Asphalt Green

WAVE MAKERS

TRANSFORMING NEW YORK CITY INTO A CITY OF SWIMMERS

UNIVERSAL SWIM REPORT

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Council Member Julie Menin
Council Member Shekar Krishnan

FOREWORD

New York City is a place defined by its coastlines and waterfronts. Yet far too many children experience swimming as a risk rather than an opportunity. Inequitable access to swim instruction has left countless families without this essential skill and the safety, confidence, and lifelong benefits that come with it. Wave Makers was born from a recognition that this reality must change.

In 2023, New York City Council Members Julie Menin and Shekar Krishnan advanced a historic legislative agenda to address water safety at its root. **At the center of that package was a clear and ambitious mandate: that New York City provide free swim instruction and water safety education to every public school second grader—more than 70,000 children annually—through the Department of Parks and Recreation**.

This effort was not limited to instruction alone. The Council's broader legislation also required the City to:

- Expand and assess public pool infrastructure, particularly in underserved communities
- Open underutilized public assets, including Department of Education pools
- Improve transparency and accountability around lifeguard staffing and safety conditions across the system

Together, these measures reframed swimming from recreational amenity to core civic infrastructure and a matter of public health, safety, and equity.

While the vision was clear, the pathway to implementation was not. Despite the passage of this legislation, the funding required to operationalize a citywide program was not secured. Faced with the risk that an unfunded mandate would stall progress, Council Members Menin and Krishnan moved decisively to mobilize action through a groundbreaking public-private partnership. They turned to the Gray Foundation and Asphalt Green to help bring their vision to life.

At a pivotal moment, the Gray Foundation committed $1.5 million in philanthropic funding to launch Wave Makers as a proof-of-concept pilot, providing the resources necessary to test, refine, and demonstrate a scalable model for universal swim instruction in New York City. Asphalt Green was then entrusted with transforming this vision into a functioning framework.

We did so not simply as an operator, but as a convener and architect of a new citywide coalition—bringing together public agencies, nonprofit providers, and private partners to deliver coordinated, high-quality instruction across the five boroughs. We served as the fiscal conduit, program manager, and data backbone, building the infrastructure required to move from fragmented programming to a unified, outcomes-driven model.

Through this coordinated effort, Wave Makers activated pools across all five boroughs, including underutilized public assets. Our coalition of program providers delivered tens of thousands of individual lessons to nearly 3,000 students in its initial phase, significantly exceeding early targets and demonstrating both demand and feasibility at scale. More importantly, the pilot proved something fundamental: a system long defined by fragmentation across agencies, facilities, and funding streams can be transformed into a coordinated network capable of delivering equitable access at scale.

This white paper captures that transformation.

What follows is not simply a documentation of outcomes from the Wave Makers pilot, but the deeper structural insights required to move from proof-of-concept to universal implementation: how to activate underutilized infrastructure, how to design effective instructional models, how to coordinate across agencies, and how to build a sustainable funding and governance framework.

The findings are clear: The model works and the path to scale is achievable.

The most important lesson of Wave Makers, however, is not operational. This initiative represents what is possible when government leadership, philanthropic investment, and nonprofit execution align around a shared goal. The City Council established the mandate. The Gray Foundation provided catalytic capital. Asphalt Green and its partners built and delivered the system. Together, we have moved from vision to validation.

I would like to personally thank Speaker Julie Menin and Council Member Shekar Krishnan for their leadership and advocacy, and the Gray Foundation—particularly Mindy and Jon Gray—for their vision and galvanizing investment that made this work possible. I am equally grateful to our inaugural partner organizations, including Commonpoint Queens, New Settlement Community Center, NYC Parks & Recreation, and the YMCA of Greater New York, whose collaboration and commitment brought this model to life across the five boroughs. And I want to especially recognize the dedicated staff of Asphalt Green, whose expertise, persistence, and belief in this mission turned an ambitious idea into an innovative and impactful initiative.

The opportunity now is to move from validation to permanent adoption—to ensure that safe swimming is not a luxury, but a guarantee for every child in New York City.

To achieve that goal, the City must take the next step and fully fund the pathway to scale. The Wave Makers pilot has established the feasibility and the cost structure of high-quality, outcomes-driven, citywide swim instruction. We now know what it takes: sustained access to facilities, coordinated transportation, a trained instructional workforce, and a standardized, data-informed model delivered consistently across the five boroughs. What remains is the public investment required to activate a network of providers that can operationalize this system citywide.

With an annual commitment on the order of $45 million, the City can move from a successful pilot to a permanent, universal program embedded within the fabric of public education. This is not simply a programmatic expansion. It is an investment in public safety, health equity, and long-term economic resilience. With leadership and funding aligned, New York City can become the first truly universal "city of swimmers," ensuring that every child, regardless of background or zip code, has the skills to be safe in the water and the opportunity to thrive because of it.

Wave Makers is not the end of this work. It is the beginning of a new standard.

Jordan Brackett
Chief Executive Officer
Asphalt Green

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TRANSFORMING NEW YORK CITY
INTO A CITY OF SWIMMERS

I.

EXECUTIVE SUMMARY

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I. EXECUTIVE SUMMARY

TRANSFORMING NEW YORK CITY INTO A CITY OF SWIMMERS

THE CRISIS

New York is a city of islands, yet water remains a source of systemic inequality. Over 25% of New York City children cannot swim, and the risk is not distributed equally. Black children ages 10–14 drown in swimming pools at rates **7.6 times higher** than their white peers (CDC, 2024). This is not an accident of geography; it is the legacy of "pool deserts" and generational exclusion. As a city surrounded by water, universal water safety is no longer a luxury but a critical public health necessity and a moral imperative for civic equity.

THE WAVE MAKERS SOLUTION

The Wave Makers pilot was launched as a functional proof-of-concept to break this cycle. In its inaugural year, the initiative activated 15 pools across all five boroughs, providing free, high-quality instruction to **2,997 students**. By mobilizing underutilized assets (including CUNY and DOE facilities) and leveraging a collaborative network of non-profit providers, the pilot achieved a low-cost delivery model ($17 per student/lesson) that outperformed traditional, disjointed efforts.

To scale this success citywide, a total approximate investment of $40M would provide a universal 25-lesson curriculum to all 70,000 New York City second graders. This amounts to a comprehensive investment of $570 per student (or $22.80 per lesson), covering all instructional costs, supplemental transportation, and essential gear.

DATA-DRIVEN INSIGHTS

Through advanced regression modeling, the pilot isolated the specific "levers" that dictate whether a child moves from at-risk to "Water Steady," the ability to tread water and swim 20+ yards for self-rescue.

THE DOSAGE "SWEET SPOT"

While foundational safety can be jumpstarted quickly within 10 sessions, the highest probability of mastery occurs between 25 and 30 total sessions.

THE 1:4 EFFICIENCY CLIFF

Class sizes are a primary predictor of success. Students in a 1:4 ratio are 68% more likely to achieve "Water Steady" status than those in larger groups.

THE "GAP" PENALTY

Consistency is as vital as hours. Every 10 days of interruption between lessons predicts a 14% decrease in learning efficiency.

IMPLEMENTATION CHALLENGES

The pilot exposed structural bottlenecks that need to be addressed to reach universality:

INFRASTRUCTURE SCARCITY

"Pool deserts" persist in high-need neighborhoods, and many existing school pools remain offline due to maintenance backlogs.

WORKFORCE SHORTAGES

The chronic lack of lifeguards and instructors remains the primary constraint on program expansion. By institutionalizing universal swim instruction, the city creates a natural pipeline for the municipal workforce.

OPERATIONAL & LOGISTICAL FRICTION

Beyond unreliable busing, partners face significant administrative hurdles in school recruitment and schedule coordination. These "off-pool" logistics often drain staff capacity and can cut into valuable instructional time when transportation delays occur.

A BLUEPRINT FOR ACTION

With the proof-of-concept established, the City has the opportunity to move beyond 'pilot-scale' thinking and embrace a **Whole-of-Government approach** to aquatic safety.

01 **Formalize Citywide Governance.** Transition the program from a nonprofit-led pilot to a formal City-governed initiative. Placing oversight within a dedicated City agency ensures a responsible fiscal conduit that stays focused on drowning prevention and equitable swim access.

02 **Mandate a "Wave Makers Standard."** Tie public funding to evidence-based metrics, prioritizing the 10 high-impact or 25–30 session dosage and 1:4 ratios.

03 **Activate "Offline" Assets.** Use the digital "Pool Atlas" to prioritize capital repairs for shuttered DOE and CUNY pools in high-need districts.

04 **Close the Equity Gap.** Deploy targeted instructional support and culturally competent staffing to address the persistent gap in skill acquisition for Black and Indigenous male students.

CONCLUSION

New York City stands at a critical intersection of climate resilience and public safety. By institutionalizing the Wave Makers model, the City can transform our pools from sites of historic exclusion into engines of health, confidence, and career opportunity.
The time to move from proving the model to scaling the solution is now.

II.

