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Education, income, and the distribution of happiness

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Abstract

We study happiness inequality in the United States using data from the 2005 to 2010 Behavioral Risk Factor Surveillance System (BRFSS). We aggregate individual level data to the state level and study how the average life satisfaction of various income, education, and life satisfaction groups changes with the average life satisfaction of the state. We find that the life satisfaction of the least happy does not increase in equal proportion with the average happiness of society, suggesting that increasing happiness levels are likely to lead to greater happiness inequality. However, the life satisfaction of the poorest and least educated does increase in equal proportions with average life satisfaction. Taken together, these results indicate that directed policies aimed at increasing the income of the poor or education levels of the least educated could result in less inequality in the distribution of welfare.

Key words: happiness inequality; happiness of poor; happiness of educated

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## 1 Introduction

While the causes and effects of income inequality have been the subject of a voluminous social science literature, the study of happiness inequality is less well developed. Recent work, however, has documented the existence of differences in the distribution of life satisfaction within and between different groups. This paper draws on methods used in the study of income distribution dynamics to contribute to our understanding of happiness inequality and factors that might influence future changes in the distribution of life satisfaction.

Specifically, we find that increases in the average level of life satisfaction in society positively influences the happiness of low-income households and less educated households more than it influences higher income and college educated households. However, the happiness of the least happy members of society does not increase one-for-one with the average happiness of society. The implication of these findings is that increases in average life satisfaction will likely cause happiness inequality to increase as the happiness of the least happy does not increase proportionally. However, specific policy actions such as increased education, especially if it affected individuals with lower levels of happiness, could cause happiness inequality to decrease. We also find some evidence consistent with the theory that, for low income groups, absolute and not relative income affects life satisfaction. For groups likely to have higher incomes, larger gaps in relative income have a negative effect on life satisfaction.<sup>1</sup>

Studying the distribution of happiness is important for two reasons. First, if life satisfaction is the ultimate objective of policy, then the distribution of life satisfaction, a measure of the equality of welfare, is also important. Understanding how the distribution of happiness may evolve is critical for policy evaluation. Second, many have suggested that the happiness of

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<sup>1</sup> We use “happiness,” “life satisfaction,” and “subjective well-being” interchangeably throughout although our data corresponds specifically to self-reported measures of life satisfaction. Frey and Stutzer (2002) explain that happiness and life satisfaction are slightly different concepts, with “happiness” being a more temporary emotion.

an individual is affected by that individual's relative position in society. This idea is most prominent in the discussion of the Easterlin paradox in which several authors have suggested that life satisfaction is derived not from absolute income but from income relative to a peer group. (Easterlin, 1974; Dynan and Ravina, 2007; Clark, Frijters, and Shields, 2008) Our interest in understanding how happiness of a specific group is affected by the average happiness of society is a natural extension of this idea.

The most closely related papers to ours are Ott (2005) and Stevenson and Wolfers (2008). Ott (2005) examines the relationship between the average level of happiness and the standard deviation of happiness across countries. Ott finds that there is a negative correlation between the two and concludes that countries with higher happiness levels also have more equal distributions of happiness. This result leads to the fortuitous policy implication that policies that increase average happiness levels will also decrease inequality in happiness. Our results are in contrast to this conclusion because we find that, within the United States, the happiness of the least happy does not increase one-for-one with average levels of happiness, implying that increases in average levels of happiness may result in greater happiness inequality. The different conclusions may be a result of our focus on regions within one country, the United States, that allows us to control for a number of shared institutional features across those regions.

In contrast to Ott (2005), Stevenson and Wolfers (2008) do focus on happiness inequality within the U.S. They find that income, education, consumption and savings all have an impact on happiness inequality. They also present evidence that difference in leisure time and legislation, such as the Civil Rights Act of 1964, have affects the distribution of happiness over long time periods. In a related paper, Stevenson and Wolfers (2013), they present a complementary finding that the racial gap in happiness is closing in the United States.

