About the WP (Working Paper) series on the Math Stagnation Nations (& what MMU1 can do about this quickly)
By Dongchan Lee

This paper is a part of the WP (Working Paper) series by Dongchan Lee about the math stagnations in the OECD, all the developed English-speaking or the majority of the Latin American countries.

In the WP series on the math stagnation nation series, for the USA, we observed and analyzed the following in part 1-5 in the USA series:

1) the math stagnations of the OECD countries, including the USA internationally (from the PISA 2000-2015, TIMSS 1995-2015);
2) the math stagnations of the 50 USA states;
3) the math stagnations of at least 85-90% of the big cities (or school districts) that have participated in the TUDA program of NAEP;
4) the math stagnations vs. the Common Core math for the NAEP math dips in 2015. Regardless of the Common Core math, the math stagnations are here to stay.
5) They key summaries of this series and beyond.

NOTE: throughout the math stagnation nations series, we use the yellow arrows for the MMU1 impacts to easy visual comparisons to the traditional quasi-flat growth over 10-20 years.

To boost the math poverty (math poorest 25 percentile) to the math prosperity (math richest 25 percentile)

Lee’s online repository to get updates about the WP series on “Math Stagnation Nations”
http://uslgoglobal.com/wp-math-stagnation/
WP series: Mathematics Stagnation Nation series for the USA (Part 2)
Math (Grade 4 & 8) stagnations of the 50 states of the United States: national, states, and cities & Their past growth compared to the projected MMU1 impacts on math as upheavals
By Dongchan Lee (Date: February 8, 2017, draft 2)

Abstract
In this visual timeline-driven observational report and analysis based on the math grades 4 and 8 of the NAEP (the National Report Card) of the USA 1992-2015 (during 23 years), we demonstrate that the following 7 key points: 1) for the 50 USA states, the math stagnations are real, not something to wisp away as the stagnations kicked in around 2003-2007 to the majority of the USA states for the math grade 4; 3) the math stagnations seemed to kick in a bit of time lag for the math grade 8 some years after the math stagnations kicking in for the math grade 4; 4) we observed this for the entire 50 states against the national (public) average timelines; 5) the math stagnations even for the fastest math growing states out of the 50 states; 6) outside the 50 USA states, DC and DoDEA haven’t had full-blown math stagnations yet, but their growths have slowed down significantly around 2013-2015; 7) all their timeline math growths plotted against the expect MMU1 impacts if implemented in short 3-4 years for each state or 2-3 years for cities or DC, DoDEA. To distinguish the expected impacts of the MMU1 over the traditional USA math education reforms, the yellow arrow was estimated to be roughly equivalent to about NAEP math 40 points. For the math grade 4, we added the timelines of 75 percentile – 25 percentile table and chart in Appendix. For the math grade 8, it is about the same and we shared in other paper by the author. The readers need to observe that the size of the yellow arrows (MMU1 size) are roughly 50-90% larger than the difference between the math best states vs. the math worst states of the grades 4 and 8 by 2011-2015: for the math grade 4, almost twice as large, for the math grade 8, about 50% larger than the gamut between the math best vs. the worst state math averages of the entire 50 USA states.

Author: Dongchan Lee
Email: dongchanlee11@uchicago.edu
Website: www.uslgoglobal.com
Lee’s other Working Papers will be released at .... 😊

Key words: Math stagnations, math crisis, USL, MMU1, math education innovation. Education reforms

This work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.
Table of Contents

About the WP (Working Paper) series on the Math Stagnation Nations (& what MMU1 can do about this quickly) ................................................. 1

Lee’s online repository to get updates about the WP series on “Math Stagnation Nations”
http://uslgoglobal.com/wp-math-stagnation/ ............................................. 1

WP series: Mathematics Stagnation Nation series: for the USA (Part 2) .................. 2

Grade 4 Math timeline .............................................................................. 4

NAEP Grade 8 math .................................................................................. 6

Timeline of the math grade 4’s differences between the 75th percentile – 25th percentile (which is the expected math poverty reduction or math worst half to the math best half equivalently) .... 7

The math grade 4 & 8 timelines of NAEP math (Nation’s Report Card) of the USA till 2015 vs. the expected math growth magnitude if the MMU1 is fully implemented for each state for 3-4 years of reform timelines (indicated by the yellow arrows). .......................... 7

Grade 4 math ............................................................................................. 8

Grade 8 math ............................................................................................. 9

Conclusion ............................................................................................... 11

APPENDIX .................................................................................................. 12

References .................................................................................................. 14

Critical Note: Throughout in this observational report with timelines from the NAEP math scores, all the data were gathered from NAEP’s The National Report Card data. As such, all the data 1990-1996 had “Accommodations Not Permitted” while the data from 2000 on, I used the data with the Accommodations Permitted.