BACKGROUND & CONTEXT

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A. WHY UNIVERSAL SWIM MATTERS

As a densely populated coastal city facing more frequent heat events, New York must bridge the gap between water as a hazard and water as a resource. Swimming is a life-saving competency, a pillar of long-term health and recreation, and a foundational workforce skill that supports the city's lifeguard and maritime sectors. The ability to swim is a life-saving competency that has for too long been treated as a luxury afforded only to those with geographic and economic privilege. Over a quarter of New York City children cannot swim. Investing in swim equity isn't just a climate response; it is a commitment to public safety, community health, and the economic empowerment of the next generation of New Yorkers.

This systemic inequity has allowed drowning to persist as a silent and swift killer, exacting a staggering toll on both human life and the municipal economy. Drowning is expensive, costing the U.S. economy over an estimated $50 billion in medical charges and lost productivity.[1] In New York, the economic cost of a single fatal drowning is estimated at over **$11 million**. The Wave Makers pilot represents a high-return investment in preventative safety, making a case for a universal second-grade mandate that would allow the city to move beyond disjointed, incremental improvements and institutionalize child safety, social-emotional growth, and long-term equity.

Drowning as a Public Health and Equity Issue

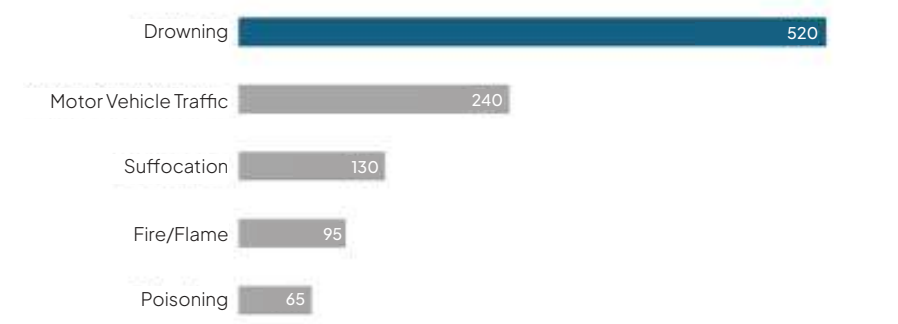
Drowning remains a silent but preventable killer, serving as the leading cause of unintentional death for children aged 1–4 and the second leading cause for children aged 5–14 nationwide (behind motor vehicle crashes).[2] It claims over 4,000 lives annually in the U.S., with recent data from 2019–2022 showing a concerning increase in fatalities among children.[3] This crisis demands a public health response commensurate with its devastating impact (Figure 1).

Today's disparities in water safety are not accidental; they are the result of long-standing barriers that

Figure 1. Leading causes of unintentional death for children, 2019–2023.

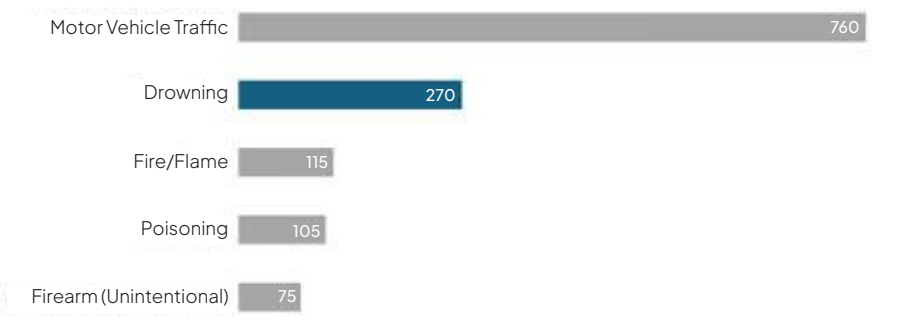
Leading Causes of Unintentional Death for Children Aged 1–4

AVG Annual Deaths, 2019–2023, CDC WISQARS & National Vital Statistics System



Leading Causes of Unintentional Death for Children Aged 5–14

AVG Annual Deaths, 2019–2023, CDC WISQARS & National Vital Statistics System



have historically limited access to swimming facilities for certain communities. While just over 1 in 4 New York City children cannot swim the risk is not distributed equally. According to the Centers for Disease Control and Prevention (CDC) data, drowning death rates for Black people under age 30 are **1.5 times higher** than for white people in the same age group.[4] The disparity is especially alarming among school-age children: **Black children ages 5–9 drown at rates 2.6 times higher** than white children, and **Black children ages 10–14 drown at rates 3.6 times higher** than their white peers. In swimming pools specifically, Black children ages 10–14 drown at rates **7.6 times higher** than white children.[5] Present-day data reflects this legacy of exclusion in formal instruction, showing that 63% of Black adults and 72% of Hispanic adults have never taken a formal swimming lesson, compared to 48% of white adults.[6] The absence of swimming and water safety skills exacerbates systemic inequities by limiting access to sports, recreation, and water-related careers; a barrier that universal swim programs directly address.

Swimming disparities are also present across socioeconomic and generational factors. CDC data indicates a direct correlation between socioeconomic status and drowning risk, revealing that individuals in highly vulnerable counties face nearly 1.6 times the fatality rate of those in more stable areas[7]. These disparities are largely driven by systemic factors such as poverty, unemployment, and limited educational attainment, which often preclude access to life-saving water safety education. Because swimming is a skill frequently passed down from parent to child, limited historical access for previous generations has created a compounding cycle of risk. Many families in affected communities report having no personal experience with formal swim instruction, which reduces the likelihood that they will seek out and enroll their children in current programs. This generational lack of experience means that families are less likely to enroll their children in existing programs, effectively perpetuating a cycle of risk that individual effort alone cannot break. Addressing these inequities requires a systemic shift that treats swim instruction as a public right rather than a private luxury, ensuring that the barriers of the past do not continue to define the safety of New York City's children today.

The Cognitive and Social-Emotional Returns of Water Safety

Early aquatic instruction does more than protect children from physical harm. Swimming training serves as a measurable catalyst for developmental and academic growth; recent meta-analyses suggest a positive correlation between early motor skill acquisition (particularly in aquatic environments) and cognitive acceleration.[8] Research led by the Griffith Institute for Educational Research, for instance, followed over 7,000 children to evaluate the long-term impact of swimming on early childhood milestones. The study found that children who participate in formal swimming are often months ahead of their non-swimming peers in mathematical reasoning, verbal expression, and literacy.[9] This "developmental edge" likely stems from the complex bilateral movements required to swim, which stimulate cross-hemispheric brain activity during a critical window of neuroplasticity.

The benefits are equally pronounced in a child's social-emotional maturation. Learning to swim is a unique pedagogical experience because it requires a student to manage physical fear while simultaneously mastering technical discipline. These structured lessons help build self-regulation and resilience as children learn to control their breathing and movement in an unfamiliar environment.[10] These are transferable skills. Studies of youth sports participation indicate that this early mastery of "challenge-based" environments correlates with higher levels of self-confidence and better focus in a traditional classroom setting.[11][12][13] By providing universal access to these experiences, the city moves beyond simple safety instruction. We are instead equipping students with the foundational cognitive and emotional tools necessary for long-term success.

Economic and Workforce Implications

A universal swim program offers a practical response to the current workforce crisis in the aquatics industry. Across the United States, a chronic lifeguard shortage has been affecting roughly one-third of public pools.[14] New York City continues to navigate the yearslong lifeguard shortage that, while showing signs of recovery, still requires adjustments to facility hours and beach coverage. New York

City's lifeguard staffing grew its corps 27% to reach 1,080 guards in 2025, up from a low of 850 in 2023. This revitalization is the result of aggressive recruitment, expanded training, and a landmark 2024 union agreement (the first in 40 years), which modernized operations and paved the way for improved hiring. While this growth and the addition of 100 new Parks Enforcement Patrol positions has bolstered safety citywide, the long-term solution remains a challenge of supply rather than just recruitment.[15]

Stabilizing a lifeguard pipeline requires a workforce development strategy that begins with a second-grade swim mandate. Current efforts such as relaxing swim-test standards and offering pre-test practice highlight critical gaps: many young New Yorkers lack the foundational skills to meet professional prerequisites.[16] [17] [18] By institutionalizing instruction early, the city can transition from reactive adjustments to a sustainable pipeline of local talent. Given that a single fatal drowning in New York carries an estimated economic cost of $11.38 million, universal aquatic education is a high-return investment that transforms a potential tragedy into a viable $22-per-hour career path, ensuring our pools and beaches remain fully operational for the next generation.

B. WHY EARLY INTERVENTION MATTERS

The Wave Makers pilot specifically targets second-grade students because this window represents a unique developmental and logistical "sweet spot" for achieving universal water competency. Deciding to intervene at this stage is a strategic choice, grounded in both pedagogical research and a commitment to dismantling generational barriers to water access.

The Optimal Window for Skill Acquisition

By age seven or eight, children reach a critical intersection of cognitive and motor development. Academic research suggests that while younger children can gain water familiarity, those in the second-grade age group possess the mature coordination required to master complex swimming strokes more efficiently than their younger peers. At this stage, students can reliably follow multi-step safety instructions and translate them into the physical movements necessary for self-rescue. This developmental readiness ensures that the investment in instruction leads to rapid, measurable, and lasting skill retention.[19]

A Proven Layer of Protection

Early intervention is a primary defense against tragedy. A landmark study published in the *Archives of Pediatrics and Adolescent Medicine* found that formal swimming lessons are associated with an **88% reduction in drowning risk** among young children.[20] By ensuring every child gains these skills by the end of second grade, the city provides a permanent layer of protection that lasts a lifetime. The earlier a child achieves this "water literacy," the sooner they are protected from the risks associated with unsupervised water exposure.

