



National Institute of  
General Medical Sciences



B2B Evaluation  
Working Group:

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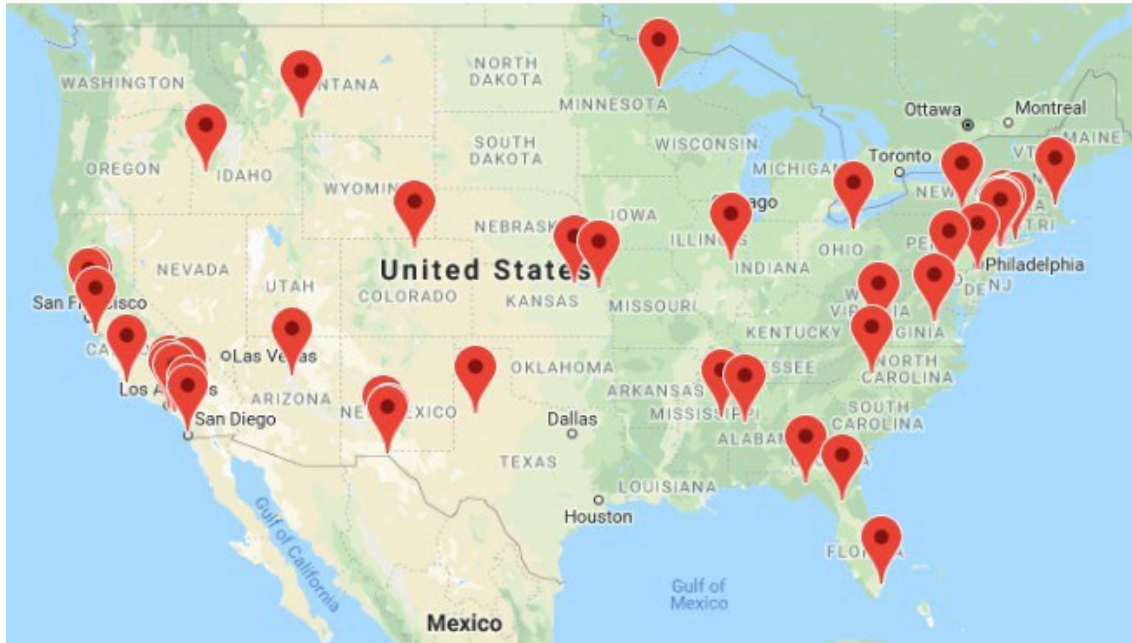
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# **Evaluation of NIGMS Bridges to the Baccalaureate (B2B) Program**

# B2B Evaluation

- Introduction: Background on the B2B program
- Is the B2B program meeting its stated objectives?
- Are the goals of the B2B program the correct ones?
- What might be learned from the transition of the B2B R25 program that might be applied to the B2B T34 program?
  - Changes from R25 [Research Education] to T34 [Training] program
- Working group recommendations