Others have also studied happiness inequality. For example, Bechetti, Massari, and Naticchioni (2013) show that an increase in the education level reduces happiness inequality whereas an increase in the unemployment rate decreases it. In a theoretical contribution, Van Praag (2011) emphasizes the importance of reference points beyond just income references and argues for the importance of referencing process that includes comparisons to other couples or races. Finally, Kalmijn and Veenhoven (2005) critique different measures of happiness inequality, showing that income inequality and happiness inequality are fundamentally different.

Finally, there is a separate but related strand of literature that examines how income inequality affects happiness. Alesina, Di Tella, and MacCulloch (2004) find that the effect of income inequality on happiness is dependent on ideological and societal factors. Using data from different household surveys, they find that Europeans and Americans felt the impact of income inequality differently. In Europe, income inequality disturbs the most poor and those who are more ideologically liberal. Conversely, in the United States, the highest-socio economic classes are most bothered by the presence of income inequality. Alesina et al. attribute these disparities to differences in perceived social mobility, with Americans being more likely to believe that changing one's socio-economic status is possible. Alesina et al. reason that in an economically mobile society, high inequality is more likely to be of concern to the rich because they might fear large, quick drops in income. Ott (2005) also finds that differences in the correlation between average levels of happiness and income inequality in different countries. Ott presents correlations between average happiness and income inequality in both rich and poor nations, finding a much larger positive correlation between income inequality and average levels of happiness in poor countries. Interestingly, Ott also reports very low correlations between

happiness inequality and income inequality in all countries, suggesting that happiness inequality and income inequality are two distinct phenomena.

Our work extends the existing literature on happiness inequality by presenting complementary findings using a different data source and method. We show how the happiness of certain demographic groups evolves as the average happiness of society increases. In addition, our methods allow us to increase our understanding of the dynamics of happiness inequality by suggesting how the distribution of happiness will evolve as average levels of happiness change. Our results are developed in the next four sections. Section 2 describes our methods and data, Section 3 presents our main results, Section 4 provides additional discussion and interpretation of these results, and Section 5 concludes.

## **2 Methods and Data**

### *Methods*

To develop a model that allows us to make inferences about how the distribution of happiness will evolve as the average level of happiness changes, we draw on methods used in the income distribution literature. Specifically, Dollar and Kraay (2002) study how the income of the poor is affected by changes in per capita income in an attempt to determine if the poor are harmed or helped by growth of average income. To do this, they use cross country data and regress the average income of the poor (bottom quintile) on income per capita and a variety of control variables. They then test to determine if the coefficient on income per capita is equal to one. A coefficient equal to one implies that the poor benefit as much as the rest of society when income per capita grows and a coefficient greater than one implies that they benefit more than the rest of society.

We use data from all 50 states and the District of Columbia in the United States and adapt the methods in Dollar and Kraay (2002) to the study of happiness inequality by regressing the life satisfaction level of various income, education, and life satisfaction groups on the average life satisfaction of society. Specifically, we estimate

$$H_{s,t}^g = \beta_0 + \beta_1 H_{s,t} + \beta_2 X_{s,t} + \mu_s + \lambda_t + \varepsilon_{s,t} \quad (1)$$

where  $H_{s,t}^g$  is the average happiness of individuals in group  $g$  in state  $s$  in year  $t$ ,  $H_{s,t}$  is the average happiness of all individuals in state  $s$  in year  $t$ ,  $X_{s,t}$  are control variables for state  $s$  at time  $t$ ,  $\mu_s$  is a state level fixed effect,  $\lambda_t$  is a year fixed effect, and  $\varepsilon_{s,t}$  is a mean zero, normally distributed disturbance term.<sup>2</sup>

We are interested in testing whether  $\beta_1=1$ , which would indicate that the happiness levels of the specific demographic groups that we analyze moves in one-to-one relationship with the average happiness of society. A coefficient of one would indicate that the distribution of happiness is unlikely to change when average happiness increases. When examining a subpopulation that has lower than average happiness, a coefficient greater than one would indicate that the happiness inequality caused by the characteristics of that subpopulation is likely to decrease as average happiness increases. Conversely, when examining a subpopulation that has higher than average happiness, a coefficient greater than one would indicate increasing happiness inequality when average happiness increases.