Dismantling Barriers through School-Day Instruction

Institutionalizing the program within the standard school day is the most effective way to ensure equitable access. For many New York City families, the "cost" of swim lessons is not just the enrollment fee; it is the secondary burden of transportation and the loss of working hours for parents.

Removing Logistical Friction. By integrating lessons into the curriculum, the program ensures that participation is not a "parental elective" but a standard part of a child's education.

Equalizing the Starting Line. This model guarantees that every student, regardless of their economic status or their parents' own history with the water, receives the same high-quality instruction.

A Foundation for Lifelong Engagement

Mastering the water in second grade does more than prevent accidents; it opens doors to future opportunities. Students who are water-competent are more likely to pursue recreational activities,

competitive sports, and even specialized career paths in the maritime or civil service sectors. By establishing this foundation early, the city supports long-term equity, transforming the water from a place of historic exclusion into a world of lifelong health and professional possibility.

Target Population Spotlight: Why 2nd Grade is the Optimal Window

The decision to target 2nd-grade students (ages 7–8) for a universal swim program is a strategic policy choice based on child development, educational timing, and implementation feasibility (Table 1).

Table 1. Target Population Spotlight: Why 2nd Grade is the Optimal Window

CATEGORY	RATIONALE FOR TARGETING 2ND GRADE (AGES 7-8)
Equity & Universal Access	The school-based, universal model at this age effectively bypasses the three primary barriers to access: cost, transportation, and parental scheduling. By offering it during the school day, the program guarantees that every student—especially those disproportionately affected by drowning—receives this life-saving skill.
Developmental Readiness	Children in this age group possess the optimal cognitive and motor development to grasp complex safety concepts, follow multi-step instructions, and execute proper swimming strokes (like freestyle and backstroke) efficiently. While water acclimation can start earlier, this is the prime window for acquiring formal swim competency.
Maximized Safety Impact	Formal swimming lessons significantly reduce the likelihood of childhood drowning by 88%. By institutionalizing lessons at age 7, we provide this layer of protection before children enter the higher-risk period of unsupervised recreational water exposure (lakes, beaches, pools) that often begins in late childhood and adolescence.
Educational Timing & Logistics	In New York City Public Schools, state-mandated standardized testing begins in 3rd grade for English Language Arts (ELA) and Math. Targeting 2nd grade ensures the program is integrated into the curriculum during a period with fewer academic pressures and scheduling conflicts, maximizing class time and reducing teacher resistance to out-of-classroom activities.
Foundational Skill Building	Acquiring water competency in 2nd grade creates a foundation for lifelong health and economic pathways. It provides students with the required foundational skills for summer aquatic recreation, participation in high school sports like water polo, and the ability to train for crucial jobs like lifeguarding and aquatics instruction.

C. NYC-SPECIFIC BARRIERS TO ACCESS

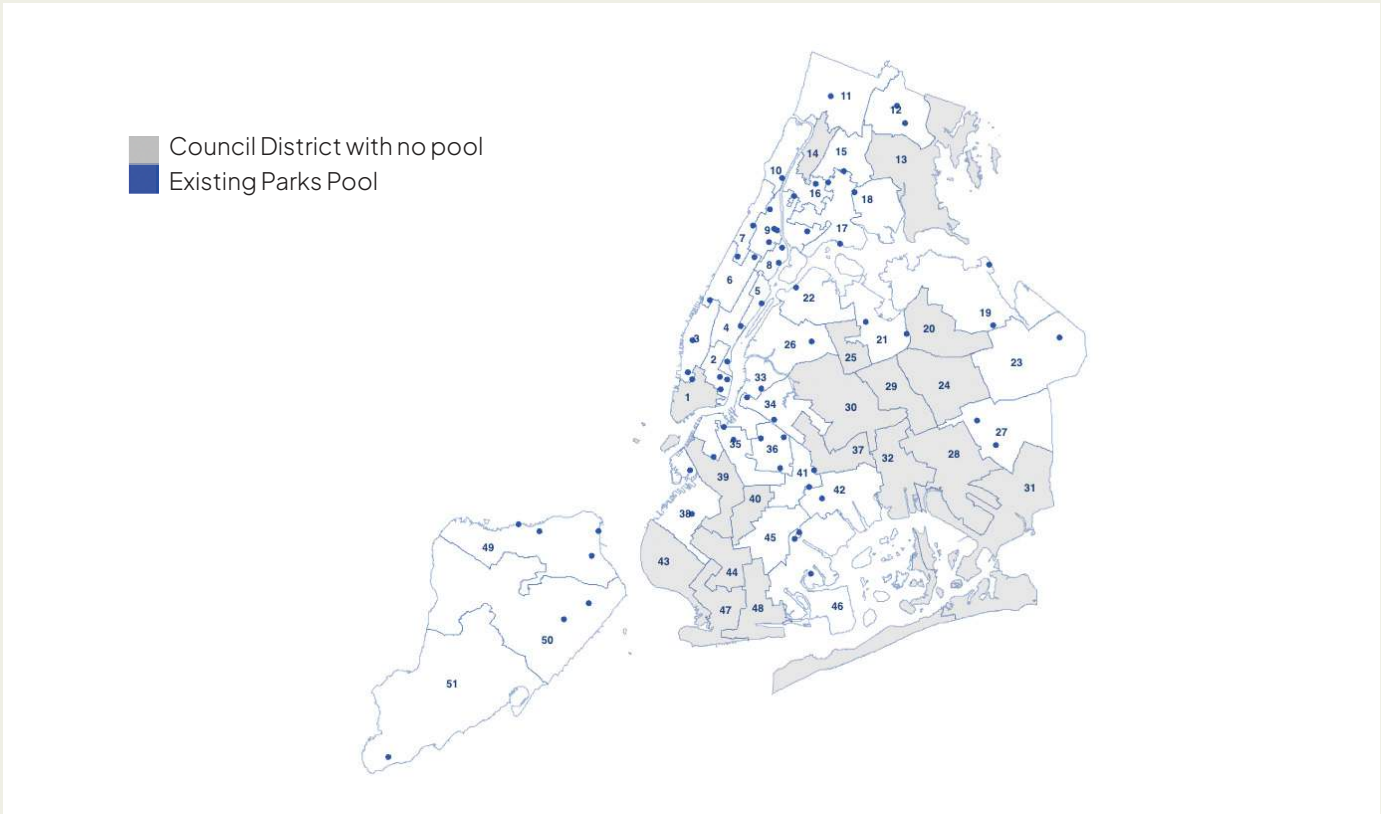
While the demand for water safety is universal, New York City's ability to deliver it is currently hindered by an aging and unevenly distributed infrastructure. The city's aquatic landscape is defined by a striking paradox: we are a city of islands, yet we possess one of the lowest per-capita ratios of public pools in the country. New York provides only **0.77 pools per 100,000 residents**, a figure that falls well behind cities like Chicago (2.78) and Philadelphia (3.11).[21]

This scarcity is not just a matter of convenience; it is a critical health concern. As climate change drives more frequent and "dangerously hot" days, pools have become essential cooling infrastructure in a city with the highest reported Urban Heat Island Index in the nation.[22] In low-income neighborhoods where private cooling options are limited, residents rely on public pools as primary refuges from the heat. When these facilities are missing, the lack of **thermal equity** places a dual burden on families who must choose between enduring extreme temperatures or navigating the risks of unsupervised water.

The Geography of "Pool Deserts" and Logistical Hurdles

The most significant barrier to universal competency is the physical distance between students and year-round facilities. The New York City Council's data team reported on the reality of New York City's "pool deserts," with **68% of residents** lacking nearby access to a public pool. The disparity is most glaring when comparing boroughs; while 65% of Manhattan residents can walk to a pool in 15 minutes or less, only **12% of Queens residents** have the same access. For a second-grade student in an underserved district, the "barrier to entry" often includes a multi-leg transit journey that is both cost-prohibitive and time-intensive for working parents (Figure 2).[23]

Figure 2: New York City pool deserts by city council district, 2023



New York City Council Data Team, 2023, https://council.nyc.gov/data/pools/

Offline and Underutilized Assets.
The instructional crisis is deepened by the seasonal nature of municipal assets. Most are outdoor facilities, leaving the city with a profound lack of the year-round indoor space required for consistent, school-year skill retention. Many potential training sites remain offline due to maintenance needs, particularly within public housing developments and aging school buildings. There are only 50 pools located within the city's 1,700 public school buildings. 19 of these are closed for repairs.[24] However, even with these challenges, the city does have enough indoor infrastructure to make significant strides toward universal program implementation.*

Operational Fragmentation and Resource Activation

A primary obstacle to a universal mandate is not a lack of interest, but a lack of coordination. Currently, New York's public aquatic assets are managed across a disconnected landscape of agencies, including the Department of Parks and Recreation, the Department of Education (DOE), and various housing and university systems. This "siloed" approach means that a pool located within a public school may sit empty during the hours it is most needed by the community, or a municipal facility may lack the transportation links necessary to bring in students from nearby "pool deserts". Without a unified operational strategy, the city's ability to maximize its existing footprint remains stunted.

