Heterosexual Genders and Their Opinion about Adoption of Children by Homosexual Couples

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Data Analysis and Statistical Inference (COURSERA-DUKE)

Abstract

Using data from the 2012 American National Election Studies (N = 5,341), we examine gender gaps in heterosexuals' attitudes toward the topic related to the legal adoption of children by homosexuals couples.

Significant differences were observed between male and female heterosexual respondents.

Overall, heterosexual women were more supportive than men about adoption rights for homosexual people.

Introduction[1]

At the first part of this project was investigated if exist a relation between the sexual orientation and the attitude/opinion of the respondents facing the legal adoption of children by homosexual couples. We found that the variables indeed were not independent. In this second part we intend to walk further in our research and we want to investigate whether ***exist any association between the different genres of respondents who define themselves as heterosexual and the opinion they hold in relation to whether homosexual couples should be legally permitted to adopt children***.

With this purpose in mind and using as before the information in NAES 2012 survey we will focus only and exclusively in the response of those respondents who are heterosexual because in last occasion was quite obvious that those with sexual orientation as gay, lesbian or bisexual were very cattle to support such thinking about adoption by themselves.

This way we'll delve in that part of the population that does not really favoring the adoption by homosexual couples and discriminate among them by gender, and find that part which is more supportive to the idea of adoption by homosexual and that other that is not, if indeed there exist any difference in opinion.

When the General Social Survey (GSS) was launched in the early 1970s, it included items about the morality of homosexuality and tolerance for homosexuals. The GSS was unusual, however. Most population-based surveys did not routinely ask about homosexuality until the late 1970s, when controversies about gay rights pushed the issue into mainstream media and politics. Since then, hundreds of survey items have tapped attitudes in this area (Yang, 1997[2]).

Unfortunately, the sample type and attitude domain are confounded. National surveys with probability samples have generally focused on opinions about civil liberties and civil rights, whereas laboratory studies with convenience samples of students have focused on affective responses to homosexual behaviors or to gay men and lesbians as people (Herek, 2002[3])

Apart from the aforementioned authors we join them with the motivation to study an exciting topic.

Data

Our work is completely based in data from The American National Election Studies[4]. Concretely The ANES 2012 Time Series Study. To see a description of a study as well as links to the study's errata, questionnaires, codebook, and other study-specific resources click on the Data Center to see the list of studies and click on the Study Page for the study that interests you.

The mission of the American National Election Studies (ANES) is to advance the scientific study of public opinion and political behavior, specifically by providing high-quality data that measure many variables and support rich hypothesis testing to help scholars understand voter turnout and vote choice. The main focus of ANES efforts over the decades has been on Time Series studies conducted shortly before and after the presidential elections since 1948. ANES has also conducted post-election surveys in most even-numbered non-presidential election years since 1956. In our case, we look for the so called *ANES 2013 Internet Recontact Study* that is the reinterview of the ANES 2012 Time Series Study. A final calculation of response rate is not yet available in the website and the estimated overall response rate (AAPOR RR3) is expected to be 1 or 2 percent.

We pretend to use, in the present study, a dataset that has been modified slightly, with respect the one citated, to make them easier. This dataset can be obtained by different procedures:

- Use the following link to download, directly, the statistics anes modified dataset file.
- Use the following code to load the COURSERA modified ANES data set into R:

```
load(url("http://bit.ly/dasi_anes_data"))
```

[1] This article is elaborate in order to cover the Computational Track of the COURSERA-DUKE course "Data Analysis and Statistical Inference" by Dr. Mine Çetinkaya-Rundel and it aims to complete the scope of the project according to the submission guidelines, therefore will be followed in the order and content with the minimum of variation. We pursue properly use the techniques learned in the course to make statistical inference about the purpose stated in the title of this article, but we in no way suggest that this essay is a complete study on the subject and should be considered for what it is.

[2] Yang, Alan. (1997). "Trends: Attitudes toward Homosexuality." Public Opinion Quarterly 61: 477-507.

[3] Herek, G. (2002). Gender gaps in public opinion. About lesbians and gay men

[4] ANES dataset is a collaboration of Stanford University and the University of Michigan, with funding by the National Science Foundation.

