



SUMMER 2020 MATH MOBILITY FINAL REPORT

EXECUTIVE SUMMARY

This past summer, The Maryland Umbrella Group (MUG) transitioned its in-person academic program to a completely virtual presence. MUG conducted an eight week math camp for sixty students. More than 60% of the students lived inside the beltway, where Maryland has a concentration of low income households. The students' ages ranged from rising first graders to high school sophomores. Each student met with his or her assigned tutor two hours per week to work on goals and objectives of lesson plans customized using a baseline assessment feature from IXL Learning and interviewing each student and his or her parents to determine grade level of knowledge and areas that needed additional work. During this short timeframe, the students answered almost 113,000 problems! On average, a full grade increase was achieved. This is the first year that MUG was able to provide its academic camp gratis to all participating families.

BACKGROUND/INTRODUCTION

The Maryland Umbrella Group (MUG) is a small but mighty 501(c)3, incorporated in the State of Maryland with its base of operations in Seat Pleasant, MD. Throughout MUG's 12-year history, its programs and services have focused on the most vulnerable in the community: seniors and youth. We've tutored students in numerous academic subjects for grades K-12, presented health and caregiver seminars, and provided health, dental and vision screenings. We offer free consultations to seniors as we assist them to live their best lives in their golden years. We have also provided fresh produce within an acknowledged food desert. From June 2020 – early August 2020, MUG – in concert with the Prince George's County Government, Prince George's County police, and a host of volunteers -- oversaw the distribution of more than 6,000 boxes of fresh produce and dried

goods to the community from the St. Margaret of Scotland Catholic Church campus.

During this COVID pandemic, MUG services have never been more necessary and valuable. As a consequence, The Maryland Umbrella Group has been forced to re-imagine the services offered and re-think delivery. One such offering has been our tutoring services. Typically, tutoring was offered using a one-on-one format in a face-to-face environment all year long. In summers, we offered a different take on summer camp – offering academic enrichment – group instruction focused on English language arts, mathematics, science and arts from 4:00 pm to 7:30 pm, four days per week for five weeks. During a sixth week, MUG partnered with 4H and sent its campers to enjoy a camp experience in the Catoctin Mountains.

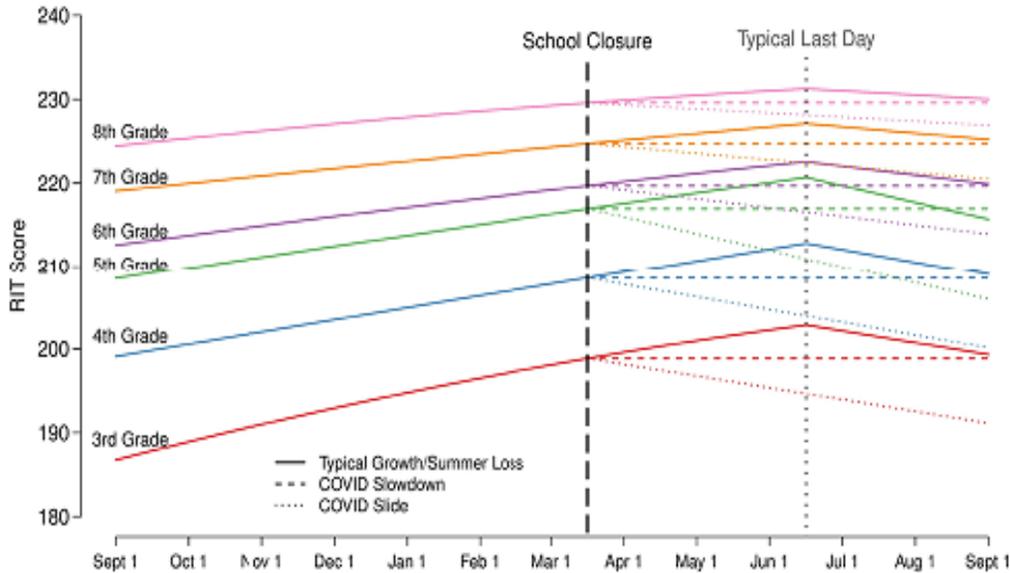
Because of COVID, MUG has adopted a completely virtual delivery of services without jeopardizing quantity or quality of services offered to its young clientele. For our working parents, the virtual delivery saves them transportation time and allows them to multitask while observing sessions.