### *Data*

The data on life satisfaction that we use is from the Behavioral Risk Factor Surveillance System (BRFSS) in the years 2005 to 2010. The BRFSS is an annual survey of approximately 450,000 individuals in all fifty states plus the District of Columbia conducted by the individual

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<sup>2</sup> A Hausman test rejects a random effects specification at the 5 percent significance level.

states in collaboration with the Centers for Disease Control and Prevention (CDC). The main focus of the survey is to elicit information from individuals about their health and health-related behaviors, however, since 2005, the survey has included a question about life satisfaction. Specifically, respondents are asked: “In general, how satisfied are you with your life?” The responses are coded on a scale of one to four, with one being “very dissatisfied” and four being “very satisfied.”

We use six different groupings in our analysis based on income, education, and life satisfaction. The BRFSS provides income groupings for individuals based on annual household income from all sources. We use these groupings to create three income groups for our study: Very Poor (less than \$15,000/year), Poor (less than \$25,000/year), and High Income (greater than \$50,000/per year).<sup>3</sup> We also create two education groups: College Graduates and No College, with the omitted group being people who have attended college, but not obtained a degree. Finally, we also examine the happiness of the least happy by calculating the average life satisfaction for the bottom 25 percent of the distribution of happiness in each state. Although examining how the happiness of the “Least Happy” is affected by average levels of life satisfaction does not provide clear policy implications, it can help us to predict how the distribution of happiness would evolve as the average level of happiness changes. We then calculate average levels of life satisfaction for each of these six groups to use as the dependent variables in our regression equation specified above.

The sample design for the BRFSS is developed by each state. Some states use a stratified sample design to oversample populations in certain geographic areas with populations that have health or health-related behaviors of particular interest. Furthermore, the data is collected via

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<sup>3</sup> Although we call this group “high income,” \$50,000 is within \$4,000 of the estimated median income for the entire U.S. during the years we study. Unfortunately, the BRFSS does not provide a more detailed income grouping that would allow us to identify top earners more selectively.

telephone survey. Although each telephone number selected for dialing can be justified as part of a probability sample, completed interviews may not generate a random sample. Therefore, when calculating state-level variables and effects we use the sampling weights provided by the BRFSS. There are a large number of responses by state each year and, using the BRFSS sampling weights, we are able to calculate reliable state level averages of self-reported life satisfaction and state level averages for self-reported life satisfactions of our six different groups. As we explain below, three of these groups correspond to income levels, two correspond to education levels, and one grouping is based on life satisfaction levels.<sup>4</sup>

We supplement this data with state level control variables. Recall that our specification includes both the average level of life satisfaction in the state as well as state and year fixed effects. Thus, the only variables that should potentially enter as control variables would be time-varying state characteristics that specifically affect the happiness of different income, education, or life satisfaction groups over and above the effects of average happiness. In other words, state characteristics that affect only the average life satisfaction or that do not change over the time period 2005 to 2010 should not enter into the regression significantly once we control for state fixed effects and average life satisfaction. Therefore, we are able to present a relatively parsimonious specification by including only controls that might theoretically affect the happiness of specific income, education, or life satisfaction groups differentially. Specifically, we include as controls real GDP per capita (from the Bureau of Economic Analysis), average annual unemployment rates (from the Bureau of Labor and Statistics), and poverty rates (as estimated by the U.S. Census Bureau).

Summary statistics for the data used in our estimations appear in Table 1. In total, after calculating state level averages from the individual responses, we have 306 observations (51

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<sup>4</sup> The BRFSS data can be obtained from <http://www.cdc.gov/brfss/>.

states for six years). Average levels of life satisfaction are relatively high at 3.38, but there is some variation across states, with the range being from 3.29 to 3.47. Of course, individuals in the bottom quartile of the happiness distribution have the lowest average happiness as a group at 2.73. As might be expected, individuals in households classified as “Very Poor” also have relatively low levels of life satisfaction, while individuals in “High Income” households and those with college degrees report the highest levels. The control variables contain significant variation, with unemployment rates ranging from 2.5 to almost 14 percentage points and poverty rates across the states ranging from 7.3 to 22.4 percent. Interestingly, the range across states of average life satisfaction for the “Very Poor” is the largest difference of any of the groups. This suggests that there may be interesting dynamics for happiness of the lowest income groups that varies across states.