The ANES 2012 Time Series is a dual-mode survey (face-to-face and Internet) with two independent samples. Cases selected for the face-to -face sample could not be interviewed on the Internet, and cases selected for the Internet survey could not be interviewed in person. The interested reader could download the codebook for an expanded information.

The cases are individuals, each RESPONDENT of the surveys is a unit of observation and the population is the contemporary United States society in general, U.S. citizens age 18 or older.

The variables of interest for this study correspond to respondents' answers to the following two questions:

- Do you consider yourself to be heterosexual or straight, homosexual or gay, or bisexual? (variable: ORIENTN_RGAY)
- Do you think gay or lesbian couples should be legally permitted to adopt children? (variable: GAYRT_ADOPT)

Apart we considerer the gender of the responder for every case.

gayrt_adopt. From the course recommended modified data set the variable is a Factor with 2 levels.

Table 1: gayrt_adopt variable

Factor with 2 levels	
level[1]	{Yes}
level[2]	{No}

gender_respondent. From the course recommended modified data set the variable is a Factor with 2 levels.

Table 2: gender_respondent variable

Factor with 2 levels	
level[1]	{Male}
level[2]	{Female}

In order to filter the dataset for our convenience we need the variable *orient_rgay* already specify. This variable is going to be used in the same way the original dataset was filtered by the variable year ($year == 2012$). In our case we are interesting in the answer from heterosexual respondent exclusively.

orientn_rgay. From the course recommended modified data set the variable is a Factor with 3 levels.

Table 3: orientn_rgay filter variable

Factor with 3 levels	
level[1]	{Heterosexual Or Straight}
level[2]	{Homosexual Or Gay (Or Lesbian)}
level[3]	{Bisexual}

In order to collect the data, we have not been involved neither in the desing of the survey nor in the blocking of confounders. We limited our acting ambit to use the data as they are facilitated. That's the reason we are involved in a **observational study**, based on data already collected in ANES 2012 -looking for the trend in public political opinion- but also we must take into account that the ANES survey collects the respondents answers in occasion of elections and with a posterior follow up web component, therefore, our study, though its an observational, it is a **prospective** one.

There could exist several possible reasons of bias in the survey; young, poor, residentially mobile, and many more are classical for misreporting bias. The so called Parthisian bias and even the more classical as members of minority groups, such as blacks and Hispanics have been sampled at a higher rate than their proportion in the population (in the ANES 2008 Time Series as an example) known as oversampling bias.

There exist another issue, we are going to mentioned at the end of the study, in order to limit the spread of our findings and it is relative to data weights.

Despite the foregoing, the findings could be generalized to explain the trend of this population because it is an observational study based on well know dataset as the ANES. But we cannot establish causal links between the variables in this kind of study that are not experimental. So, we could arrive to the finding that exist an association between the variables, but it does not mean that there exist necessarily a causality relations between them.