CONCERN ADDRESSED

A very large concern was the learning gap that many educational researchers, academics and teachers expected as a consequence of schools reverting to a virtual format in March 2020. Every year, pundits anticipate the “Summer Slide” -- a loss of learning that results when children are not in school and forget what they’ve been taught. Similarly in 2020, the prediction was that the “COVID Slide” would result in as much as a one half year to a full year loss for several students, especially those in communities of color and/or those communities deemed low economic.

Northwest Evaluation Association (NWEA) researchers, Dr. Megan Kuhfeld and Dr. Beth Tarasawa, studied the summer slide based on a national sample of students who took the MAP Growth assessments in 2017-2018. They leveraged that research to develop a predictive “Covid Slide” model. The general consensus is that student performance in Math suffers more than Reading during this lag time. See the NWEA Mathematics Forecast in Figure 1.

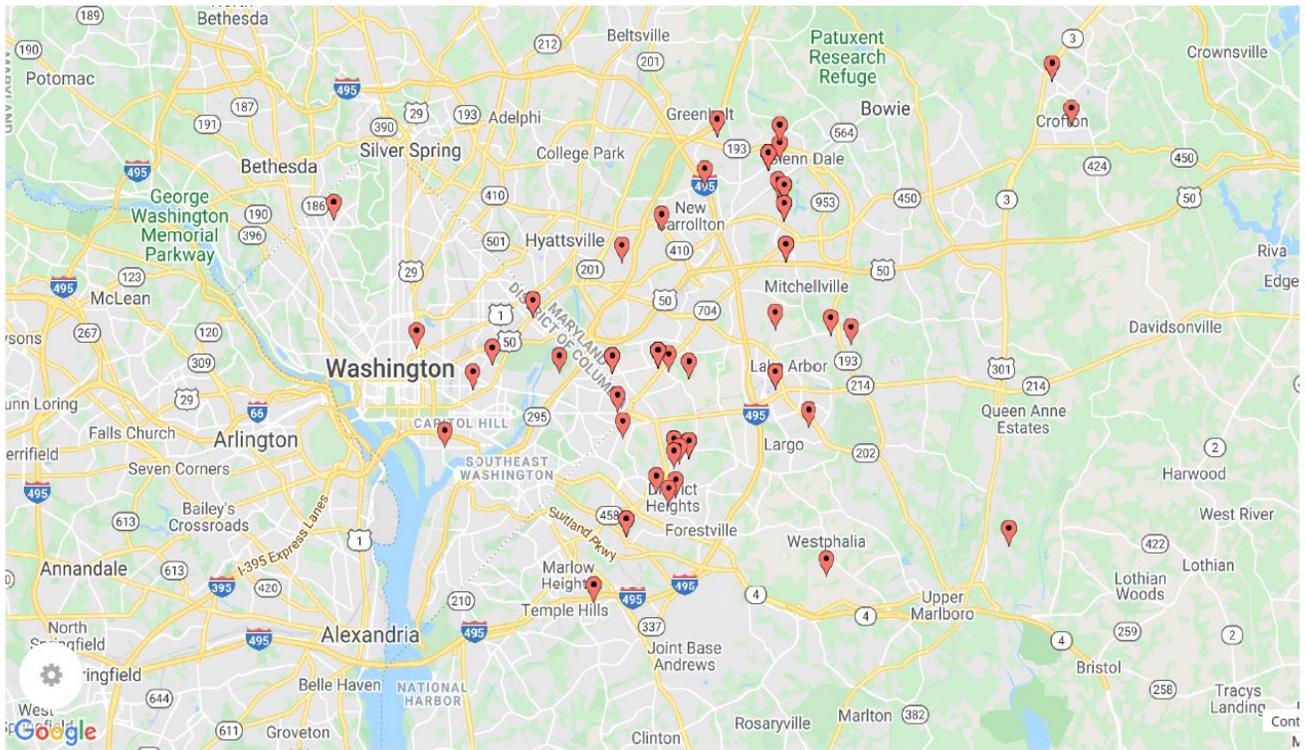
Figure 1. NWEA Mathematics Forecast



This model promised that students in Grades 3 through 7 would lose at least a full grade level of learning and for those in Grade 8 – something a little less than a full grade loss.