Correlation coefficients for average life satisfaction among the various groups are presented in Table 2. As is to be expected, all measures of average life satisfaction are positively correlated. Perhaps not surprisingly, the lowest correlations are between the High Income group life satisfaction and the average life satisfaction of the Very Poor and the Least Happy. Interestingly, however, there is a higher correlation between the Poor and the overall average life satisfaction than between the High Income and the average life satisfaction even though the High Income group represents a larger proportion of the population.

#### *Potential estimation issues*

Before presenting our main results, we discuss two potential issues with our methods. One potential issue is that all of our demographic groups are subsets of the entire population and, thus, the life satisfaction measures of the subgroups are incorporated into the calculation of the overall average life satisfaction by state. We do this so that our methods are parallel to those of

Dollar and Kraay (2002) and because it allows us to interpret the results as indicating how the life satisfaction of one group moves with the average. However, to the extent that the subgroup is a large portion of the population, our methods may bias the coefficient on average life satisfaction towards one. This is of greatest concern for the “High Income” group which represents 42 percent of the sample and of least concern for the “Very Poor” group which is only 11 percent of the sample. As we discuss below, our results do not indicate that this issue is affecting our interpretation of the results.

A second issue is that, by construction, the maximum observation for life satisfaction is four. Although theoretically life satisfaction could increase without bound, our measurement of it does not. Therefore, we may expect to find that groups with higher average life satisfaction will increase their life satisfaction with the societal average at a rate less than one-for-one because they have more individuals who are already reporting the maximum level. In our data, the groups with the highest life satisfaction levels are college graduates and high income households. This issue should urge caution in our results—a coefficient less than one on average life satisfaction would indicate that measured life satisfaction is converging, however, it may not indicate that actual life satisfaction is converging due to our inability to identify increases in life satisfaction at the upper end of the scale. As we explain below, to partially address this issue, we verify that our results are robust to using the natural log of life satisfaction.

### **3 Results**

#### *Income groups*

The results of estimating Equation 1 for the three different income groups appear in Table 3. The first three columns report results for the average life satisfaction of individuals in the

Very Poor group, columns 4 through 6 report results for those in the Poor group, and the last three columns show the results for the High Income group.

Focusing first on the Very Poor group, we see that in Column 1, average life satisfaction is positively and significantly related to the average life satisfaction of the Very Poor. In fact, the results of our Wald test indicate that we cannot reject the hypothesis that the coefficient on average life satisfaction is equal to one. In Columns 2 and 3 of Table 3, we add state level controls that might affect the life satisfaction of the Very Poor, even after controlling for average life satisfaction in the state. Interestingly, neither the unemployment rate nor the poverty rate has a statistically significant effect on life satisfaction of the Very Poor, but Very Poor individuals who live in states with higher income per capita have higher life satisfaction on average. This evidence does not support theories that suggest that it is relative income that affects happiness. Recall that we classified individuals as Very Poor if they lived in a household with annual income of less than \$15,000. Therefore, Very Poor individuals who live in higher income states would experience a higher income differential relative to other state residents than Very Poor individuals who live in low income states. The effects, however, are moderate: A one standard deviation increase in GDP per capita increases the life satisfaction of the Very Poor by .07, or approximately one standard deviation.

The results for the life satisfaction of the Poor (Columns 4, 5, and 6 of Table 3) mirror those for the life satisfaction of the Very Poor. The coefficient on average life satisfaction is close to one in all three estimations. However, none of the state level controls are significant once average life satisfaction and state and year fixed effects are included. As mentioned above, there is a concern that the coefficient on average life satisfaction is biased towards one because the Poor and the Very Poor are included in the calculation of the average. However, this is less

of a concern for these two groups because they are a smaller portion of the entire sample, with the Very Poor accounting for 11 percent of the sample and the Poor accounting for 29 percent.

In columns 7 through 9 of Table 3, we present results for the life satisfaction of the High Income group. In all three estimations, the coefficient on average life satisfaction is positive, but less than one. None of the state-level controls are significant. These results indicate that as average life satisfaction in the state increases, the life satisfaction of higher income households does not increase by as much. This suggests that as average life satisfaction increases, the happiness of the Poor and Very Poor “catches up” to the happiness levels of the High Income group.