Instead of a centralized system, the burden of coordination often falls on individual schools or non-profit partners. This fragmentation results in several logistical failures:

Underutilized Capacity.
Across 1,700 public school buildings, the city possesses only 31 functional pools, with 19 remaining offline due to lack of renovation resources and bureaucratic delays in maintenance and repair.

Transportation Hurdles.
There is no standardized citywide protocol for busing students to aquatic facilities, leaving many DOE principals to navigate complex chartering processes on their own.

Disjointed Scheduling.
Agency-specific priorities often conflict, preventing the "strategic activation" of CUNY or private-sector pools for public school instruction during the academic day.

To move forward, the city can transition toward a unified "Whole-of-Government" approach in addition to exploring broader coordination with private pool operators. By establishing a lead coordinating body or a formal inter-agency task force, New York can align its resources by linking transportation, facility maintenance, and scheduling under a single mission. This shift would transform a collection of independent pools into a cohesive, citywide infrastructure capable of supporting every second grader in the five boroughs.

D. STATEWIDE AND NATIONAL POLICY MOMENTUM

New York City has the opportunity to lead by following the momentum of successful water safety legislation and programs being adopted at the state and national levels. Policy makers are increasingly recognizing swim competency as a key component of public education, moving beyond the view of it as an optional extracurricular activity.

National and Statewide Legislative Alignment

A growing number of states have enacted "Every Child a Swimmer" legislation, a movement designed to institutionalize parental awareness and access to instruction. Originally passed in Florida in 2021, this model has since been adopted by Georgia, Arkansas, Washington, Arizona, and New Mexico. These laws typically require schools to provide parents with specific resources on drowning prevention and local options for free or reduced-cost

* For a detailed breakdown of current indoor lane capacity and the projected municipal budget required to achieve universal second-grade swim access, please see Appendix C: Citywide Lesson Estimates and Budgetary Projections.

lessons.[25] The U.S. National Water Safety Action Plan (USNWSAP) launched in 2023 to generate a national agenda.[26]

In 2025, New York State announced the New York Statewide Investment in More Swimming (NY SWIMS) initiative. NY SWIMS represents a historic, multi-faceted investment in public health and equity, centered on a $150 million grant program to expand municipal pool access in underserved, high-heat communities where pool deserts have long persisted. This comprehensive strategy pairs massive infrastructure investment with vital safety mandates, most notably through the enactment of Section 926 of the New York State Education Law, which ensures that all public school families receive standardized drowning prevention and water safety information starting in the 2026–2027 academic year. The initiative seeks to address barriers to aquatic literacy by integrating the construction of permanent and "pop-up" facilities with aggressive workforce development (including increased lifeguard pay, modernized certification pathways, and funding for underserved youth to join competitive swim teams).[27] NY SWIMS is another indicator that swim safety is a critical issue that will continue to play a role in the lives of New Yorkers.

Municipal Models

Large metropolitan areas are already demonstrating that universal swim programs can be scaled effectively through coordinated public-private investment.

Boston (Swim Safe). This city-driven initiative coordinates with the YMCA and Boys & Girls Clubs to offer free youth lessons, supported by a diverse partnership between the Mayor's Office and health insurers like Blue Cross Blue Shield.[28]

Chicago. Through an official partnership with **USA Swimming**, the Chicago Park District has grown its training locations from two to 49. This model specifically targets multicultural participation and provides municipal coaches with national-level professional development.[29]

Greensboro, NC. The Greensboro Aquatic Center developed a curriculum-based "Learn to Swim" program in partnership with Guilford County Schools. Now in its 13th year, it provides free water safety training to over **3,100 second-grade students** annually across 48 different schools.[30]

New York City's Progress Toward Universality

New York City has already begun laying the groundwork for expanded youth aquatics, demonstrating that the necessary political will and infrastructure exist to support a larger mandate. Under the previous administration, the city committed **$5.5 million** to scale the "Swim for Life" program, an investment designed to reach **18,000 second graders** through the use of public school and third-party pools.[31] While this represents a significant increase in capacity, it still only serves a portion of the city's total student population. By aligning with the statewide requirements of Chapter 419 and the funding opportunities of the NY SWIMS initiative, the current administration has a unique opportunity to lead the nation. Moving from these isolated pilots to a cohesive, citywide mandate would ensure that water safety becomes a standard part of every child's education rather than a project-based exception.

III.

THE WAVE MAKERS PILOT

A MODEL FOR UNIVERSAL ACCESS

Asphalt Green

WAVE MAKERS

The Wave Makers initiative was launched as a proactive public-private partnership to identify the most effective, efficient, and outcome-driven pathway for providing large-scale, free swim instruction to New York City children. While previous efforts have been fragmented, this pilot functioned as a comprehensive proof-of-concept to support expansion to a scalable universal model.

A. PROGRAM DESIGN AND SCOPE

The Wave Makers pilot was designed to test several key components of a broad, collaborative service model including structure, processes, and outcomes. In terms of structure, Asphalt Green assembled New York City's first coordinated network of swim providers serving all five boroughs to support scaled delivery that could serve the pilot target of 2,000 second graders. The model was designed to allow provider autonomy over its curriculum, scheduling, and instructor training, with Asphalt Green acting as the initiative manager. Formal processes focused on building a Swim Partner Data Portal to facilitate and troubleshoot data collection. Key outcome variables explored included dosage, skill progression, and instructor-to-student ratio.

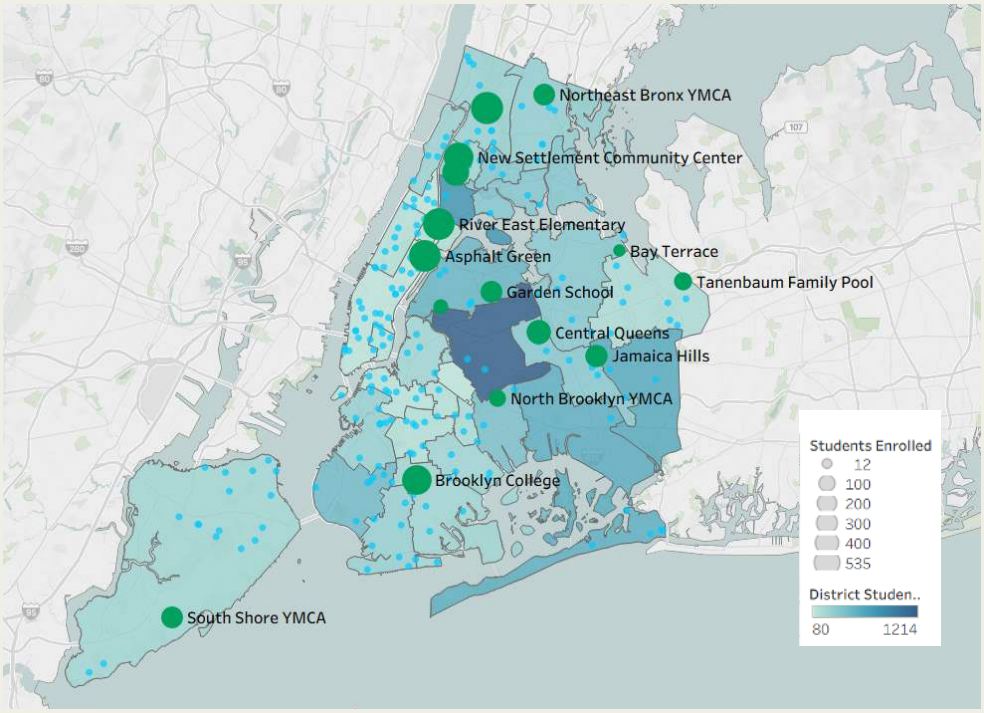
The initiative significantly exceeded its goals across each component. The pilot was guided by a clear structure that systematically identified and secured partners, activated new assets, and defined working standard operating procedures. Data collection processes were built and implemented to utilize a shared data portal. The pilot provided free lessons to nearly 3,000 children across 15 pools to generate a robust, outcomes-based dataset. In an aim to normalize progress across diverse sites and programs, the pilot measured success against two core safety benchmarks:

Water Safe (Water Ready)
Mastery of foundational skills including breath control, shallow water submersion, floating, gliding, kicking (5 yards), and swimming (10+ yards).

Waterproofed (Water Steady)
Achievement of all "Water Safe" skills plus deep water entry/exit, treading water for 30 seconds, and swimming 20+ yards.

Sites that could not adjust their existing assessment procedures maintained their own methods but still submitted their data.

Figure 3. Digital Pool Atlas: Wave Makers Pilot Pools and Usage



B. WHAT MADE THE PILOT DISTINCT

The Wave Makers initiative distinguished itself through three key structural innovations that align with the city's new focus on inter-agency coordination:

Public-Private Innovation
The program acted as a functional blueprint for cooperation, blending philanthropic support from the **Gray Foundation**, political advocacy from **City Council Members Menin and Krishnan**, and the operational expertise and collaboration of **Asphalt Green** and its public, nonprofit, and private partners.

Mobilizing Government Assets
The pilot proved that underutilized municipal assets (including CUNY, Parks, and DOE facilities) can be successfully activated through persistent and coordinated efforts.