Exploratory data analysis

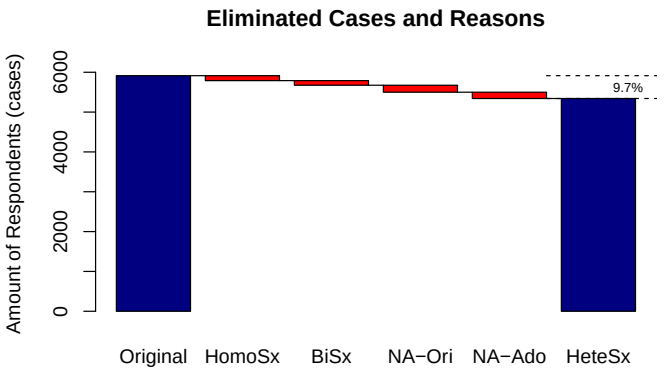
First at all, the listed R code to reproduce 100% this report. The code have been commented as a good practice with any code to be published and mantained. The interested reader could copy and run it directly.

```
# Load the modified ANES 2012 dataset and the
# inference code we're going to use. Also we want
# from the begining all we require
"navy"->blue;red<-"red"

load(url("http://bit.ly/dasi_anes_data"));
source("http://bit.ly/dasi_inference")
library(openintro);library(waterfall);
library(lattice);library(BHH2);library(lmPerm)

# Our variables of interest are "gender_respondent"
# and "gayrt_adopt" but after we filter the
# Respondents self defined as heterosexual by the
# variable "orientn_rgay"
# So, we get the variables and we also check how
# many cases we are going to eliminate due to
# respondent self defined as lesbian/gay/bisexual

summary(myanes <- subset(anes,
                         select=c(orientn_rgay,
                                  gender_respondent,
                                  gayrt_adopt)))
```

```r
# filter the data by self defined heterosexual
# condition. We already got the levels order with
# the last command

myanes <- subset(myanes,
  orientn_rgay == levels(myanes$orientn_rgay)[1])

# remove variable are not needed anymore
# "orientn_rgay". We also check how many respondent
# do not answeer to the question about adoption,
# before we remove NA's cases

summary(myanes <- subset(myanes,
                         select=c(gender_respondent,
                                  gayrt_adopt)))

# Finally we clean the result taking out the rest
# of NA's and als any level could persist. We'll
# work with it as our full data set for the study.
# And finally we see a final figures we are going
# to us for the waterfall plot

summary(myanes <- droplevels(na.omit(myanes)))

# We want the Opinions with the genders ordered:
# Females before Males because the hypothesis will
# be about the difference in the proportions
# between Females - Males and we always prefer
# as a possitive number.

Opinion_Legal_Homo_Adoption <- myanes$gayrt_adopt
genders <- levels(myanes$gender_respondent)
Hetero_Gender <- factor(myanes$gender_respondent,
                  levels=c(genders[2],genders[1]),
                  ordered=TRUE)

# We build the contingency table, add the sums and
# print everything that will give us the p-value
# and chi-sq already. Also be need to copy those
# values for our Conti. Table and to check conditi-
# ons for the hypothesis tests. This will be my
# secound chun inside doc but without chunk.
# I'll copy the values to do the table with LaTex
# But before I want to see everything about my
# Contingency table

Contingency_table<-table(
                  Opinion_Legal_Homo_Adoption,
                  Hetero_Gender)
for(i in 1:7){
  print(chisq.test(Contingency_table)[i])
}
addmargins(Contingency_table)

# We make a plot to see the cases that have been
# eliminated and reasons The one better adapted to
# this kind of information is the waterfallplo and
# it'll beinto a chunkat the doc in Data Explo.

factors <- c("Original","HomoSx","BiSx","NA-Ori",
             "NA-Ado","HeteSx")
amount <- c(5914,-124,-116,-175,-158,-5341)
wf <- data.frame(factors,amount)
require(openintro)
require(waterfall)
waterfallplot(wf$amount,
              names.arg=wf$factors,
              col=c(blue,red,red,red,red,blue),
        ylab="Amount of Respondents (cases)",
              main="Eliminated Cases and Reasons")
segments(6,5914,10,5914, col="black", lty="dashed")
segments(6,5341,10,5341, col="black", lty="dashed")
text(7.1,5341+(5914-5341)/2, "9.7%",srt=0,cex=0.7)

# Let's see the results graphically with X-Y
# ordered. We need to reverse X-Y in order to be
# consistent with our choseen X & Y variables on
# axis at mosaic and association plots

Inv_Contingency_table <- table(Hetero_Gender,
                      Opinion_Legal_Homo_Adoption)
par(mfrow=c(1,2))
mosaicplot(Inv_Contingency_table,
           color=c(blue, red),
           main="Proportion Chart",
xlab="Gender (Self defined heterosexual)",
ylab="Legal adoption of children by homosexual+
couples"
)
assocplot(Inv_Contingency_table,
          col = c(blue, red),
          main="Association Chart",
xlab="Gender (Self defined heterosexual)",
ylab="Legal adoption of children by homosexual+
couples"
)

# First run of inference() we do it for the
# hypothesis "type=ht"

inference(Opinion_Legal_Homo_Adoption,
          Hetero_Gender,
          est = "proportion", method="theoretical",
          type = "ht", null = 0,
          conflevel = 0.95, alternative="twosided",
          success="Yes", eda_plot=FALSE,
          inf_plot=FALSE, inf_lines=FALSE)
# This secound run is in order to get the
# ci "type=ci"

inference(Opinion_Legal_Homo_Adoption,
          Hetero_Gender,
          est = "proportion", method="theoretical",
          type = "ci", null = 0,
          conflevel = 0.95, alternative="twosided",
          success="Yes", eda_plot=FALSE,
          inf_plot=FALSE, inf_lines=FALSE)
# End of code
```