SOLUTION: MATH MOBILITY SUMMER 2020

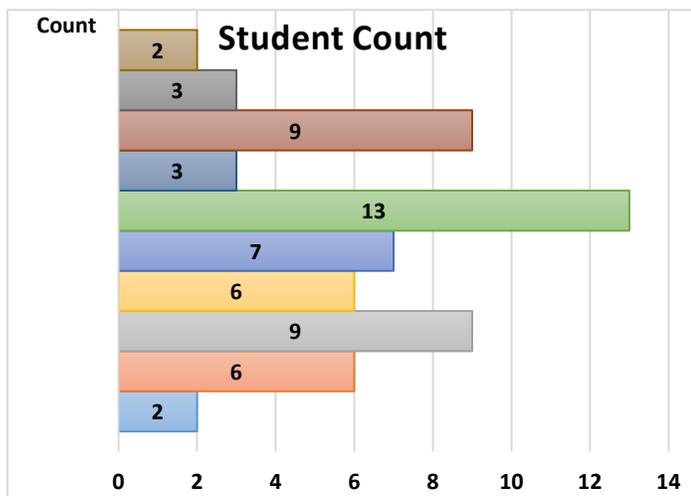
To address the anticipated learning loss in mathematics, MUG transitioned its in-person academic camp to a completely virtual presence in Summer 2020. We serviced 60 students, primarily from Prince George’s County with the majority coming from inside the beltway.



Math Mobility Summer 2020 students' residences

Participants in our virtual Math Mobility Camp ranged from rising first graders to rising high school sophomores.

Grade	Count
1st	2
2nd	6
3rd	9
4th	6
5th	7
6th	13
7th	3
8th	9
9th	3
10th	2
Total:	60



Each student met with his/her tutor two hours per week for eight weeks. In that brief period of time, our Math Mobility students completed approximately 113,000 problems. MUG was able to demonstrate, on average, a full grade increase.

METHODOLOGY

MUG uses IXL, an online resource that provides diagnostic analyses, assistance with lesson planning, tracking of student progress and recommendations that further advancement in topics of study across six elements: Numbers & Operations, Algebra & Algebraic Thinking, Fractions, Geometry, Measurements and Data, and Statistics and Probability. IXL has aligned its curricula across grades K through 12 with not only the most popular texts, but with the more commonly used national assessments (e.g., PSAT, SAT, ACT, NWEA MAP GROWTH, TABE, TERRA NOVA 3) as well as Common Core State Standards.

Each participant accepted in the Summer 2020 Math Mobility Camp took an initial assessment (IA) to determine a baseline for their knowledge across the six identified elements. MUG noted the initial scores. The students continued study of instructional guides provided by IXL and their peer tutors who coached them through more challenging topics. IXL tracked and monitored progress; with each lesson mastered, IXL assigned a new score. Those scores were noted by the educational team and used to craft new lesson plans weekly. The Final Assessment (FA) noted was a compilation of the work completed over the eight weeks and additional assessment work when necessary.

EDUCATIONAL TEAM

Our educational team was comprised of two groups – each headed by a senior educational advisor supervising three senior tutors. The tutors were all rising senior high school students – five in a dual enrollment program from Charles Herbert Flowers High School’s Science and Tech Program and one from a traditional all-girls college preparatory school, Elizabeth Seton High School. In a time when summer employment for many was eliminated due to the pandemic, MUG was able to employ youth in both an academically exciting and rewarding way.

Each tutor was assigned ten students. In the three weeks preceding the start of the Math Mobility Camp, the tutor and the educational advisor met with each student along with parents to make introductions. During this introductory meeting, we endeavored to make clear MUG expectations, to begin relationship building with the student and to garner parent concerns and goals for their child.