Centralized Data Infrastructure
Wave Makers established a **Swim Partner Data Portal**. While partners maintained local autonomy, this centralized system provided the accountability necessary to analyze program efficacy at a citywide scale.

C. COMPOSITION OF PARTNERS

The Wave Makers pilot demonstrated that achieving citywide scale requires a cooperative network utilizing the unique strengths and facilities of different providers. The pilot assembled New York City's first citywide collaborative partner network for scaled swim instruction delivery across the five boroughs.

Role of Asphalt Green

As the lead implementer, fiscal conduit, and data backbone of the pilot, Asphalt Green played a multi-faceted and essential role:

Convening and Fiscal Management:
Asphalt Green served as the fiscal conduit, assembling the city's first coordinated network of swim providers and issuing subgrants to partner organizations.

Data and Evaluation:
Asphalt Green developed and managed a **Swim Partner Data Portal** to collect and normalize outcomes data across sites. Asphalt Green also developed a skill acquisition framework to evaluate student progress.

Strategic Facility Mobilization ("Pool Atlas" Innovation):
Asphalt Green developed a **digital Pool Atlas** (Figure 3) to map pools and identify "pool deserts" and underutilized CUNY/DOE assets. This innovation led directly to the successful commissioning of pools at sites like **Lehman College** and **River East Elementary**, demonstrating a scalable strategy for overcoming facility scarcity.

Pilot Partners

The inaugural partner network comprised key community and municipal organizations, demonstrating operational feasibility across different geographical areas and pool types:

Commonpoint Queens
A critical partner serving Queens, offering summer programming at sites like the Garden School, Bay Terrace Outdoor Pool, and Little Neck, as well as school-year programming at Forest Hills and Jamaica High School.

New Settlement Community Center
An anchor institution in the Bronx, New Settlement served as a delivery partner for both summer and school-year instruction in a high-need community.

NYC Parks & Recreation
Partnered with Wave Makers to provide instruction at the **Brooklyn College campus site**, demonstrating the ability to mobilize CUNY and city assets under the new collaborative framework.

YMCA of Greater New York
The YMCA contributed its extensive community reach and facilities, participating in the pilot at sites including the **Northeast Bronx YMCA** and the **South Shore YMCA (Staten Island).**

D. PERFORMANCE OUTCOMES AND EQUITY IMPACT

The Wave Makers pilot successfully executed its adaptive model, confirming the program's value through wide-scale participation and a comprehensive data collection effort. By measuring efficacy across diverse sites, the initiative identified indicators of success and developed a nuanced understanding of the logistical requirements for a citywide rollout.

Methodology Overview

To ensure the pilot provided actionable insights, the pilot partners implemented a rigorous monitoring and evaluation framework, the full details of which are described in **Appendix B**. The evaluation utilized a multi-method approach, beginning with **pre- and post-program assessments** for every student to measure skill acquisition, supplemented by **weekly progress tracking** and **demographic mapping** from the majority of partner sites. This quantitative foundation was paired with **15 semi-structured, in-depth interviews** with pilot initiative staff and leadership to capture the operational realities and impacts of the program. Finally, the dataset was analyzed using **advanced statistical analysis**, including **linear and logistic regression models**, to isolate how specific variables like dosage, pool environment, and attendance gaps impacted a child's path to water competency.

Reach

The pilot provided free instruction to **2,997 students**, intentionally prioritizing neighborhoods with historic "pool deserts." The program successfully engaged populations traditionally excluded from the aquatic economy, with **56% of participants** identifying as Hispanic, Black, or multicultural. Crucially, pre-program data revealed that **61% of parents** possess limited or no swimming skills, confirming that school-based intervention is the only viable path to breaking generational cycles of water fear. Beyond physical safety, the program's social impact was near-universal: **100% of students** expressed interest in further lessons, and **83% reported feeling significantly safer** in the water, with staff noting marked increases in student confidence and independence.

Key Drivers of Skill Acquisition

Regression modeling allowed us to move beyond simple correlations to isolate the specific operational levers that dictate a child's progress. To ensure an "apples-to-apples" comparison across diverse partner sites, our analysis held constant several confounding variables (factors that usually skew results) including a student's starting skill level, their gender, the specific season of instruction, and their racial or ethnic background. By neutralizing these external influences, we found that many delivery structures, specifically dosage, consistency, instructor-to-student ratio, and environment, are the primary predictors of whether a student achieves life-saving competency.

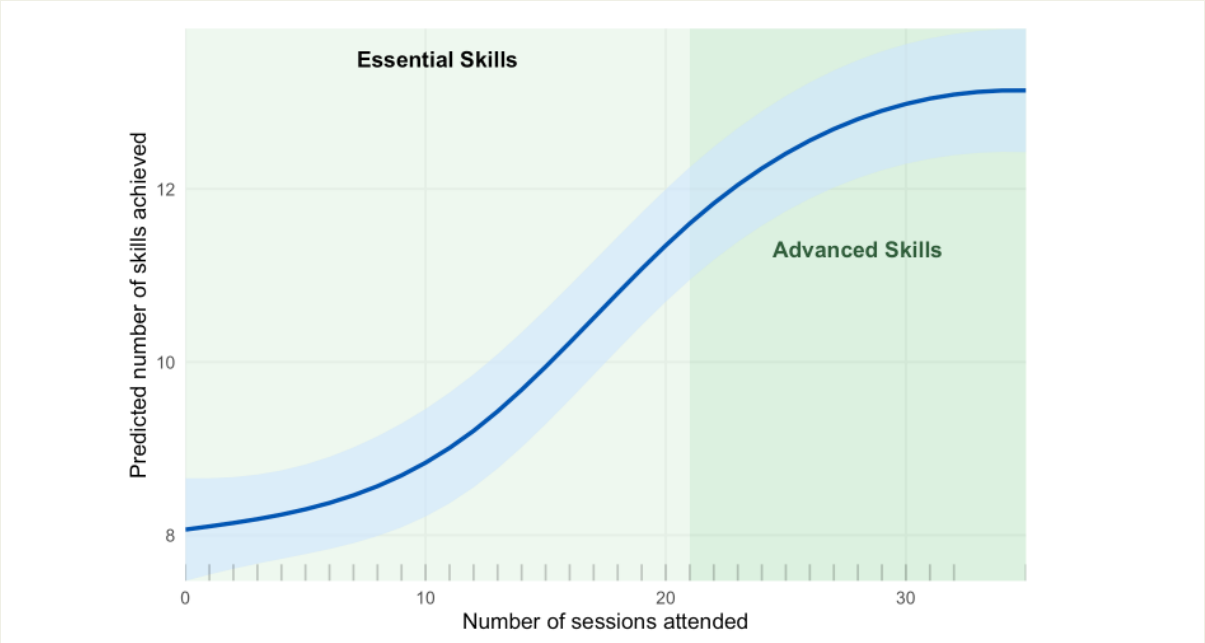
DOSE MATTERS. We found a clear dose-response relationship, meaning as the cumulative instruction time increases, so does the probability of a child achieving critical safety milestones, and this was found across all provider sites, irrespective of their curriculum or process.

Students progressed through two primary safety tiers: "Water Ready," where a child masters foundational breath control and basic swimming (10+ yards), and "Water Steady," where they gain the deep-water treading endurance and swimming stamina (20+ yards) required for self-rescue. And there is a compounding effect of lessons, for each additional swim lesson a child attends, their odds of becoming Water Ready increased by 7.1%, and their odds of becoming Water Steady increased by 9.3%.

There is a strategic **"Sweet Spot."** While the pilot showed that a 10-week intensive model can successfully jumpstart safety, the data identifies an optimal window of 25 to 30 total sessions. This range represents the most efficient "return on instruction," providing the greatest proportion of students with a permanent foundation of water competency. Students who reached a threshold of 20 or more sessions reached "Water Steady" or "Water Ready" status at a 41% rate, a significantly higher probability of success compared to those in low-dosage models (Figure 4).

Figure 4. Dose-Response: Sessions vs. Skills Achieved

Spline-based non-linear fit (non-YMCA; adjusted for baseline level and demographics)



THE "GAP" PENALTY AND LEARNING LOSS. Consistency is as vital as total hours. Regression analysis revealed that progression is highly sensitive to interruptions; **every 10 days of interruption between lessons predicts a 14% decrease in skill progression efficiency.** This "learning loss" confirms that a consistent model, one that avoids long seasonal breaks, could be the most effective way to protect the city's investment and prevent the erosion of newly acquired skills.

INSTRUCTOR-TO-STUDENT RATIO. Using multivariate regression to hold other factors constant, the data reveals a sharp "efficiency cliff" when class sizes expand beyond four students per instructor**.** Students in smaller groups (1:4 or less) demonstrate significantly higher rates of mastery compared to those in larger cohorts. Specifically, students that move from a 1:4 ratio to a 1:5–8 ratio are approximately 68% less likely to achieve "Water Steady" status. **For a universal mandate to be effective, the city could aim for a 1:4 or 1:5 ratio as the gold standard for high-need second graders.**

ENVIRONMENTAL FACTORS AND LEARNING PRODUCTIVITY. The physical layout of a pool has a measurable impact on how quickly a child learns to swim. While the pilot proved that students can become safe in almost any pool, certain facility features make the teaching process more efficient and help students gain confidence faster.