Respondents are included in this analyses if they indicated that they were heterosexual. This criterion eliminated 240 respondents who reported that they were gay, lesbian, or bisexual, and another 175 respondents, who did not answer the question about sexual orientation, were eliminated.

Another 158 cases were eliminated because respondents did not answer the question about adoption.



Finally we retain 5,341 cases of heterosexual respondents distributed as 2,782 women and 2,559 men that, in overall, they gave 3,230 "Yes" answers to the adoption question and 2,111 "No" answers to the same question. These figures are conveniently tabulated in a Contingency table 4. (Light blue values are the expected values)

Table 4: Contingency table

	Gender				
Opinion	Female		Male		Total
Yes	1,791	(1,682)	1,439	(1,548)	3,230
No	991	(1,100)	1,120	(1,011)	2,111
Total	2,782		2,559		5,341
$\chi^2[1, N = 5,341] \approx 37,\ p \ll 0.05$					

A natural way to visualize that there may exist a relation between the tabulated variables (apart to the χ^2 and $p-value$ shown in the bottom of the Contingency table and the own table information) is by using mosaic and association plots.

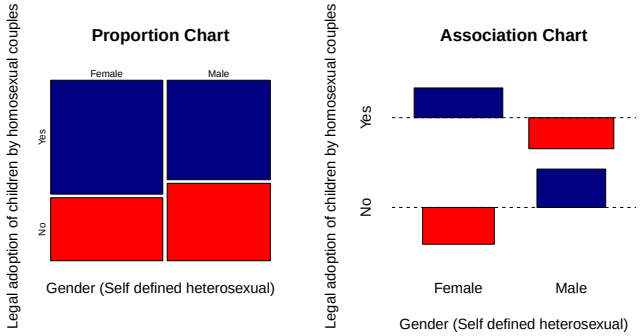
The former should be familiar for the reader but the latter not necessarily so we give a fast recap about it. The association plot (Cohenm, 1980[5], Friendly, 1991[6]) puts deviations from independence in the foreground, and so, the area of each box is made proportional to $observed - expected\ frequency$.

In order to make the interpretation of the association plot we need to consider the next points:

- In the association plot, each cell is shown by a rectangle.
- The rectangles for each row in the table are positioned relative to a *baseline representing independence* shown by a dashed line.
- Cells with $observed > expected\ frequency$ rise above the line (colored blue);
- Cells that contain $observed < expected\ frequency$ fall below it (shaded red).

From the mosaic plot we can extract that the proportion of females and males are roughly the same (50-50%). Also, both gender, hold a larger proportion favoring the Yes opinion than the no, but do not in the same proportion between female and male.

From the association plot we extract that women attitude/opinion pro-adoption by homosexual couples overcame the expectations and the opinion anti-adoption from this collective is under the expectancy. Men opinion about the adoption, referenced with the expected frequency, is completely opposite as women.



The plots suggest that there exist an association between the two considering variables so we would conduct our analysis to the search for conclusions about the subject we are dealing.

Inference

In order to do a hypothesis test to compare the two proportions we must check before if the conditions for inferences are met.

Firstly, 2,782 respondents in the group of females are less than 10% of all American females and 2,559 respondents in the group of males are less than 10% of all American males. Besides respondents for NAES survey are chosen randomly so the group of American women is sampled randomly and the group of American men are random as well. Also there are not reason to expect sampled females and males to be dependent. Therefore the *Independence Condition* is met.

