure 3: FtM Labour Market Participation Event Study





Figure 4: GnC Labour Market Participation Event Study









Figure 7: GNC Employment Event Study



Appendices

Table A1: Variable Descriptions			
Variables	Description		
Employed	Dummy variable that takes the value 1 if the individual is		
Unemployed	Dummy variable that takes the value 1 if the individual is unemployed and 0 otherwise.		
Participation	Dummy variable that takes the value 1 if the individual participates in the labour market (employed or unemployed) and 0 otherwise		
Age Married	Continuous variable that is equal to the individuals age. Dummy variable that takes the value 1 if the individual is married or legally partnered and 0 otherwise.		
Couple	Dummy variable that takes the value 1 if the individual cohabits with somebody that they are in a romantic relationship with and 0 otherwise.		
Children	Dummy variable that takes the value 1 if the individual has children and 0 otherwise.		
White	Dummy variable that takes the value 1 if the individual's racial identity is white and 0 otherwise.		
No Education	Dummy variable that takes the value 1 if the individual has no education and 0 other otherwise.		
Elementary	Dummy variable that takes the value 1 if the individual's highest educational achievement is elementary level and 0 otherwise.		
Some Higher	Dummy variable that takes the value 1 if the individual's highest educational achievement is Some high school level and 0 otherwise.		
HS Grad	Dummy variable that takes the value 1 if the individual's highest educational achievement is high school graduation level and 0 otherwise.		
Some College	Dummy variable that takes the value 1 if the individual's highest educational achievement is some college level and 0 otherwise.		
College Grad	Dummy variable that takes the value 1 if the individuals is a college graduate and 0 otherwise.		
Removal of Surgical Requirements (RSR)	Dummy variable that is equal to 1 if the individual lives in a state during or after the year that the law was relaxed so that people do not need surgery to be able to change the gender on their birth certificate, and 0 otherwise.		
ENDA	Dummy variable that is equal to 1 if the individual lives in a state during or after the year that a gender identity ENDA has been passed, and 0 otherwise.		
Credit	Dummy variable that is equal to 1 if the individual lived in a state during or after the year that a gender identity Credit Non-Discrimination Act has been passed, and 0 otherwise.		
Private Health	Dummy variable that is equal to 1 if the individual lives in		

	a state during or after the year that a gender identity based
	non-discrimination in private health care law has been
	passed, and 0 otherwise.
Medic Aid	Dummy variable that is equal to 1 if the individual lives in
	a state during or after the year that transgender care is
	covered under Medic Aid, and 0 otherwise.
Public Accommodations	Dummy variable that is equal to 1 if the individual lives in
	a state during or after the year that a gender identity based
	non-discrimination in public accomodations act has been
	passed, and 0 otherwise.

State	Date of Relaxation
Alabama	-
Alaska	2011
Arizona	-
Arkansas	-
California	2014
Colorado	2019
Connecticut	2012
Delaware	2017
District of Columbia	2013
Florida	2018
Georgia	-
Hawaii	2015
Idaho	2018
Illinois	2017
Indiana	-
Iowa	2004
Kansas	2019
Kentucky	-
Louisiana	-
Maine	2020
Maryland	2006
Massachusetts	2006
Michigan	-
Minnesota	2006
Mississippi	-
Missouri	-
Montana	2017
Nebraska	-
Nevada	2006
New Hampshire	-
New Jersey	2013
New Mexico	2019
New York	2014
North Carolina	-
North Dakota	-
Ohio	-
Oklahoma	-
Oregon	2017
Pennsylvania	2016
Rhode Island	2004
South Carolina	-
South Dakota	-
Tennessee	-
Texas	-
Utah	-
Vermont	-

Table A2: The Removal of Surgical Restrictions by State and Year

Virginia	2020
Washington	2018
West Virginia	-
Wisconsin	-
Wyoming	-

This data comes from the Movement Advancement project (2020), Lambda Legal (2020) and the National Centre for Transgender Equality (2020).