The tutor then began to craft the first lesson plans based on both notes from the introductory meeting, the IXL initial assessments and educational advisor input. The educational advisors hosted a two-hour initial Zoom orientation for the tutors, staff and alternate tutors who would serve as substitutes if a tutor could not meet during the assigned time. Thereafter, educational advisors met with each tutor to review lessons plans and identify and cure learning challenges weekly and as needed. MUG staff also monitored daily student/tutor interaction through Zoom and IXL Live. There was a final team meeting prior to final reports being issued to parents.

COMMUNICATIONS WITH PARENTS

All participating parents received a report of the initial assessment and participated in the introductory meeting that included the child, assigned tutor and educational advisor. Additionally, the parents were tendered written feedback after each tutoring session, as well as a mid-session report and a final report with a final assessment.

In total, there were approximately 1,140 written reports and/or assessments tendered to parents. Ad hoc communications included e-mail and phone calls to apprise parents of camper progress, challenges, attendance and behaviors – distracting and laudable.

Parents also had the ability to shadow any session conducted with their child. Similarly, parents were encouraged to check their learner's progress in real time at the IXL portal.

The most effective and useful communication is two-way. Parents, family members, guardians and students were clear about the efficacy of the Math Mobility Summer 2020 program. We've listed some of their comments:

I want to thank you for all you have done in assisting us with setting up Ava's tutoring this summer. She has really shown improvement. I also want to take the time to truly say how pleased and impressed we have been with Emerson as her

tutor. He is so kind, patient, and he knows how to engage her in a subject that she has avoided for years. He is a gem and I know that he is destined for an amazing future in whatever he pursues. I am so happy we found this program. With that being said, I wanted to inquire about retaining Emerson as a tutor for her during the school year. I am happy to pay for his services. Please let me know if this is possible.

Thanks for everything!

S.Gage-Wright
August 20, 2020

The MUG Summer Math Program was one of the best decisions I have made to support my children's academic development. My 2nd & 3rd grade boys made a great connection with their respective tutors. The tutors were professional, respectful and knew how to build confidence in my children while giving them the push they needed to excel to up to two grade levels beyond where they were. As a Mom of four children, I can't do it all. I want the best for my family as we all do. I would highly recommend this tutoring program to any parent of a child who needs extra support or for those who need to be challenged to the next level.

Sharon VJ
August 2020

I just wanted to say thank you!!! My sister is doing much better with math and this is her first time getting straight A's in school. She also wanted to say thank you for helping her. ☺

B. Garcia
October 9, 2020

Please tell Arianne we both say hello and THANK YOU!!! His math teachers raved about his work and I know she played a major role in getting him ready and challenging him so we definitely appreciate all her efforts and miss her.

J. Williams and J. Blalock
October 14, 2020

EVIDENTIARY FINDINGS

IXL scores the student in six mathematical content areas: Numbers & Operations, Algebra & Algebraic Thinking, Fractions, Geometry, Measurements

and Data, and Statistics & Probability. The average of these six scores comprises the overall assessment score assigned. All 60 students were assessed before the start of the Math Mobility Summer Program. This initial assessment (IA) was captured in the data collection. A final assessment (FA) score was collected at program close on or about August 22, 2020 and those scores were added to the data set. The difference in the scores (Δ) connotes improvement in the learner's knowledge and comprehension of content area.

To understand the IXL scoring methodology, keep in mind some basic tenets:

1. Scores in the 100's indicate the student's comprehension at the first grade level; scores in the 200's indicate a 2nd grade comprehension; scores in the 300's indicate a 3rd grade comprehension and so on.
2. An improvement score of 100 points demonstrates a full grade level improvement. An improvement score of 200 points demonstrates an improvement of two full grade levels.
3. Scores on the hundred mark but less than the hundred+50 would indicate a basic understanding at the grade level indicated. Anything above that mark indicates a more comprehensive grasp of the knowledge at the grade level indicated.