Table 5. resume the data and results of calculations we need to check the sample size/skew and the success-failure conditions.

We can assume (see Table 5. For ci the $observed\ values \geqslant 10$ and for ht the $expected\ values \geqslant 10$) that the sampling distribution of the difference between the proportions is nearly normal, besides 3,230 people answered *Yes* (successes) and 2,111 answered *No* (failures), both are greater than 10. So, the sample size/skew condition is met, and also, the success-failure condition.

[5]Cohen, A. (1980). On the graphical display of the significant components in a two-way contingency table. Communications in Statistics - Theory and Methods, A9, 1025-1041.

[6]Friendly, M. (1992), Graphical methods for categorical data. SAS User Group International Conference Proceedings, 17, 190-200

Table 5: Sample Size/Skew Check

		$i=1$	$i=2$
		Female	Males
(Success) Yes	3,230	1,791	1,439
No	2,111	991	1,120
	n_i	2,782	2,559
	$\hat{p}_i$	0.6438	0.5623
	$\hat{p}_{pool}$	0.6048	
(observed) ci	$n_i \cdot \hat{p}_i \geqslant 10$	1,791	1,439
(observed) ci	$n_i \cdot (1-\hat{p}_i) \geqslant 10$	991	1,120
(expected) ht	$n_i \cdot \hat{p}_{pool} \geqslant 10$	1,682	1,548
(expected) ht	$n_i \cdot (1-\hat{p}_{pool}) \geqslant 10$	1,100	1,011

$\therefore$ All conditions for inferences test are met and we can continue by establishing the hypothesis and deal with our analysis as theoretical without simulation.

We already have explored the data and we have found that there exist an association between the variables, where attitude about whether homosexual couples should be legally permitted to adopt children do vary with heterosexual gender as indicated by $\chi^2[1, N = 5,341] \approx 37$, $p \ll 0.05$ (Chi-independence)

Now we wonder about if the difference between the proportions of females that hold a favorable opinion about the adoption by homosexual couples and the proportions of males that hold a favorable opinion about the adoption by homosexual couples could be due to chances with a significance level $\alpha = 0.05$ and we want to know; between which values we must expect to find this difference with a confidence level of 95%.

We formally state the next two hypothesis:

$$H_0 = p_{female} - p_{male} = 0 \quad (1)$$
$$H_A = p_{female} - p_{male} \neq 0 \quad (2)$$

We follow an easy methodology to get all we need.

From (1) we have a $null_{value} = 0$ and we calculate the $point_{estimate}$ with both $\hat{p}_i$ from Table 5. as the observed difference between proportions, so we get

$$\begin{aligned} point_{estimate} &= \hat{p}_{female} - \hat{p}_{male} \approx \\ &\approx 0.6438 - 0.5623 \\ &\approx 0.0815 \end{aligned} \quad (3)$$

Using n_i and $\hat{p}_{pool}$ from Table 5. we can obtain the standard error, SE, as follow

$$\begin{aligned} SE_{ci} &= \sqrt{\frac{\hat{p}_1(1-\hat{p}_1)}{n_1} + \frac{\hat{p}_2(1-\hat{p}_2)}{n_2}} \approx \\ &\approx \sqrt{\frac{0.6438 \cdot 0.3562}{2,782} + \frac{0.5623 \cdot 0.4377}{2,559}} \\ &\approx 0.01336 \end{aligned} \quad (4)$$

$$\begin{aligned} SE_{ht} &= \sqrt{\frac{\hat{p}_{pool}(1-\hat{p}_{pool})}{n_1} + \frac{\hat{p}_{pool}(1-\hat{p}_{pool})}{n_2}} \approx \\ &\approx \sqrt{\frac{0.6048 \cdot 0.3952}{2,782} + \frac{0.6048 \cdot 0.3952}{2,559}} \\ &\approx 0.01339 \end{aligned} \quad (5)$$