As mentioned above, one concern that we have is that when we examine a group such as the High Income group that has higher average life satisfaction that, it is not possible for many people in this group to increase their measured life satisfaction because they are already reporting the maximum level of four. While it isn’t possible to solve this problem entirely, it is reassuring that we obtain identical qualitative conclusions when we estimate all of our specifications using the natural logs of all the life satisfaction averages. In considering the significance of this issue, it is also important to note that no group that we examine is near the maximum in any state. As indicated in Table 1, the highest life satisfaction of any group is 3.62 (High Income group in Tennessee in 2006).

Unfortunately, we do not have enough detailed income data to make a refined analysis of the life satisfaction of higher income households, however, it is noteworthy that the GDP per capita control variable is not significant. In other words, these results provide no evidence that the average life satisfaction of higher income households is affected by higher average incomes in the state.

### *Education groups*

In Table 4, we present results that examine the life satisfaction of two different educational groups: individuals who have not attended college and those who have a college degree. Columns 1 through 3 of Table 4 present the results for the No College group. Generally, these results mirror those for the Very Poor. Higher levels of average life satisfaction are positively and significantly related to higher average levels of life satisfaction of those who have never attended college. We cannot reject the hypothesis that the coefficient on average life satisfaction is equal to one. The only state-level control variable that enters into these estimations is GDP per capita. As before, it indicates that, for this non-college-educated group, living in a state that has a higher income per capita is associated with higher levels of happiness on average. Although this evidence is not as direct because some in this group may in fact have high incomes even though they did not attend college, to the extent that those who have not gone to college have lower incomes, it also casts doubt on the relative income theory for this group.

The results for the College Graduate group (Columns 4 through 6 of Table 4) also parallel those for the High Income group. The coefficient on average life satisfaction is positive, but less than one. This indicates that as average life satisfaction increases, the life satisfaction of households in this group increases by less. As with the results examining income groups, this indicates that as average life satisfaction increases in the state, the life satisfaction of the less educated will catch up with the life satisfaction of the more educated. Conversely, if average life satisfaction were to decrease, the average life satisfaction of the less educated would decrease by more.

In contrast to the previously stated findings, the coefficient on GDP per capita is negative and significant. To the extent that college graduates have higher incomes, this is consistent with

a relative income theory—college graduates who live in states with higher incomes per capita are less happy on average.

### *Life satisfaction groups*

Thus far, we have examined how the life satisfaction of various demographic groups changes with the average life satisfaction of society. While these estimations have implications for how the distribution of happiness may evolve, these estimations do not directly examine the distribution of happiness. To do this, we need to examine how the life satisfaction of the least satisfied changes as average life satisfaction changes. These results are in Table 5.

The results in Table 5 show that the coefficient on average life satisfaction in the estimation of the life satisfaction of the Least Happy is positive, significant, but less than one in all three specifications. In other words, as the average happiness of society increases, happiness inequality will also increase because the happiness of the Least Happy does not increase by equal amounts. These results make the most direct prediction about how the distribution of happiness will evolve as average life satisfaction increases.<sup>5</sup>

## **4 Discussion**

### *Contradictory results?*

In the previous section, we presented results that indicated that when average life satisfaction increases, 1) life satisfaction of the poorest and least educated also increases equally,

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<sup>5</sup> Note that our use of the fixed effects technique allows us to draw a conclusion about how the happiness of the least happy will respond to changes in average happiness. Because the technique essentially allows for a state-specific constant in the estimation, the coefficient on average life satisfaction can literally be interpreted as indicating how the happiness of the Least Happy deviates from its average when average happiness deviates from its average in that state. In a cross-section estimation that does not allow for the estimation of a state-specific constant, the only interpretation would be a less interesting one: that the happiness of the Least Happy is less than the average happiness overall.

2) life satisfaction of the richest and most educated increases by less, and 3) life satisfaction of the least happy increases by less. Because the richest and most educated are the happiest overall on average, points one and two might appear to suggest that increases in average life satisfaction could lead to an equalizing of the distribution of happiness. However, the result that life satisfaction of the least happy increases by less than that of average life satisfaction suggests otherwise. As noted above, these results about the happiness of the least happy suggest that increases in average life satisfaction will increase happiness inequality.

