

## 1. Introduction

a) Skim the introductory section (“Summary and Key Messages”) of the 2004 World Bank poverty assessment report (available on iLearn). What are 3 important policy recommendations it makes regarding poverty and inequality? Write 2-3 sentences describing each recommendation you list.

Mexico enacted many policies to help assess and reduce poverty and inequality. One of the policies introduced was an improvement in its social services, specifically education. In Mexico, there has been an unequal return to primary and secondary education between students living in rural areas and the children of richer households. This policy pushes for the access of quality education for students living in more rural areas to help push students for a brighter future. However, with a weak tax collection system, this policy may be more difficult to implement as these initiatives require funding and subsidies to get the programs started. The next policy introduces a broader approach to tackling the problems with social protection that undermine the impoverished experiencing inconsistent employment and income security. The Social protection’s two objectives include, “supporting efficient risk management of households, and redistributive transfers to the poor.” This social protection policy and program are designed to reduce poverty, as well as diminishing citizen’s exposure to risks by introducing strategies to reduce risk and pooling together risks. Lastly, the policy introduced to reduce poverty would be under the program “*Seguro Popular*”. This programs initiative is to aid the impoverished with public resources they often don’t have and can’t afford. This program helps offer package of specific services and medicines to those not covered by social security, with a zero premium for the “bottom quintile of the population”. The *Seguro Popular* is just the start and can hopefully change the direction in where the healthcare system is. Though, it is evident that the Mexican government has enacted many policies and programs to create positive change, however many are still living below the poverty line.

## 2. Poverty

a) Calculate the mean per capita consumption (cons\_pc) in each of the two years and compute the **annual growth rate** (fill in table). How did consumption change over the period?

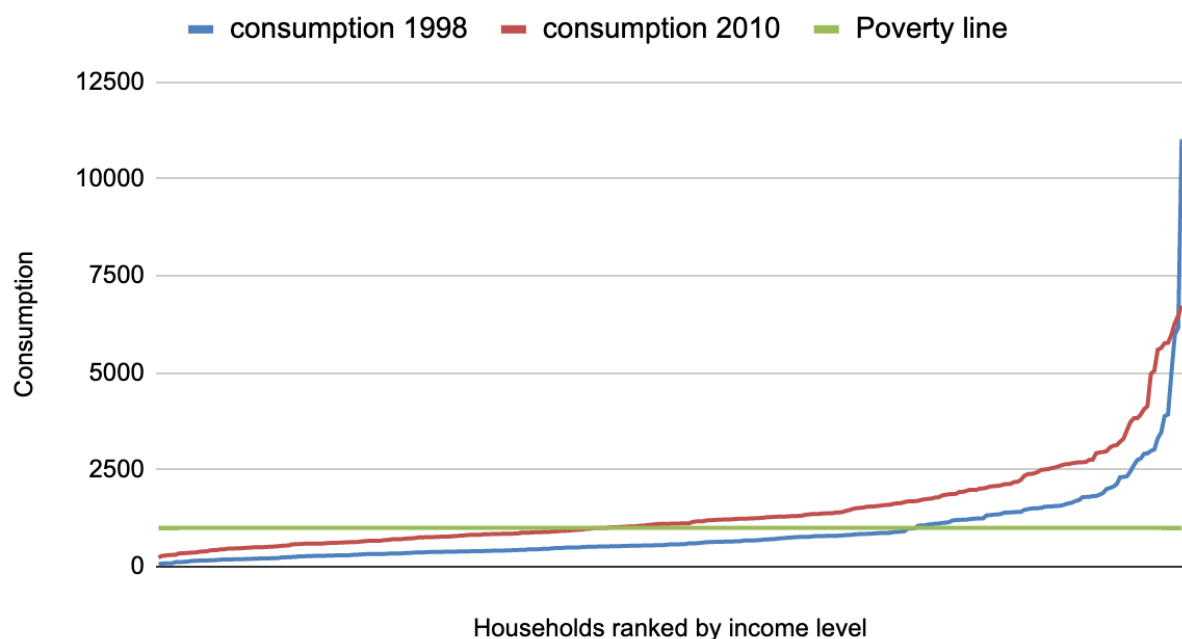
From 1998 to 2010 the mean per capita consumption has increased significantly, although, when I graphed the chart there was one huge outlier in the 1998 consumption at \$11,028, causing the graph to shoot up. However, ignoring the outlier, there is a noticeable difference in the average consumption level, as we can see that in 2010, the consumption starts off higher than the consumption seen in 1998. We can also observe that in 2010, there are less households under the poverty line by comparing where the mean consumption in 2010 and 1998 cross that poverty line.