Pool Depth, Gradient, and the Speed of Learning:

Our analysis found that while pool depth and sloped (gradient) floors didn't change whether a child *eventually* became safe, they did change **how fast they got there**. Students in pools with sloped floors mastered individual technical skills more quickly than those in flat-bottom pools. Essentially, these configurations act as a "fast track" for beginners, helping them move through the early stages of the curriculum with less hesitation.

Lane Configuration and Space.

Higher success rates were observed in pools with "Variable" or larger lane capacities (up to 16 lanes). These facilities likely facilitated better instructor-to-student ratios and reduced overcrowding, allowing for more individualized attention.

OPPORTUNITY AND COST TO SCALE. While there is an overall shortage of operable and accessible pools in New York City, there is currently enough capacity to provide swim instruction to all **70,000 second-grade students** through the Wave Makers model. Between the Department of Education, CUNY, NYC Parks Department, and non-profit organizations, there are approximately **100 operable indoor pools** across all five boroughs.

The capacity of these pools in relation to the number of students varies by borough: all second graders in the **Bronx** could receive 10 lessons each; in **Brooklyn, Queens, and Staten Island**, 15 lessons each; and in **Manhattan**, 30 lessons each. Where proximity allows, inter-borough busing could be utilized to equalize these capacities.

Participation should be prioritized according to economic need; in the 2024–25 school year, **75% of all public-school students** faced economic hardship, with rates as high as **88.8% in the Bronx**.

The Wave Makers pilot established a high-efficiency delivery model with a direct instructional cost of only **$17 per lesson, per participant**. Through this model, all 70,000 students could receive a 25–lesson curriculum at a total approximate cost of *$40M.**

* Taking scheduling limitations into account, the average capacity across these 100 pools would allow for every 2nd grade student to receive 16–19 lessons.

Investment in a 25–lesson curriculum for 70,000 students

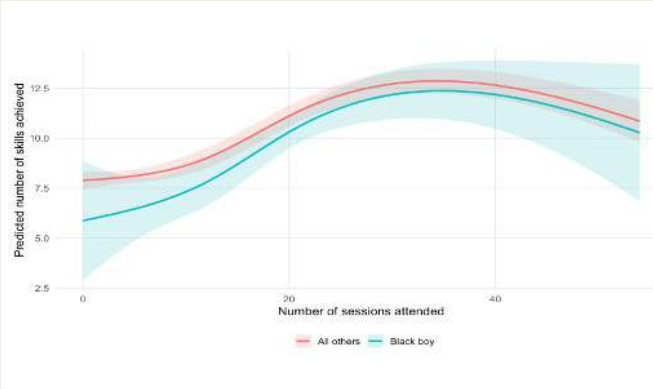
This amounts to $570 per student (or $22.80 per student per lesson) and includes:

- **$30M** for frontline instructional costs.
- **$2M** for supplemental transportation where needed.
- **$1.75M** for essential gear (swimsuit, cap, and goggles) for every student.
- **$3M** in rental funds to activate 15 CUNY pools.
- **$3M** (10%) for administrative and oversight costs.

By strategically coordinating public and private assets, the City can turn what is often seen as a cost-prohibitive service into an affordable, institutionalized public safety standard. This flexible mandate ensures that every child is given the dosage and environment required to stay safe for a lifetime.

Beyond the devastating human cost, every drowning represents a preventable tragedy that underscores the urgent need for systemic intervention. Since the launch of the Wave Makers pilot in 2024, the program has already reached nearly 3,000 students, proving that targeted investment can immediately disrupt the cycle of swimming inequity. By scaling this model to a universal citywide investment of **$40M**, New York City can ensure that all **70,000 second-grade students** receive life-saving instruction, building a permanent layer of protection for the next generation.

Figure 5. Skill Acquisition: Demographic Gap



Addressing the Persistent Gap in Swim Skill Acquisition

Despite successfully attracting diverse participants, the data reveals a persistent gap in skill acquisition that requires targeted intervention. **Black boys have the worst swimming outcomes** and may need the most attention. Black participants had **68% to 82% lower odds** of reaching Water-Ready or Water-Steady status compared to their White peers, even when accounting for attendance and other factors (Figure 5).

E. IMPLEMENTATION CHALLENGES

While the pilot demonstrated a viable path to scale, the process of moving nearly 3,000 children through 15 different facilities exposed a set of structural and operational hurdles. These findings, derived from fifteen in-depth interviews with site coordinators, municipal officials, and aquatic experts, reveal the friction points that occur when a centralized vision meets the reality of local pool management. Addressing these bottlenecks is not simply a matter of administrative cleanup; but should be carefully considered to ensure that the city's investment actually reaches the water.

Logistical Bottlenecks.
Logistical delays, specifically the unreliability of busing and cancellations, shortened the already limited instructional window or forced the cancellation of sessions entirely. When transportation responsibility shifted to parent-managed models, the data showed a corresponding rise in both lateness and absenteeism, suggesting that for the most vulnerable second graders, a successful program requires a fully integrated and reliable transit solution.

Data Fragmentation and Standardization.
The administrative weight of the program also took a toll, particularly regarding data fragmentation. Because partners operated with their own internal reporting cultures and skill definitions, the task of normalizing this information into a single citywide dataset was labor-intensive and prone to delay. This lack of initial standardization made it difficult for partners to provide and gain "real-time" insights needed for agile management, highlighting the need for a unified, user-friendly data portal that can be used across all municipal and private sites without a heavy administrative burden.

Facilities and Workforce Limit Scalability.
Beyond these logistical and data-related concerns, the pilot ran head-first into the structural limits of New York City's aquatic infrastructure and workforce. Interviewees repeatedly noted that "pool deserts" in high-need neighborhoods prevent expansion because there simply are not enough functioning lanes to support a universal mandate. Even where pools exist, the chronic shortage of certified lifeguards and qualified swim instructors remains a primary constraint. Finally, many providers faced a difficult tension between public service and financial survival. Without a dedicated municipal funding stream to offset costs, it is difficult for non-profit operators to reallocate lanes from revenue-generating activities like private lessons or swim teams to support a free, large-scale public initiative.

IV.
RECOMMENDATIONS

A BLUEPRINT FOR UNIVERSAL SWIM IN NYC

Asphalt Green

WAVE MAKERS

The Wave Makers pilot has proven that a multi-provider, outcome-driven model is the most effective and efficient pathway to scaling swim competency in New York City. To move from a successful pilot to a sustainable, universal public system, the City must commit to targeted investments in five core areas.

A. ESTABLISH A UNIFIED MUNICIPAL PARTNERSHIP AND FUNDING STRUCTURE

The current fragmented system needs a centralized, multi-year commitment to partnership and funding that prioritizes stability and equity.

1. **Establish a City-Led Fiscal Conduit and Lead Agency.** The pilot demonstrated that while a nonprofit-led coalition can effectively prove a concept, scaling to universality requires a transition to a formal city-governed initiative that is centralized, provides a multi-year commitment.

   To ensure long-term accountability, the City should transition oversight to a dedicated municipal agency. This agency will coordinate funding, streamline facility access, and institutionalize universal standards of water competence citywide. While the agency will mandate these performance standards, it will maintain curricular freedom, allowing partners to utilize their own instructional methods as long as they meet the required safety benchmarks. This structure centralizes fiscal authority and ensures the program remains exclusively focused on service delivery and drowning prevention.

2. **Formalize Multi-Agency Governance.** While a single agency acts as the lead, the scale of universal access requires a formal coalition representing leadership from the **DOE, NYC Parks, and major non-profit partners**. This unified body should be empowered to resolve cross-agency barriers, such as aligning school schedules with pool availability and standardized busing logistics, that no single entity can solve in isolation.

3. **Commit to Multi-Year, Universality-Focused Public Funding.** Expansion is not possible without predictable, multi-year public investment. The program's demonstrated cost-efficiency makes a city-led consortium a high-return, scalable option for serving all NYC second graders.

4. **Standardize MOUs and Partner Readiness Criteria.** To ensure consistent delivery as the network scales, the City should develop standardized Memorandums of Understanding (MOUs) that codify timelines, roles, communication protocols, and data requirements. New partners must meet objective readiness criteria, including mission alignment, operational capacity, and facility availability, before onboarding. This rigorous vetting process ensures that geographic expansion does not compromise instructional quality or create operational ambiguity.

5. **Establish a Municipal School Liaison Office.** The pilot proved that school recruitment is a full-time endeavor. Future scaling should include dedicated 'Success Managers' within the lead agency to handle the specialized outreach, busing logistics, and principal coordination required to keep pools at maximum capacity.

B. STANDARDIZE DATA SYSTEMS BUT MAINTAIN CURRICULAR FREEDOM

The pilot revealed that inconsistent data tracking undermines quality control and limits the ability to report accurate citywide outcomes.