Can these apparently contradictory results be reconciled? Yes, by recognizing that even within demographic groups, there is a distribution of life satisfaction. Thus, even though, on average, college graduates and high income individuals report higher levels of happiness, within each group, there are individuals who report all levels of happiness. In fact, approximately 30 percent of the “Least Happy” are college graduates and approximately 30 percent are classified as high income. Therefore, it is not possible to determine how the overall distribution of happiness will change by examining how the happiness of these two demographic groups change. What is possible to conclude from these results, however, is: as overall life satisfaction increases, 1) the inequality in life satisfaction that is associated with disparate education or income levels dissipates, but 2) overall, happiness inequality will increase.

#### *Relative vs. absolute income*

Another issue that merits further discussion is the finding about the effect of GDP per capita on the life satisfaction levels of various groups. The results discussed above suggest that, for the Very Poor and those without college degrees (no college), living in a higher income state increases happiness levels.

At first glance these results seem to contradict previous findings that relative income affects happiness because these groups are likely to be the poorest, on average, in each state. However, previous work on this issue has suggested that at low levels of income, the relative income hypothesis is not in effect. For example, Layard (2003) finds that once a country's GDP per capita exceeds about \$15,000, its level of happiness moves independently from its income per capita. Other studies have found similar cutoffs with the results in Frey (2008) suggesting a cutoff of about \$10,000. Interestingly, in our data, the Very Poor have incomes less than \$15,000, similar to the cutoffs found in the previous literature. Although the No College group does not have an income cutoff, they are also most likely to have the lowest incomes in the state. And, finally, it is important to note that those with college degrees (more likely to have higher incomes) are less happy in high income states. Thus, our results are broadly consistent with these previous findings: individuals in low income groups are likely to be happier in higher income states, however, once individuals reach a certain income level that effect does not exist. There is even some evidence that at higher income/education levels, living in a richer state is associated with lower levels of life satisfaction, supporting the relative income hypothesis.

*Is one state the happiest for all?*

Although our methods are different, we confirm the finding of Oswald and Wu (2010) that, on average, Louisiana is the happiest state. But is the same state best for all demographic groups? Oswald and Wu (2010) use the same BRFSS data from 2005 to 2008 and run regressions using the individual level data, but calculate state fixed effects. They examine the magnitudes of these state fixed effects to identify Louisiana as the happiest state. Although their results are based on unweighted regressions, our methods that use sampling weights to adjust for different sampling probabilities of individual observations result in a similar conclusion: no

other state has a statistically significant higher level of happiness than Louisiana. However, that conclusion is only true on average. When we examine the happiness of various income and education groups after controlling for average life satisfaction, we find that depending on the group, different states have the highest and lowest levels of life satisfaction. Specifically, we examined the individual state fixed effects in the estimations that appear in Table 3, Columns 1, 4, and 7 and Table 4, Columns 1 and 4. We then ordered the states by the value of the fixed effects, from largest to smallest and report in Table 5 the top ten and bottom ten states for each demographic group.

What we see in this table is that no state consistently enters the top ten list for all demographic groups. Louisiana enters the top ten list for the Very Poor and Poor groups, but it does not enter as a top ten state for High Income or college educated households. Similarly, New Hampshire seems to be the worst state for both the Poor and Very Poor and in the bottom ten for people without college degrees. However, it does not appear in the bottom ten for either High Income households or College Graduates. The District of Columbia shows up in the bottom ten for Poor, High Income, No College and College Graduates, however, it is not in the bottom ten for the Very Poor. Although we do not report the detailed results from the estimations, all of the state fixed effects were statistically significant in these regressions. These results indicate that state characteristics that do not change over time do differentially affect the life satisfaction of these demographic groups.

This observation has important implications for studies that use aggregate measures of happiness. (cite a few) Specifically, when characterizing the level of life satisfaction within a country or other geographic area, using simple averages of individual levels may mask important dimensions of happiness. Specifically, some demographic groups may be more satisfied and the

distribution of happiness may also differ across countries or states. Care should be taken that the correct measure of aggregate life satisfaction be used.