Introduction

In the previous WP papers by the author (Dongchan Lee), we demonstrated that math stagnations in the vast majority of the OECD nations, especially in all English-speaking developed nations as well as most of the PISA-TIMSS participating Latin American countries’ are real and not something that we wish to go away. In the Math Stagnation Nations for the USA Part 1, we demonstrated\(^1\) that according to the 15-20 years of timelines of the PISA and TIMSS math, the USA math saturations have arrived already. In this Part 2, we will focus on the individual timelines of the USA. In the part 3, we will focus on the 20-22 big cities (or districts) of the USA. The overall conclusion is that the USA is officially a Math Stagnation Nation internationally, nationally, in at least 85 plus % of the states, and in most of the big cities of the USA.

\(^1\) You can refer to our Part 1 of the Math Stagnation nation series for the USA part 1.
Grade 4 Math timeline
Showing the math saturations after around 2005-2007

Except the math richer Northern USA states
Primarily for the math-richer Northern USA states
NAEP Grade 8 math

The NAEP (of the USA) Grade 8 math growths of the USA states: 1992-2015 *(Note: the math growth saturations since about 2003-2007)*

Math-ricer northern USA states

The NAEP (of the USA) Grade 8 math growths of the math richer Northern parts of the USA states: 1992-2015 *(Note: the math growth saturations since about 2007)*
Timeline of the math grade 4’s differences between the 75th percentile – 25th percentile (which is the expected math poverty reduction or math worst half to the math best half equivalently)

The source data of the 25th and 75th percentile timelines for the NAEP math grade 4 is given in Appendix.

The math grade 4 & 8 timelines of NAEP math (Nation’s Report Card) of the USA till 2015 vs. the expected math growth magnitude if the MMU1 is fully implemented for each state for 3-4 years of reform timelines (indicated by the yellow arrows)

The readers need to observe that the size of the yellow arrows (MMU1 size) are roughly 50-90% larger than the difference between the math best states vs. the math worst states of the grades 4 and 8 by 2011-2015: for the math grade 4, almost twice as large, for the math grade 8, about 50% larger than the gamut between the math best vs. the worst state math averages of the entire 50 USA states.
In the following, you may notice that the math richer states had saturated a bit earlier than the math poorer states (usually outside the northern states).
Grade 8 math

The NAEP (of the USA) Grade 8 math growths of the USA states: 1992-2015 (Note: the math growth saturations since about 2003-2007)
Grade 8 math for the math richer Northern parts of the USA

The NAEP (of the USA) Grade 8 math growths of the math richer Northern parts of the USA states: 1992-2015 (Note: the math growth saturations since about 2007)

MMU1 expected projections vs. the top 10 most math growth USA states of the 50 USA states

THE TOP 10 MOST MATH GRADE 4 GROWTH STATES OF THE 50 USA STATES FROM 2005 TO 2015 (NOTE THE GROWTH SATURATIONS SINCE 2005-2007)
Conclusion
The conclusion we draw here is that same. In almost all 50 USA states, the math stagnations have been around for the past 5-10-15-20 years or so depending on your focuses, be it PISA, TIMSS, or...
NAEP and its variations. Regardless, the USA is officially a math stagnation nation in almost all scale. As such, the math growths have almost saturated and no longer of rapid growths are expected. With regard to the Common Core math impacts on the math growths in the USA, we will deal with this issue in the part 4 of this WP series for the USA.