With a significance level $\alpha = 0.05$ ($\Rightarrow z^* \approx 1.96$) we'll get a 95% confidence interval using (3) and (4)

$$\begin{aligned} ci &= point_{estimate} \pm z^* \cdot SE_{ci} \approx \\ &\approx 0.0815 \pm 1.96 \cdot 0.01336 \\ &\approx [0.0553, 0.1076] \end{aligned} \quad (6)$$

Now using the (3), (5) and $null_{value}$ we have

$$\begin{aligned} Z &= \frac{point_{estimate} - null_{value}}{SE_{ht}} \approx \\ &\approx \frac{0.0815 - 0}{0.01339} \\ &\approx 6.0825 \end{aligned} \quad (7)$$

We get the *p-value* (using the two tail *pnorm*() facilities in tables, excel, R -the one we used- http://bitly.com/dist_calc, or any other way) corresponding to the difference between the estimated $point_{estimate}$ and $null_{value}$. So, using (7) and we compare it with the significance level $\alpha = 0.05$

$$\begin{aligned} p-value &\approx P(|Z| > 6.0825) \approx \\ &\approx 1.183229e-09 \ll 0.05 \end{aligned} \quad (8)$$

The next two chunks show the use of the inference () function with different settings; the first to perform the analysis of hypotheses (type = "ht") and the second time to analyze the confidence interval (type = "ci"). Both results give the same values we have obtained before. Since the mosaic plot has been already shown and $Z \approx 6$ is so high, we will configure the output of the results without the graphs. (This code is already included in the first listing we gave and is include now again to help follow the reading.)

```
# First run of inference() we do it for the
# hypothesis "type=ht"

inference(Opinion_Legal_Homo_Adoption,
          Hetero_Gender,
          est = "proportion", method="theoretical",
          type = "ht", null = 0,
          conflevel = 0.95, alternative="twosided",
          success="Yes", eda_plot=FALSE,
          inf_plot=FALSE, inf_lines=FALSE)

# This second run is in order to get the
# ci "type=ci"

inference(Opinion_Legal_Homo_Adoption,
          Hetero_Gender,
          est = "proportion", method="theoretical",
          type = "ci", null = 0,
          conflevel = 0.95, alternative="twosided",
          success="Yes", eda_plot=FALSE,
          inf_plot=FALSE, inf_lines=FALSE)
```

Merging both output summaries we have:

```
Common output for both run of inference()

Response variable: categorical, Explanatory
variable: categorical
Difference between two proportions -- success: Yes
Summary statistics:
      x
 y     Female Male  Sum
   Yes   1791 1439 3230
   No     991 1120 2111
   Sum   2782 2559 5341
 Observed difference between proportions
 (Female-Male) = 0.0815
 H0: p_Female - p_Male = 0
 HA: p_Female - p_Male != 0
 Pooled proportion = 0.6048

## Specific output for type="ht"

 Check conditions:
    Female : number of expected successes = 1682 ;
    number of expected failures = 1100
    Male : number of expected successes = 1548 ;
    number of expected failures = 1011
 Standard error = 0.013

 Test statistic: Z =  6.083
 p-value =  0

## Specific output for type="ci"

 Check conditions:
    Female : number of successes = 1791 ;
    number of failures = 991
    Male : number of successes = 1439 ;
    number of failures = 1120
 Standard error = 0.0134

 95 % Confidence interval =
 ( 0.0553 , 0.1076 )
```

We found evidences to reject H_0 favoring H_A. From one side the probability of at least as extreme as the observed datum given that H_0 is true, result lower than the significance level $\alpha = 0.05$ we stated. From the other side, the $null_{value} = 0$ is out of the confidence interval calculated with a confidence level of 95%.

> $\therefore$ We reject that the difference, between the proportion of heterosexual females and heterosexual males favoring that homosexual couples should be legally permitted to adopt children, is due to chances and we also are 95% confident that the value of the aforementioned difference is between 0.055 and 0.107

Conclusion

Our findings can be summarized as ***women are roughly 5-10% more supportive than men about legal adoption rights for homosexual people***.

However, we are convinced that we can not be categorical at the conclusion and we must consider before two aspects:

1. *About the data analysis.* For any analysis that is intended to generalize to the population should use weights, because unweighted data do not represent the population as well as weighted data. To this respect the ANES dataset include, inside the own dataset as individual variables, the recommended weights to be used.