## **5 Conclusion**

Our results indicate that increasing happiness levels are likely to lead to greater happiness inequality as the life satisfaction of the least happy is not likely to increase proportionally. However, policy interventions that increase education levels of the least educated or incomes of the poorest are likely to decrease happiness inequality because these are the groups with the lowest life satisfaction. Thus, directed policies aimed at the poor or least educated could result in less inequality in the distribution of welfare, however, a general increase in life satisfaction for society overall will generate greater happiness inequality.

Our work has the advantage of examining happiness of different groups with a large data set within one country. Because individuals in the same country experience similar institutional and social contexts these results allow us to focus specifically on how the life satisfaction of one group moves with the average life satisfaction of society. Of course, a limitation of that feature of our data is that different results could be obtained in different countries. This suggests that future research that examines how happiness of different groups within a country reacts to the happiness of the average could be useful to help us better understand life satisfaction and its distribution.

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Table 1: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Average Life Satisfaction	306	3.38	.033	3.29	3.47
Poor Life Satisfaction	306	3.16	.042	3.06	3.27
High Income Life Satisfaction	306	3.54	.033	3.46	3.62
Very Poor Life Satisfaction	306	3.05	.061	2.92	3.26
No College Life Satisfaction	306	3.30	.034	3.21	3.39
College Graduate Life Satisfaction	306	3.50	.030	3.40	3.59
Least Happy Life Satisfaction	306	2.73	.049	2.56	2.84
Real GDP per capita (in 2005 \$10,000)	306	4.34	1.66	2.79	15.12
Unemployment Rate	306	6.03	2.34	2.48	13.8
Poverty Rate	306	13.38	3.12	7.3	22.4

Table 2: Correlation Coefficients

	Average Life Satisfaction	Very Poor Life Satisfaction	Poor Life Satisfaction	High Income Life Satisfaction	No College Life Satisfaction	College Graduate Life Satisfaction	Least Happy Life Satisfaction
Average Life Satisfaction	1.0000						
Very Poor Life Satisfaction	0.5464	1.0000					
Poor Life Satisfaction	0.7036	0.7925	1.0000				
High Income Life Satisfaction	0.5888	0.3598	0.5775	1.0000			
No College Life Satisfaction	0.8414	0.5811	0.7669	0.5931	1.0000		
College Graduate Life Satisfaction	0.7433	0.4135	0.5769	0.8239	0.6487	1.0000	

Table 3: Life Satisfaction by Income Group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Very Poor Life Satisfaction	Very Poor Life Satisfaction	Very Poor Life Satisfaction	Poor Life Satisfaction	Poor Life Satisfaction	Poor Life Satisfaction	High Income Life Satisfaction	High Income Life Satisfaction	High Income Life Satisfaction
Average Life Satisfaction	1.107***	1.095***	1.089***	1.022***	1.043***	1.041***	0.702***	0.717***	0.718***
	(0.145)	(0.147)	(0.148)	(0.088)	(0.089)	(0.090)	(0.051)	(0.051)	(0.051)
Real GDP per capita		0.042*	0.038*		0.004	0.002		-0.004	-0.004
		(0.022)	(0.023)		(0.013)	(0.014)		(0.008)	(0.008)
Unemployment Rate		0.004	0.005		0.003	0.003		0.001	0.001
		(0.003)	(0.004)		(0.002)	(0.002)		(0.001)	(0.001)
Poverty Rate			-0.003			-0.001			0.000
			(0.005)			(0.003)			(0.002)
Constant	-0.685	-0.864*	-0.787	-0.294	-0.406	-0.379	1.174***	1.130***	1.120***
	(0.494)	(0.510)	(0.525)	(0.300)	(0.310)	(0.319)	(0.172)	(0.178)	(0.183)
Observations	306	306	306	306	306	306	306	306	306
Number of States	51	51	51	51	51	51	51	51	51
R-squared	0.30	0.31	0.31	0.46	0.46	0.46	0.60	0.60	0.60
Reject coefficient on average life satisfaction = 1	No	No	No	No	No	No	Yes***	Yes***	Yes***

Standard errors in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

All estimations include state and year fixed effects.