MUG's data shows that the average increase for the whole group is 100 points – a full grade increase. We are 95% confident that most students, using the MUG methodology, will show an improvement range between 83 points and 118 points, in 8 weeks of concentrated effort. On average, this group of Math Mobility students worked in IXL about 21 hours, showed progress in 50 mathematical skills and completed 1,882 problems over the 8-week period. This means an investment of 3 hours of work and completing 292 problems per week resulted in the mastery of 6 math skills per week. (MUG data, sans unique student and parent identifiers, will be made available upon request.)

<i>Overall Improvement</i>	
Mean	100.5833333
Standard Error	8.723702748
Median	80
Mode	75
Standard Deviation	67.57351092
Sample Variance	4566.179379
Kurtosis	0.040295753
Skewness	0.735370907
Range	285
Minimum	-20
Maximum	265
Sum	6035
Count	60
Confidence Level (95.0%)	17.45608888

To be more fair and accurately read the data, the students were divided into three subgroups: grades 1-3, grades 4-6, and grades 7-10.

<i>Grades 1-3 -- Overall Improvement</i>	
Mean	115.294118
Standard Error	17.0933348
Median	90
Mode	70
Standard Deviation	70.4776247
Sample Variance	4967.09559
Kurtosis	-0.00867999
Skewness	0.78907951
Range	255
Minimum	10
Maximum	265
Sum	1960
Count	17
Confidence Level (95.0%)	36.236251

The average improvement for students in grades 1-3 is 115 points – more than a full grade increase. At this grade interval, we would expect most students to improve by a minimum of 79 points and as much as 151 points. The youngest of our learners worked 22 hours, mastered 60 skills and answered more than 2,100 questions. There were 17 students in this subgroup.

Improvement Overall Grades 4-6

Mean	80.41666667
Standard Error	10.96732906
Median	77.5
Mode	75
Standard Deviation	53.72872009
Sample Variance	2886.775362
Kurtosis	0.626462614
Skewness	0.378355386
Range	230
Minimum	-20
Maximum	210
Sum	1930
Count	24
Confidence Level (95.0%)	22.68764873

The average improvement for students in grades 4-6 is 80 points -- a little more than $\frac{3}{4}$ of a grade increase. At this grade interval, we expect that most students would increase by at least $\frac{1}{2}$ grade to as much as a full grade improvement. Data shows that this group of 24 students invested 23 hours in IXL, mastered an average of 53 skills and completed more than 2,100 problems.

Overall Improvement Grades 7-10

Mean	112.8947368
Standard Error	17.70583126
Median	80
Mode	75
Standard Deviation	77.17792915
Sample Variance	5956.432749
Kurtosis	-0.839781983
Skewness	0.602515811
Range	240
Minimum	15
Maximum	255
Sum	2145
Count	19
Confidence Level (95.0%)	37.19857113

The learners in this subgroup, Grades 7-10, also average more than a full grade improvement with a mean score of 113. Again, the expectation is that most students would improve by at least $\frac{3}{4}$ of a grade to as much as 1 $\frac{1}{2}$ grade increase. These older learners invested 17 hours of time, mastered 34 skills and completed over 1,300 problems each.

CONCLUSION

The Maryland Umbrella Group lays claim to a bold, if not novel, claim: **with a little bit of time, focus and some coaching all of our students are able to overcome the traditional learning lags from the “summer slide” and the**

expected “COVID slide.” Our Math Mobility Summer 2020 Program **provided a necessary bridge** from the time school was dismissed for summer break until the next school year. Additionally, MUG believes that parents, teachers and students stumbled earlier trying to find a good rhythm with virtual learning. Fortunately, MUG was able to **deliver the required supports** so that students would be ready for a new school year -- even a virtual school year. Virtual delivery of training was convenient for students, tutors and parents.

ACKNOWLEDGEMENTS

Math Mobility Summer 2020 was offered free to the students. The Maryland Umbrella Group would like to thank En Solutions Inc. who donated \$10,000 to the effort. MUG used funding provided by the Maryland Department of Commerce and Payroll Protection to continue to employ tutors during the COVID 19 pandemic. The Math Mobility 8-week model for improvement can be offered at cost of \$500 per child.

Submitted October 18, 2020



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