# B2B R25 Program: 1992-2019

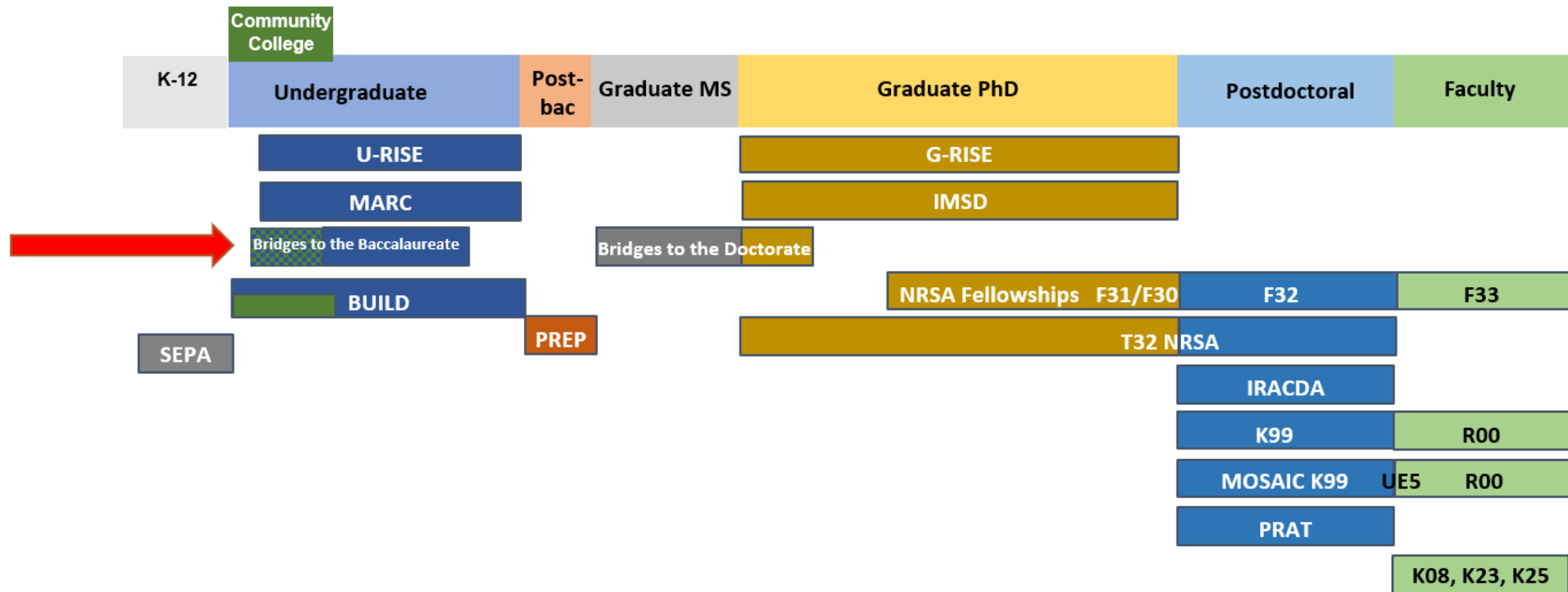


- **Established:** Created in 1992 as “Bridges to the Future.”
- **Overarching Goal:** Support educational activities that enhance the diversity of the biomedical research workforce.
- **Short-Term Goal:** Enhance the pool of students who transfer from a 2-year institution to a 4-year institution to study biomedical sciences.
- **Intermediate-Term Goal (added in 2007):** Enhance the pool of students who complete a Bachelor's degree in STEM fields.

# Need for B2B – Fits with the Overarching Goals Across NIH

- NIH strives to ensure that future generations of researchers will be drawn from the **entire pool** of talented individuals, bringing different aptitudes, perspectives, interests, and experiences to address complex scientific problems.
- NIH seeks to enhance the diversity of the biomedical research workforce by supporting individuals from a variety of backgrounds **at multiple training and career stages** in a variety of institutions and educational settings across the country.

# Training, Workforce Development, and Diversity (TWD) Programs



# Need for B2B Program

- Community colleges (CCs) enrolled 8.9 million students in 2020-21, representing 41% of undergraduates.
- On average CC students tend to be older, of lower socioeconomic status, and are more likely to be from underrepresented racial and ethnic groups than 4-year college and university students.
- Many CC students work full time, forcing students to attend part time. Often students spend 6-8 years in a community college setting before transferring to a 4-year institution.
- After transferring to the 4-year institution, students continue to face financial hardships and often face challenges with the investment of time required to be successful in upper division science, technology, engineering, and mathematics (STEM) courses.

<https://public.tableau.com/app/profile/john.fink/viz/UndergraduateEnrollmentTrendsbySector/Summary>

<https://nces.ed.gov/ipeds/use-the-data>

<https://ccrc.tc.columbia.edu/community-college-faqs.html>

# The B2B Program Evaluation

Is the Bridges to the Baccalaureate Program meeting its goals?

- What percentage of the B2B students transfer to a 4-year institution?
- Among those who transfer to a 4-year institution, what percentage complete the baccalaureate degree?