2. *About significance testing and associated statistics.* We have used ordinary methods assuming simple random sample design of the data. But the ANES should be considered as a complex sample designs dataset so, in order to avoid estimates that could be biased and represent the population properly, we should do two things in nearly all analyses:

   - Use the weights.
   - Calculate sampling errors and significance tests using another design-consistent approach.

It was out of the scope of this study the utilization of such methods, therefore the estimates of the parameters we have done could be biased, have erroneous significance levels and could therefore lead to incorrect conclusions.

Learned technique is particularly efficient and an easy first approximation which we must have in our catchall and the use of other methods might be interesting for future study about the same matter.

References

ANES dataset is a collaboration of Stanford University and the University of Michigan, with funding by the National Science Foundation.

Cohen, A. (1980). On the graphical display of the significant components in a two-way contingency table. Communications in Statistics - Theory and Methods, A9, 1025-1041.

Friendly, M. (1992), Graphical methods for categorical data. SAS User Group International Conference Proceedings, 17, 190-200

Herek, G. (2002). Gender gaps in public opinion. About lesbians and gay men. Public Opinion Quarterly Volume 66:40-66. 2002 by the American Association for Public Opinion Research

McCutcheon, J. (2011). Attitudes Toward Adoption by Same-Sex Couples: Do Gender Roles Matter? Thesis for the Master in the Department of Psychology University of Saskatchewan Saskatoon

Yang, Alan. (1997). "Trends: Attitudes toward Homosexuality." Public Opinion Quarterly 61: 477-507.

Appendix A

```
# This appendix is a chunk for one page listing of
# the data set that we've used, showing the two
# relevant variables. Because we used a two column
# doc, we are plenty of space and we can give just
# a little more...
print(myanes[1:83,])
```

```
##     gender_respondent gayrt_adopt
## 1              Female          No
## 2                Male         Yes
## 3              Female          No
## 4              Female          No
## 5                Male         Yes
## 6                Male         Yes
## 9              Female          No
## 10               Male         Yes
## 11               Male         Yes
## 12               Male         Yes
## 13             Female         Yes
## 14             Female         Yes
## 15             Female         Yes
## 16               Male          No
## 17               Male          No
## 18             Female         Yes
## 19             Female         Yes
## 20             Female          No
## 21               Male         Yes
## 23               Male         Yes
## 24             Female          No
## 25               Male          No
## 26               Male          No
## 27               Male          No
## 28             Female         Yes
## 29               Male          No
## 31             Female         Yes
## 32             Female         Yes
## 33             Female         Yes
## 34             Female          No
## 36             Female         Yes
## 37             Female         Yes
## 39             Female         Yes
## 40             Female         Yes
## 41             Female         Yes
## 42             Female         Yes
## 43             Female         Yes
## 44             Female         Yes
## 46             Female          No
## 47             Female          No
## 49             Female         Yes
## 50             Female         Yes
## 51               Male          No
## 52               Male         Yes
## 54             Female         Yes
## 55               Male          No
## 56               Male         Yes
## 57             Female          No
## 58             Female          No
## 59               Male         Yes
## 60               Male         Yes
## 61               Male          No
## 62               Male         Yes
## 63             Female         Yes
## 64             Female         Yes
## 65               Male         Yes
## 67             Female         Yes
## 69               Male          No
## 71               Male          No
## 72               Male         Yes
## 73               Male         Yes
## 75             Female         Yes
## 77             Female          No
## 78             Female         Yes
## 79               Male          No
## 81               Male         Yes
## 82               Male         Yes
## 83               Male         Yes
## 85             Female         Yes
## 88             Female         Yes
## 91               Male         Yes
## 92             Female         Yes
## 93             Female         Yes
## 94               Male         Yes
## 95               Male          No
## 96             Female          No
## 97             Female         Yes
## 99               Male          No
## 100            Female          No
## 101              Male         Yes
## 103            Female          No
## 104              Male         Yes
## 105              Male          No
```