APPENDIX

Grade 4 math timeline source data

2016 Mathematics Grades 4 and 8 Assessment: Report Cards: Summary Data Tables for National and State Average Scores and Achievement Level Results

Average scores in NAEP mathematics for fourth-grade public and nonpublic school students, by state/jurisdiction: Various years, 1992–2015

|--------------------|------|------|------|------|------|------|------|------|------|------|------|

Grade 8 math timeline source data

### 2015 Mathematics Grades 4 and 8 Assessment Report Cards: Summary Data Tables for National and State Average Scores and Achievement Level Results

Average scores in NAEP mathematics for eighth-grade public and nonpublic school students, by state/jurisdiction: Various years, 1992-2015

<table>
<thead>
<tr>
<th>State/Jurisdiction</th>
<th>All Students</th>
<th>75th percentile</th>
<th>25th percentile</th>
<th>75th percentile - 10th percentile</th>
<th>25th percentile - 10th percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>District of Columbia</td>
<td>235.398105</td>
<td>278.995702</td>
<td>192.884498</td>
<td>85.513607</td>
<td>63.112205</td>
</tr>
<tr>
<td>Florida</td>
<td>237.309152</td>
<td>275.739502</td>
<td>192.884498</td>
<td>85.513607</td>
<td>63.112205</td>
</tr>
<tr>
<td>Georgia</td>
<td>236.309152</td>
<td>275.739502</td>
<td>192.884498</td>
<td>85.513607</td>
<td>63.112205</td>
</tr>
<tr>
<td>State/Jurisdiction</td>
<td>All Students</td>
<td>75th percentile</td>
<td>25th percentile</td>
<td>75th percentile - 10th percentile</td>
<td>25th percentile - 10th percentile</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>----------------------------------</td>
<td>-----------------------------------</td>
</tr>
</tbody>
</table>

Source: This report was generated using the NAEP State Comparisons Tool. [http://nces.ed.gov/nationsreportcard/statecomparisons/](http://nces.ed.gov/nationsreportcard/statecomparisons/)

The original data from these 25th and 75th percentiles of the NAEP math grade 4

References

International or national or state or city or district level math assessment timelines


NAEP math data from using the report was generated using the NAEP State Comparisons Tool.
http://nces.ed.gov/nationsreportcard/statecomparisons/


Lee, Dongchan. 2017 February. WP series of “Mathematics Stagnation Nations” for the USA, Australia, New Zealand, UK, and Ireland and most Latin American countries (Part 1). “Math stagnation nations of all 5 developed, English-speaking countries according to PISA and TIMSS for the past 15-20 years of the math growth history: what this means for education and economy”

United States: national, regional, and the past growth compared to the projected MMU1 impacts on math growths if fully implemented in 3-4 years” (http://vixra.org/pdf/1702.0101v1.pdf for the version 1)

Lee, Dongchan. 2017 February. WP series of “Mathematics Stagnation Nations” for the USA (Part 3). The collective Math stagnations of the grades 4th and 8th in the big cities (or the School Districts based on TUDA of NAEP) of the USA over the 1 decade: their confirmations, time lags, math poverty shares, and the roles of the Common Core math (http://vixra.org/abs/1702.0101)

Lee, Dongchan. 2017 February. WP series of “Mathematics Stagnation Nations” for the USA (Part 4). Math Education Stagnations in the USA played more roles than the Common Core Math Standards impacts for the stagnations on the NAEP math 2015, but the Math dipping were most likely due to CCSS Math (http://vixra.org/abs/1702.0097)

Lee, Dongchan. 2017 February. WP series of “Mathematics Stagnation Nations” for the USA (Part 5). The quasi-universal math stagnations in almost all developed countries are real and won’t go away. How to transcend them with MMU1 or at least 1/3 of its full version in just 2-4 years


Lee, Dongchan. 2017 February. 8 point executive summary: math stagnations and the Economic impacts of MMU1: To end the math poverty multiple times faster with MMU1 than without it (then to achieve the POST-2015 goals of the UN multiple time faster than without MMU1) (http://rxiv.org/abs/1702.0056)


Some Youtube versions by Dongchan Lee

Lee, Dongchan. 2017. “Math edu crisis in most of the USA states and what MMU1 can do” https://www.youtube.com/watch?v=q1Zw2GnNLXQ

Lee, Dongchan. 2017. “Math EDU crisis in most of the USA states Part 2 and what MMU1 can do” https://www.youtube.com/watch?v=vB7LcMLVWs4

Lee’s online repository to get updates about the WP series on “Math Stagnation Nations” http://uslgoglobal.com/wp-math-stagnation/