The working panel found that the B2B Program was successful.

# Scope of This Evaluation

Analysis includes all programs funded in 2005-2019 (n = 88\*)

\*Excludes one program providing support for peer mentors but not for students.

- Total number of institutions involved:
  - 2-Year = 167
  - 4-Year = 92
- Program structure:
  - Summer Only = 21
  - Summer Plus = 67
- Total number of participant spaces= 9,864
  - Range: 3-48 spaces/year
  - Median: 15 spaces/year
- Total number of students supported = 8,500 (roughly)
  - Spaces/students = average 1.2 years of support
  - Number of students unknown for 6 programs

B2B transitioned from an R25 research education mechanism to a T34 training mechanism in 2019; this evaluation only includes the previous R25 version of the program and may be used as a baseline for future evaluation of the T34 version.



# Scope of This Evaluation (Continued)

Each column shows funding for one program

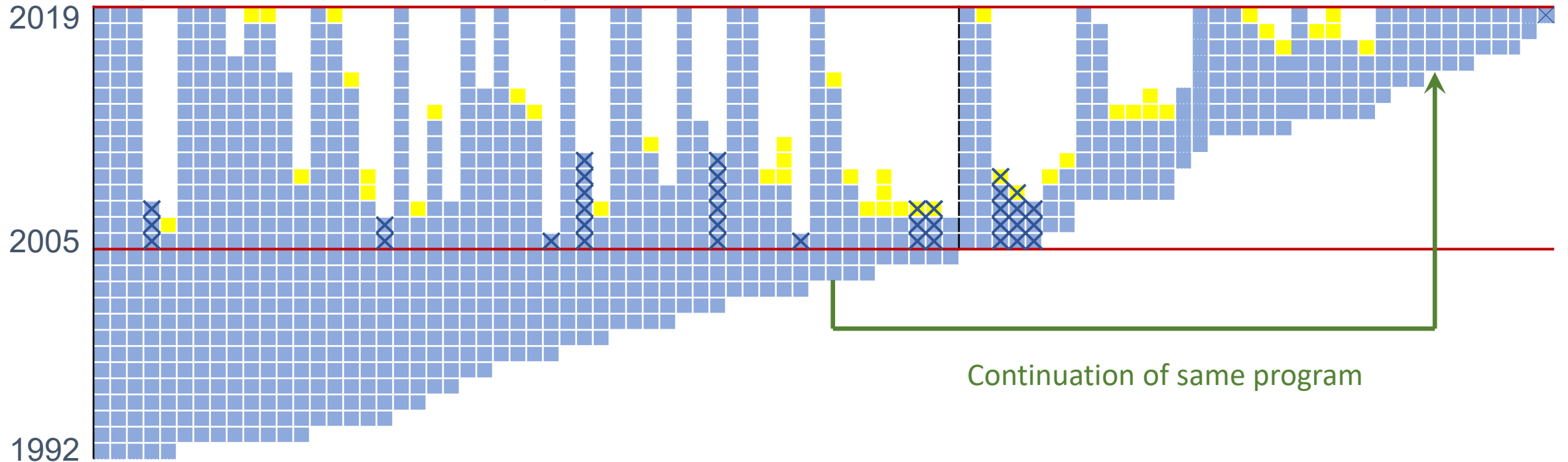
■ = funding for one fiscal year

■ = No-cost extension year

✕ = No student-level data provided

Only 3 cases were found where the same (or related) institutions had two different B2B grants. Only one involved the exact same program having a lapse in funding and submitting a new application.