1. **Define a Core Competency Framework.** Convene partners and aquatic experts to define a **shared water-competency framework** aligned with national standards. This requires adopting a standardized skill progression with clear operational definitions (e.g., assisted / semi-assisted / independent) that all instructors can apply uniformly.
2. **Implement a Unified Data System.** Mandate the use of a unified skills-tracking tool and harmonize data elements across all providers to support citywide reporting. Improvements must focus on **reducing administrative burden** and simplifying consent workflows to ensure timely and accurate data submission.
3. **Preserve Curricular and Operational Freedom.** Partner sites should maintain the autonomy to lead programs based on their own established curricula. This flexibility ensures that providers can adapt their teaching methods and program execution to meet the specific cultural, linguistic, and developmental needs of their local communities.
4. **Integrate Swim Competencies into Education Systems.** Where feasible, pilot PE-linked swim units for specific grades in districts with pool access and scale through the DOE if successful. Work with DYCD to ensure summer camps and youth programs systematically include swim days and water-safety education.

C. INVEST IN FACILITIES, WORKFORCE, AND TARGETED EQUITY

Structural barriers like limited pools and instructor shortages must be solved through explicit, intentional public investment.

1. **Prioritize Facility Activation.** Use the **Pool Atlas** to identify geographic gaps and potential solutions, and **prioritize capital investment** to bring disused or underutilized DOE and CUNY pools back online. The successful activation of pools at Lehman College and River East Elementary serves as the model for this strategy.
2. **Build a Durable Aquatics Workforce Pipeline.** Expand lifeguard and swim-instructor training as an explicit pillar of the initiative. This includes expanding training through DOE high schools and CUNY and offering stipends, career pathways, and return bonuses to improve retention, particularly in underrepresented communities.
3. **Address Disparate Outcomes with Targeted Support.** The City must acknowledge the persistent equity gap where **Black and Indigenous students have significantly lower odds of achieving competency**. The program should pilot tailored instructional support, smaller-group instruction, and culturally competent staff training specifically designed to close these documented gaps.

D. COALITION AND POLITICAL STRATEGY

The final key to success is aligning the interests of all stakeholders behind a unified message.

1. **Leverage the White Paper as a Core Advocacy Tool.** Use this synthesis of outcomes, cost-comparisons, and partner stories to advocate effectively to City Hall, City Council, DOE, and Parks.
2. **Frame Wave Makers as a Triple Investment.** Position the program not merely as swim lessons, but as a public-safety, equity, and youth development initiative. The City should align messaging around:

Public Health: Drowning prevention and injury reduction.

Climate Resilience: Utilizing public pools as critical community cooling centers during extreme heat.

Workforce Development: Creating a pipeline for certified lifeguards and aquatics instructors.

The findings provide clear guidelines for scaling the program through a unified, city-backed coalition.

Table 2. Quantitative Drivers of Skill Acquisition and Program Efficacy

EXPANSION THEME	KEY TAKEAWAY FOR POLICY
Funding Stability	Expansion requires multi-year, predictable funding that can move the program from pilot to universal scale. A comparable city program is "130% more expensive" than Wave Makers, highlighting the efficiency and scalability of the consortium model if funding is stable.
Governance	The City must establish standardized Memorandums of Understanding (MOUs) that codify roles, clear readiness criteria for partners (capacity staffing), communication timelines, and data requirements.
Workforce and Facilities	Use the Pool Atlas to identify gaps and explicitly invest in lifeguard/ instructor pipelines and capital funds to bring more underutilized CUNY/DOE/private pools online, particularly in high-need boroughs.
Standard-ization	Convene partners to define a shared water-competency framework and create a unified, simplified skills-tracking tool to ensure outcomes are consistent and measurable citywide.
Targeted Support	The program must be tailored to address the learning needs of specific groups, such as Black boys, to close the observed equity gaps in skill achievement.

V.
CONCLUSION

FROM PILOT SUCCESS TO UNIVERSAL NECESSITY

Asphalt Green

WAVE MAKERS

The data and strategic insights gathered from the Wave Makers pilot confirm that drowning is a preventable public health crisis that disproportionately affects Black, Latinx, and immigrant communities in New York City. This persistent inequity is compounded by generations of limited access to pools and the absence of water safety skills.

The Wave Makers initiative has served its purpose as a functional proof-of-concept. The pilot successfully demonstrated that a multi-provider coalition, utilizing flexible programming and strategic mobilization of existing public assets (such as CUNY and DOE pools), can efficiently deliver life-saving skills to thousands of children in high-need neighborhoods.

Crucially, the data has pinpointed the **key drivers of success**:

Dosage is Critical

Students need approximately **25 to 30 high-quality sessions** to achieve the necessary Water Ready and Water Steady competencies.

Small Ratios Accelerate Learning

Smaller instructor-to-student ratios directly increase the likelihood of success.

Consistency Prevents Skill Erosion

Frequency is as vital as total hours. The "Gap Penalty" proves that long interruptions (10+ days) lead to measurable learning loss, reinforcing the preference for consistent programming.

Facility Configuration and Skill Acquisition

While pool depth does not prevent a student from eventually becoming safe, gradient (sloped) pools facilitate a faster rate of individual skill acquisition, suggesting that certain infrastructure choices can accelerate the "velocity" of learning.

However, the path to universality is not without systemic barriers. The pilot demonstrated the clear value of **centralized oversight**, while also revealing the administrative intensity required to bridge the gap between various city entities and private partners. To scale effectively, there is an opportunity for the city to address the friction of **disconnected facility management** and alleviate the heavy administrative burden of **school outreach and recruitment**. Streamlining these processes, alongside providing targeted instructional support, will be essential to closing the persistent equity gap in skill achievement observed among Black and Indigenous boys.

New York City stands at a critical intersection of political momentum and proven operational success. The Wave Makers pilot has provided the refined blueprint; now, the City must institutionalize it. By establishing stable, multi-year public funding and **formalizing a city-led, multi-agency governance structure**, the City can transition drowning prevention from a discretionary pilot into a permanent municipal service. This shift will ensure that a single lead agency provides the necessary fiscal accountability while the **DOE, NYC Parks, and non-profit partners** collaborate to dismantle the systemic barriers to universal swim access.

Investing in universal swim competency is not simply investing in recreation; it is investing in public health, youth equity, workforce development, and climate resilience. The time to transition from proving the model to scaling the solution is now.

Asphalt Green

WAVE MAKERS

UNIVERSAL SWIM ACCESS
IMPLEMENTATION ROADMAP

PHASE 4
Scale for **Universal Access**

Fiscal Baseline: Utilize the pilot's established model to project citywide funding at **$22.80 per student/lesson**. This comprehensive rate includes direct instruction, transportation, gear, and admiistrative oversight.

Asset Activation
Prioritize capital repairs to **bring offline assets back into use**, specifically targeting the school pools closed for repairs.

Workforce Pipeline
Expand **lifeguard and instructor training** through DOE high schools and CUNY to solve the primary constraint on program expansion.

PHASE 3
Implement the **Evidence-Based Model**

Flexible Dosage Standards
Establish a tiered instructional framework where **10 sessions serve as the benchmark for foundational safety** and **25–30 sessions represent the "Sweet Spot"** for achieving technical mastery and self-rescue.

The Efficiency Ratio
Maintain a **1:4 instructor-to-student ratio**; students in this ratio are **68% more likely** to achieve mastery than those in larger groups.

The Consistency Rule
Minimize learning loss by ensuring **no more than 10 days pass between sessions**, as larger gaps predict a 14% decrease in efficiency.

PHASE 2
Transition to **Municipal Governance**

The Pilot-to-Policy Hand-off: Transition from the nonprofit-led Innovation Phase, which provided the initial research and operational blueprint, to a **formal city-governed initiative**.

A Single Lead Agency
Designate a single municipal entity to act as the permanent fiscal and administrative lead, ensuring long-term accountability and a stable funding conduit.

Multi-Agency Governance
Move beyond informal agreements to a structured coalition representing NYCPS (DOE), NYC Parks, and non-profit partners to solve systemic barriers like busing and scheduling.

Strategic Autonomy
Mandate performance standards while maintaining curricular freedom, allowing partners to use their own instructional methods to meet safety benchmarks.

PHASE 1
Identify & Prioritize High-Need Areas

The Data
Utilize the Digital Pool Atlas to map the **68% of residents** who currently lack nearby access to a public pool.

The Geography
Prioritize expansion in **pool deserts** like Queens, where only 12% of residents have walking access to a pool, compared to 65% in Manhattan.

The Inequity
Target resources toward communities facing the highest disparities, specifically where Black children drown in pools at rates **7.6 times higher** than their white peers.

APPENDICES

REFERENCES, METHODS, & PROJECTIONS

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WAVE MAKERS

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APPENDIX B: METHODS FOR RESEARCH AND EVALUATION

This appendix provides a technical overview of the monitoring, evaluation, and statistical frameworks used to analyze the Wave Makers Year 1 Pilot. The research was designed to identify the specific drivers of success in a multi-provider, citywide aquatic program.

A. QUANTITATIVE DATA COLLECTION & ANALYSIS

The evaluation utilized a mixed-methods approach to bridge the gap between hard metrics and operational realities.

Quantitative Data (Swim Partner Data Portal)

Developed and managed by **Asphalt Green**, this centralized digital infrastructure normalized data across 15 sites. Partners submitted weekly attendance, demographic characteristics, where possible, and standardized skill-progression metrics for **2,997 students**. All data were cleaned and coded by the Asphalt Green data team.