b) Calculate the  $P_0$  and  $P_1$  indicators for each year (fill in table). Calculate the **annual rate of change** in  $P_0$  (fill in table). How did poverty rates and the depth of poverty change over the period? Write 3-4 sentences describing and interpreting your results.

The poverty rates decreased drastically from 1998 to 2010. There is a huge noticeable difference between the decrease in poverty rates because in 1998, 74% of households were under the poverty line, whereas, in 2010, this percentage dropped down to 44%. The depth of poverty ( $p_1$ ) which measures the ratio of the targeted to the untargeted budget needed to eliminate poverty has also decreased meaning the budget is lower to help eliminate poverty. Since  $P_1$  can be seen compared by the area underneath the poverty line, there is a noticeable decrease between the 1998 consumption and 2010 consumption.

c) Graph the poverty profiles for the two years on a single figure. Use different colors for the two years, and define these in a legend. Include the poverty line ( $z$ ) on the graph as well. (paste graph into your group results)

### Poverty Profile in 1998 vs 2010



By examining the poverty profiles visually, you can infer what happened to the  $P_2$  “severity of poverty” index. Explain in 3-4 sentences what happened to the  $P_2$  index and how that can be inferred from the graph.

The P2 index can be used to measure the inequality among the poor. By comparing where the 1998 and 2010 consumption curves intersect the poverty line, we notice that in 2010, the area below the poverty line is much smaller than the area under the poverty line in 1998. This portrays a decrease in the P2 index concluding that there has been less inequality amongst the poor between 1998 and 2010.

### 3. Inequality

- a) Calculate the 20/20 Kuznet's Ratio for each year. (fill in table)

What happened to inequality over time as measured by the 20/20 Kuznet's ratio?

Write 2-3 sentences explaining and interpreting your results.

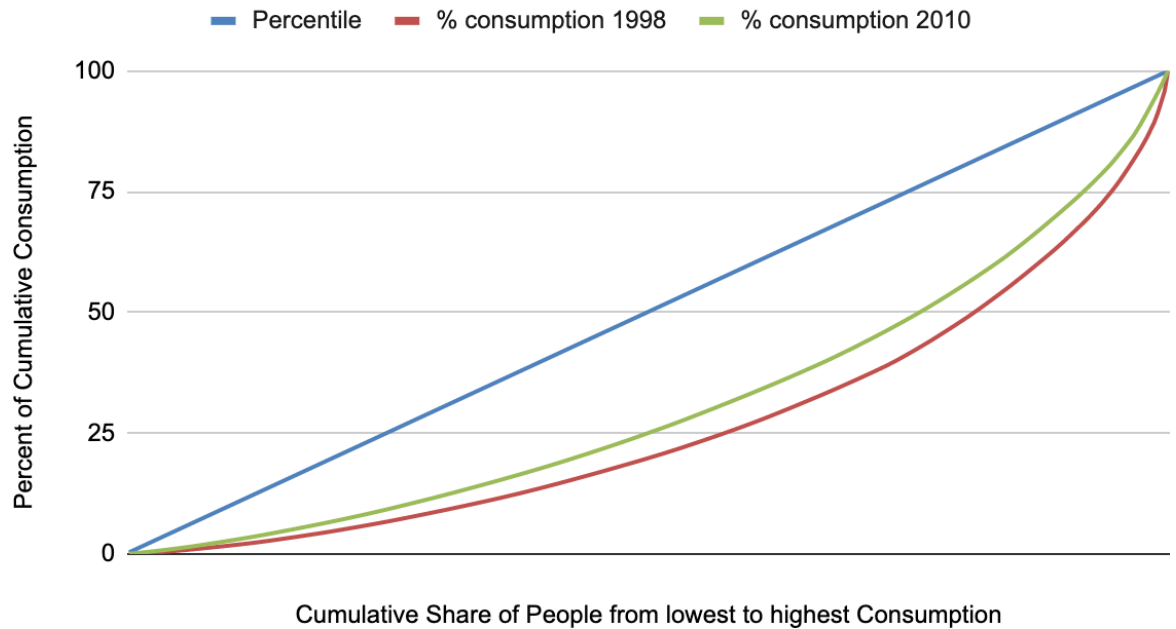
Inequality over time has decreased since the Kuznets ratio has decreased. In 1998 the Kuznets ratio was 11 compared to a Kuznets ratio of 6.67 in 2010. Since the Kuznet's ratio measures inequality based on the consumption of the top 20% over the bottom 20%, this ratio has significantly decreased between 1998 and 2010. A huge Kuznet's ratio indicates a great inequitable distribution between wealth from the wealthy to poor.