Programs, sorted by first FY of funding:



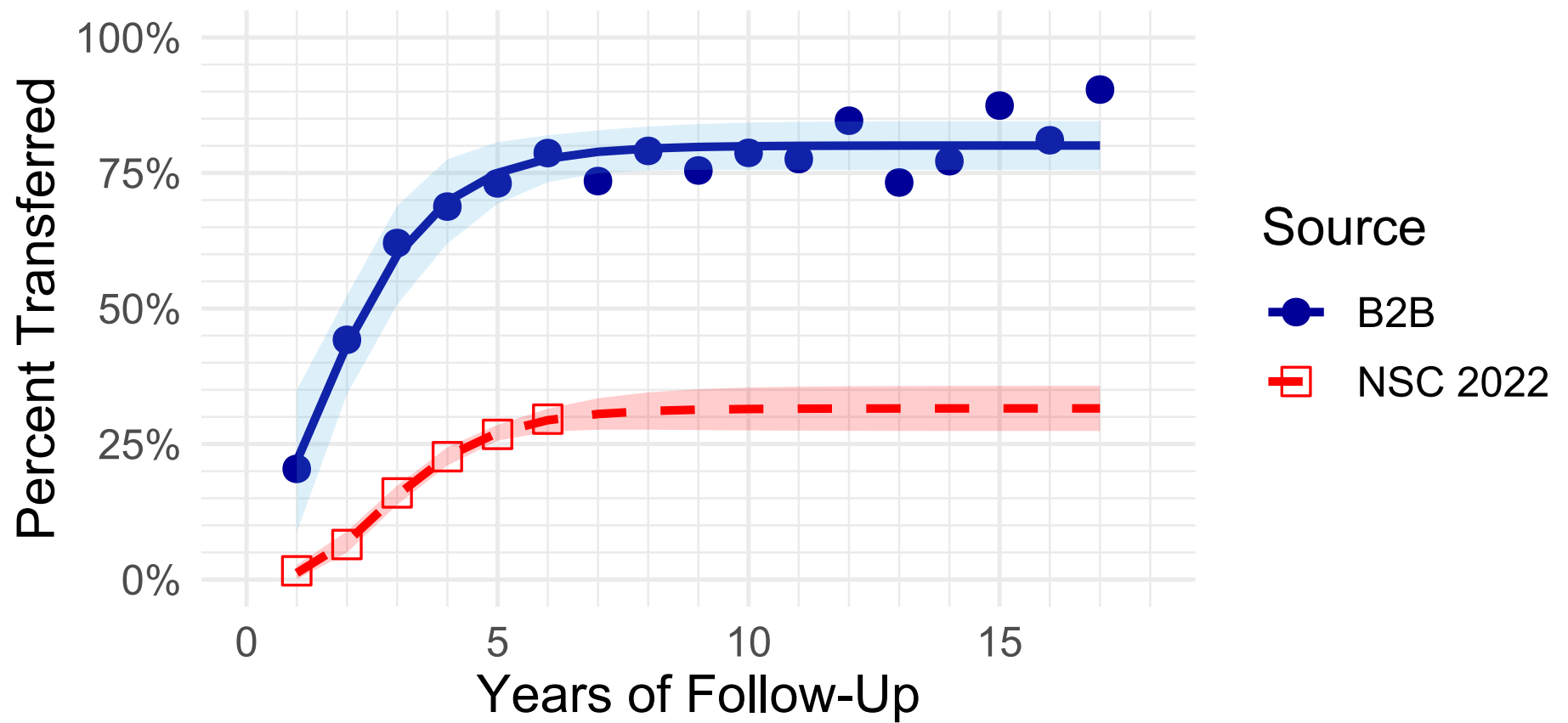
# The B2B Program Evaluation (Repeated Slide)

Is the Bridges to the Baccalaureate Program meeting its goals?