Data Sources and Integration

To ensure the evaluation was both geographically comprehensive and statistically rigorous, the research team integrated two primary data streams. These sources allowed for a "Whole-of-City" view of the pilot's impact and included data on student performance, data taken from the NYC Pool Atlas to locate pools across the city, and data collected on each facility used through the pilot.

> **Student Performance Dataset:**
> This core dataset, managed through the **Swim Partner Data Portal**, tracked **2,997 students** across 15 sites. It recorded attendance, enrollment models (School-Day vs. OST), and standardized skill-level assessments and achievements. This allowed researchers to measure individual progress from "At-Risk" to "Water Steady."

Facility & Operational Metrics:
Beyond location, researchers integrated site-specific physical and administrative variables. This included instructor-to-student ratios, pool depth, gradient configurations (sloped vs. flat), and lane capacity. These metrics were used to isolate how the physical environment and staffing levels influenced the speed of student learning.

Statistical Modeling and Exact Tests

The evaluation moved beyond descriptive statistics to employ advanced modeling, allowing the team to determine which program "levers" had the highest impact on outcomes while holding confounding variables constant.

Multivariate Logistic Regression (Mastery Probability):
This test was used to calculate the likelihood of a student achieving the **Water Ready** or **Water Steady** benchmarks. By utilizing logistic regression, the team identified the "Efficiency Cliff" for class size, determining that students in a **1:4 ratio** were significantly more likely to reach competency than those in larger groups.

Linear Regression (Skill Acquisition Velocity):
To measure the rate of technical progress, the team used linear regression to track the total count of technical milestones achieved. This test revealed that specific facility configurations, such as **gradient (sloped) pools**, significantly increased the *velocity* of skill acquisition.

Spline-Based Non-Linear Fit (Dosage Optimization):
To identify the strategic "Sweet Spot" for instruction, researchers applied a non-linear fit to the dose-response curve. This analysis pinpointed **25–30 sessions** as the threshold for the highest probability of mastery.

Controlled Variables:
To ensure the integrity of these tests, all models controlled for **initial skill level**, gender, age, and race/ethnicity, ensuring the results isolated program efficacy rather than student background.

B. QUALITATIVE DATA COLLECTION & ANALYSIS

The research team conducted 15 semi-structured, one-on-one interviews with a diverse cohort of stakeholders, including site coordinators, municipal officials, and aquatics experts. These sessions, ranging from 60 to 90 minutes in length, provided the foundational context for the operational and socio-emotional findings of the pilot.

Interview Protocol:
Two lead researchers, both formally trained in qualitative interviewing with similar urban populations, facilitated each session. To ensure a candid and natural dialogue, the team chose not to audio-record the sessions; instead, researchers took comprehensive, real-time notes to capture key insights and nuances.

Concurrent Review:
Within 24 hours of each interview, the lead researchers reviewed their notes with the broader research team. This immediate debriefing allowed the team to track emerging trends and refine subsequent interview prompts to explore new operational friction points as they surfaced.

Thematic Coding:
Upon completing the interview cycle, the lead researchers systematically analyzed the collective notes to identify prominent themes. The team only designated a finding as a "theme" if at least two independent interviewees highlighted the issue, ensuring the report reflects consistent operational realities rather than isolated anecdotes.

APPENDIX C: CITYWIDE LESSON ESTIMATE AND BUDGETARY PROJECTIONS

Overview

While New York City faces significant infrastructure and maintenance backlogs, data confirms that the city currently possesses the indoor lane capacity to provide swim instruction to all 70,000 second-grade students. By activating approximately 100 operable indoor pools across the five boroughs, including DOE, CUNY, NYC Parks, and non-profit facilities, the city can achieve universal coverage through a multi-provider model.

Table 1: Citywide Lesson Capacity Estimate

This table provides a borough-by-borough analysis of current indoor pool infrastructure relative to student population. It outlines how the city can provide between 10 and 30 lessons per student depending on borough-specific capacity, or an average of 16–19 lessons when accounting for scheduling limitations.

Table 1. Citywide Lesson Capacity Estimate

Pool capacity (by type & location) — **Estimated student capacity**

The Bronx

Pool Type	Operational Indoor Pools	Average Capacity per Pool	3 cohorts/year (10 lessons/ student)	2 cohorts/year (15 lessons/ student)	1 cohort/year (30 lessons/ student)
DOE	6	350	6,300	4,200	2,100
CUNY	2	500	3,000	2,000	1,000
Parks (Indoor)	1	500	1,500	1,000	500
Non-Profit	6	500	9,000	6,000	3,000
Totals: **The Bronx**	**15**		**19,800**	**13,200**	**6,600**
Total 2nd Grade Students (2024–2025)					**15,145**

Brooklyn

Pool Type	Operational Indoor Pools	Average Capacity per Pool	3 cohorts/year (10 lessons/ student)	2 cohorts/year (15 lessons/ student)	1 cohort/year (30 lessons/ student)
DOE	12	350	12,600	8,400	4,200
CUNY	3	500	4,500	3,000	1,500
Parks (Indoor)	3	500	4,500	3,000	1,500
Non-Profit	11	500	16,500	11,000	5,500
Totals: **Brooklyn**	**29**		**38,100**	**25,400**	**12,700**
Total 2nd Grade Students (2024–2025)					**21,270**

Pool capacity (by type & location) Estimated student capacity

Manhattan

Pool Type	Operational Indoor Pools	Average Capacity per Pool	3 cohorts/year (10 lessons/ student)	2 cohorts/year (15 lessons/ student)	1 cohort/year (30 lessons/ student)
DOE	3	350	3,150	2,100	1,050
CUNY	5	500	7,500	5,000	2,500
Parks (Indoor)	5	500	7,500	5,000	2,500
Non-Profit	14	500	21,000	14,000	7,000
Totals: **Manhattan**	**27**		**39,150**	**26,100**	**13,050**
Total 2nd Grade Students (2024–2025)					**9,221**

Queens

Pool Type	Operational Indoor Pools	Average Capacity per Pool	3 cohorts/year (10 lessons/ student)	2 cohorts/year (15 lessons/ student)	1 cohort/year (30 lessons/ student)
DOE	9	350	9,450	6,300	3,150
CUNY	4	500	6,000	4,000	2,000
Parks (Indoor)	2	500	3,000	2,000	1,000
Non-Profit	8	500	12,000	8,000	4,000
Totals: **Queens**	**23**		**30,450**	**20,300**	**10,150**
Total 2nd Grade Students (2024–2025)					**20,101**

Staten Island

Pool Type	Operational Indoor Pools	Average Capacity per Pool	3 cohorts/year (10 lessons/ student)	2 cohorts/year (15 lessons/ student)	1 cohort/year (30 lessons/ student)
DOE	1	350	1,050	700	350
CUNY	1	500	1,500	1,000	500
Parks (Indoor)	0	500	-	-	-
Non-Profit	3	500	4,500	3,000	1,500
Totals: **Staten Island**	**5**		**7,050**	**4,700**	**2,350**
Total 2nd Grade Students (2024–2025)					**4,591**

Total Capacity	99		134,550	89,700	44,850
Total 2nd Grade Students (2024–2025)					70,328

Notes:

- Pool counts were taken from a NYC DOHMH spreadsheet shared with Asphalt Green in 2025.
- About 13,000 of NYC's 70,000 2nd graders attend charter schools.
- Non-DOE pool capacity is estimated at 20 students per class x 5 classes / day x 5 days / week.
- DOE pool capacity is estimated at 350 students to allow for programs serving students in other grades (39 out of the DOE's 50 pools are located in high schools).
- There are 19 DOE pools out of operation that could serve 28,500 students at 10 lessons each.
- In 2024–25, The DOE used its Economic Need Index (ENI) to determine that 75.7% of students faced economic hardship. By borough: Bronx 88.8%, Brooklyn 76.1%, Queens 71.6%, Manhattan 70.5%, Staten Island 61.6%. Individual school ENI's could be used to prioritize participation in school-day learn-to-swim programs.
- There are 52 outdoor NYC Parks Dept. pools and 194 privately owned pools that could be utilized in some capacity.

Table 2: Universal Implementation Budget

This table outlines the projected fiscal requirement for a universal mandate. Based on the pilot's established low-cost delivery model, it estimates a total investment of $40M to provide 25 lessons to every second grader citywide. This "whole-child" budget includes frontline instruction ($17/lesson), supplemental transportation, student gear (suits, caps, goggles), and administrative oversight.

Table 2. Estimated Citywide Cost
To Provide all 70,000 2nd grade students with 25 group swim lessons

Swim Lessons	**$29,750,000**
Total NYC Public and Charter School 2nd graders	70,000
Cost per Lesson per Student	$17
Estimated Lessons per Student at Current Capacity	25
Supplemental Transportation	**$1,968,750**
Cost per yellow bus charter (round trip)	$750
Total NYC 2nd grade classes	3,500
Estimated % needing supplemental transportation	0.03
# of round trips per class	25
Swim suits, Swim caps, Goggles	**$1,750,000**
Equipment costs per student	$25
CUNY Rental space	**$3,093,750**
Estimated Rate per Hour	$330
# of Pools	15
Hours per week	25
Total weeks	25
Subtotal	$36,562,500
10% Admin Cost	$3,656,250
Total Cost	**$40,218,750**