- b) Graph the Lorenz curve for each of the two years on a single figure. (paste graph into your group results)

Explain how you can infer the change in the Gini coefficient from the graph above.

Did it get bigger or smaller? Is that more or less **inequality**? Write 2-3 sentences explaining and interpreting your results.

## Lorenz Curve Mexico 1998 vs 2010



The Gini coefficient can be observed by calculating the areas underneath each consumption curve that can further tell us how far each consumption curve deviates away from equality. The Gini coefficient tells us that the consumption in 1998 is more unequal than the consumption seen in 2010 because it deviates further from the 45° line. We can then conclude that the Gini coefficient got smaller when comparing the consumption curves between 1998 and 2010 thus there was more equality seen in 2010.

### 4. Discuss your findings addressing the following questions (2-3 sentences each)

a) Was growth in average per capita consumption associated with poverty reduction?

Yes, growth in average per capita consumption is associated with poverty reduction because as seen in the table, the annual rate of change for the mean per capita consumption between 1998 and 2010 increased by 39% while the headcount ratio decreased by roughly 41%. Since the reduction in poverty can be seen as the P0 index, measuring the share of poverty. As seen in the poverty profile graph, the consumption in 2010 for the least poor person crosses the poverty line earlier than the consumption in 1998 for the least poor person, meaning there are less people under the poverty line in 2010 than 1998. This concludes that the growth in average capita consumption is associated with the poverty reduction.

b) Was growth in per capita consumption associated with a change in inequality?

In order to measure whether growth in per capita consumption is associated with a change in inequality, we need to look at the P2 index because the P2 index satisfies the monotonicity and transfer axioms and most importantly, it measures inequality among the poor. As seen in the poverty profile graph, the P2 index differs from the P1 and P0 index because P2 is sensitive to the distribution of expenditures among the poor meaning it focuses on the poorest individual underneath the poverty line compared to the P1 where it focuses on the least poor person. Comparing the consumption levels between 1998 and 2010, it can be observed that the consumption level in 2010 starts off slightly higher the consumption level seen in 1998. In conclusion, there is an association between growth in per capita consumption and the change in inequality, but only slightly.

c) Choose one result from this exercise (a number, a graph, a fact) that you found interesting. What did you learn from it and/or why is it interesting to you?

I learned the differences between the P0, P1 and P2 indices. I learned that each index measures different variables and distributions. For example, the P0 is a very useful index because it can let us know the change in people under the poverty rate and you can easily compare it between different years. Though, the P1 index doesn't give us a measure of inequality, it helps measure the budget needed to get citizens out of the poverty line. Finally, the P2 index measures inequality of the poor starting from the poorest person under the poverty line. All of these indices aid us in poverty profiles and can give us an idea of whether a country has been improving with positive change or not.

Summary table	1998	2010	Annual Rate of Change
Mean per capita consumption	879.9537757	1442.777355	39%
P0 headcount ratio	0.74	0.44	- 40.5%
P1 depth of poverty	0.3871660356	0.1437624547	XXXXXXXXXX XX
Kuznets ratio 20/20	11.042	6.676605967	XXXXXXXXXX XX