Table 4: Life Satisfaction by Education Group

	(1)	(2)	(3)	(4)	(5)	(6)
	No College Life Satisfaction	No College Life Satisfaction	No College Life Satisfaction	College Graduate Life Satisfaction	College Graduate Life Satisfaction	College Graduate Life Satisfaction
Average Life Satisfaction	1.041***	1.030***	1.034***	0.778***	0.797***	0.795***
	(0.051)	(0.051)	(0.051)	(0.054)	(0.055)	(0.055)
Real GDP per capita		0.018**	0.022***		-0.019**	-0.020**
		(0.008)	(0.008)		(0.008)	(0.008)
Unemployment Rate		0.001	0.000		-0.001	-0.000
		(0.001)	(0.001)		(0.001)	(0.001)
Poverty Rate			0.003			-0.001
			(0.002)			(0.002)
Constant	-0.227	-0.278	-0.343*	0.871***	0.891***	0.918***
	(0.172)	(0.177)	(0.181)	(0.185)	(0.189)	(0.195)
Observations	306	306	306	306	306	306
Number of States	51	51	51	51	51	51
R-squared	0.72	0.73	0.73	0.60	0.61	0.61
Reject coefficient on average life satisfaction = 1	No	No	No	Yes***	Yes***	Yes***

Standard errors in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

All estimations include state and year fixed effects.

Table 5: Life Satisfaction of the Least Happy

	(1)	(2)	(3)
	Least Happy Life Satisfaction	Least Happy Life Satisfaction	Least Happy Life Satisfaction
Average Life Satisfaction	0.870*** (0.070)	0.849*** (0.071)	0.848*** (0.071)
Real GDP per capita		0.009 (0.010)	0.007 (0.011)
Unemployment Rate		-0.001 (0.002)	-0.001 (0.002)
Poverty Rate			-0.001 (0.002)
Constant	-0.212 (0.237)	-0.171 (0.245)	-0.149 (0.252)
Observations	306	306	306
Number of States	51	51	51
R-squared	0.58	0.58	0.58
Reject coefficient on average life satisfaction=1	Yes*	Yes**	Yes**

Standard errors in parentheses

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

All estimations include state and year fixed effects.

Table 4: State Rankings

After controlling for average life satisfaction, top ten states to be

<b><u>Very Poor</u></b>	<b><u>Poor</u></b>	<b><u>Rich</u></b>	<b><u>No College</u></b>	<b><u>College Grad</u></b>
Delaware	Mississippi	Kentucky	Louisiana	Kentucky
Mississippi	South Dakota	Mississippi	Illinois	Mississippi
South Dakota	Alabama	Tennessee	West Virginia	Tennessee
California	Louisiana	West Virginia	Wisconsin	West Virginia
Texas	Nebraska	Oklahoma	Nebraska	South Carolina
Nebraska	Texas	Florida	Iowa	Florida
Louisiana	Tennessee	Arkansas	Missouri	Oklahoma
Alabama	New Mexico	South Carolina	Pennsylvania	Arkansas
South Carolina	California	Alabama	South Dakota	Utah
North Dakota	West Virginia	Arizona	North Dakota	North Carolina

After controlling for average life satisfaction, bottom ten states to be

<b><u>Very Poor</u></b>	<b><u>Poor</u></b>	<b><u>Rich</u></b>	<b><u>No College</u></b>	<b><u>College Grad</u></b>
New Hampshire	New Hampshire	New York	District of Columbia	New York
Washington	Washington	District of Columbia	Utah	District of Columbia
Minnesota	Maryland	California	New Hampshire	California
Maryland	Nevada	Illinois	Connecticut	Oregon
Nevada	Connecticut	Maryland	Massachusetts	Connecticut
Connecticut	Virginia	Connecticut	Hawaii	Illinois
Virginia	Utah	New Jersey	Vermont	Maryland
Utah	Colorado	Alaska	Rhode Island	Washington
Wisconsin	District of Columbia	Hawaii	Colorado	Kansas
Oregon	Delaware	Delaware	Virginia	Hawaii