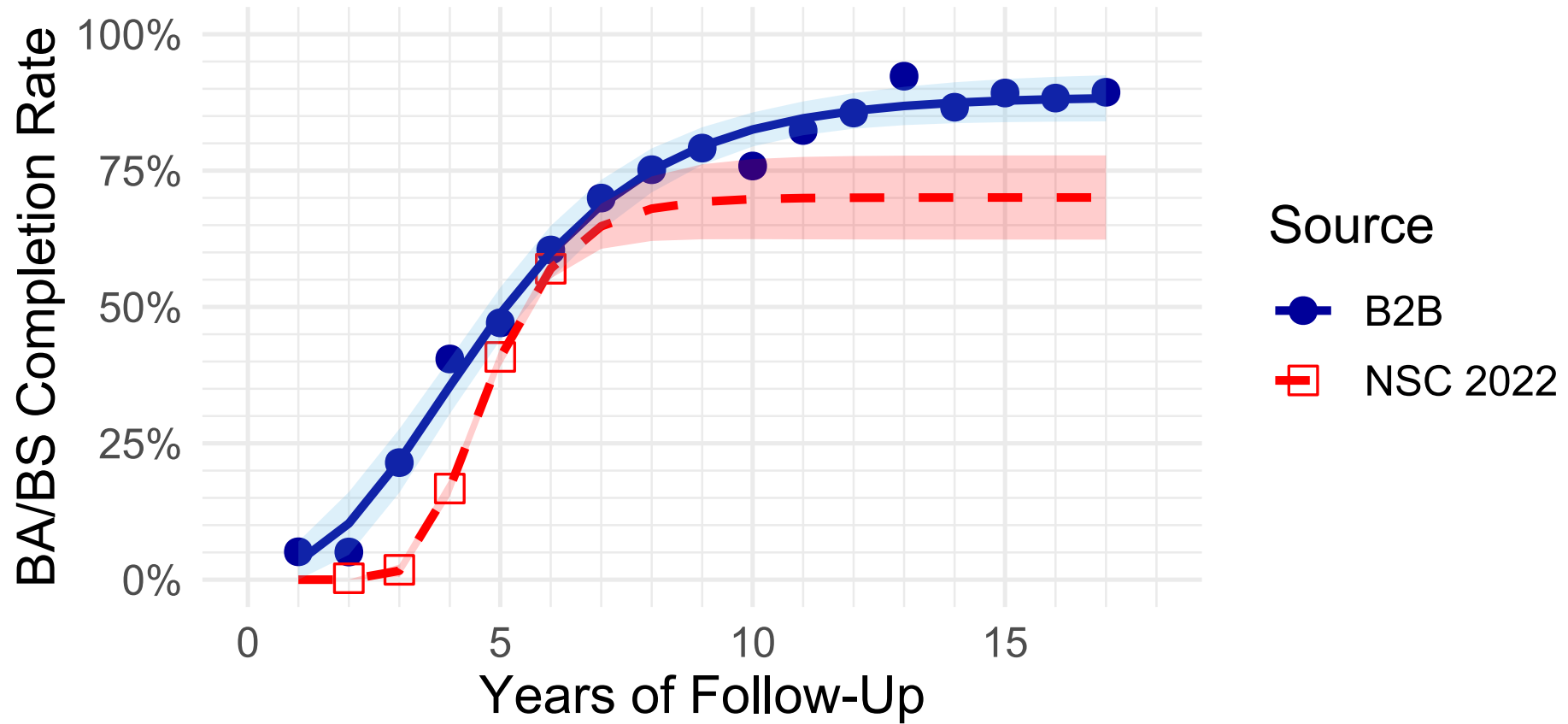
- What percentage of the B2B students transfer to a 4-year institution?
- Among those who transfer to a 4-year institution, what percentage complete the baccalaureate degree?

The working panel found that the B2B Program was successful.

# Transfers: B2B and National Student Clearinghouse (NSC) Rates



# Completions: B2B and NSC Rates



# The B2B Outcomes Summary

Is the Bridges to the Baccalaureate Program meeting its goals? – YES!

- The asymptotic student transfer rates to 4-year institutions are between 80-90% which exceed the 2007 FOA target of 70%.
- The asymptotic Bachelor's degree completion rates are between 80-90% which exceed the NCES national benchmark\* of 50%.

(\*National Center for Education Statistics: 53% of students transferring from 2-yr to 4-yr in 2014 completed BA/BS by 2017)

# Are the Goals of the B2B Program the Correct Ones?

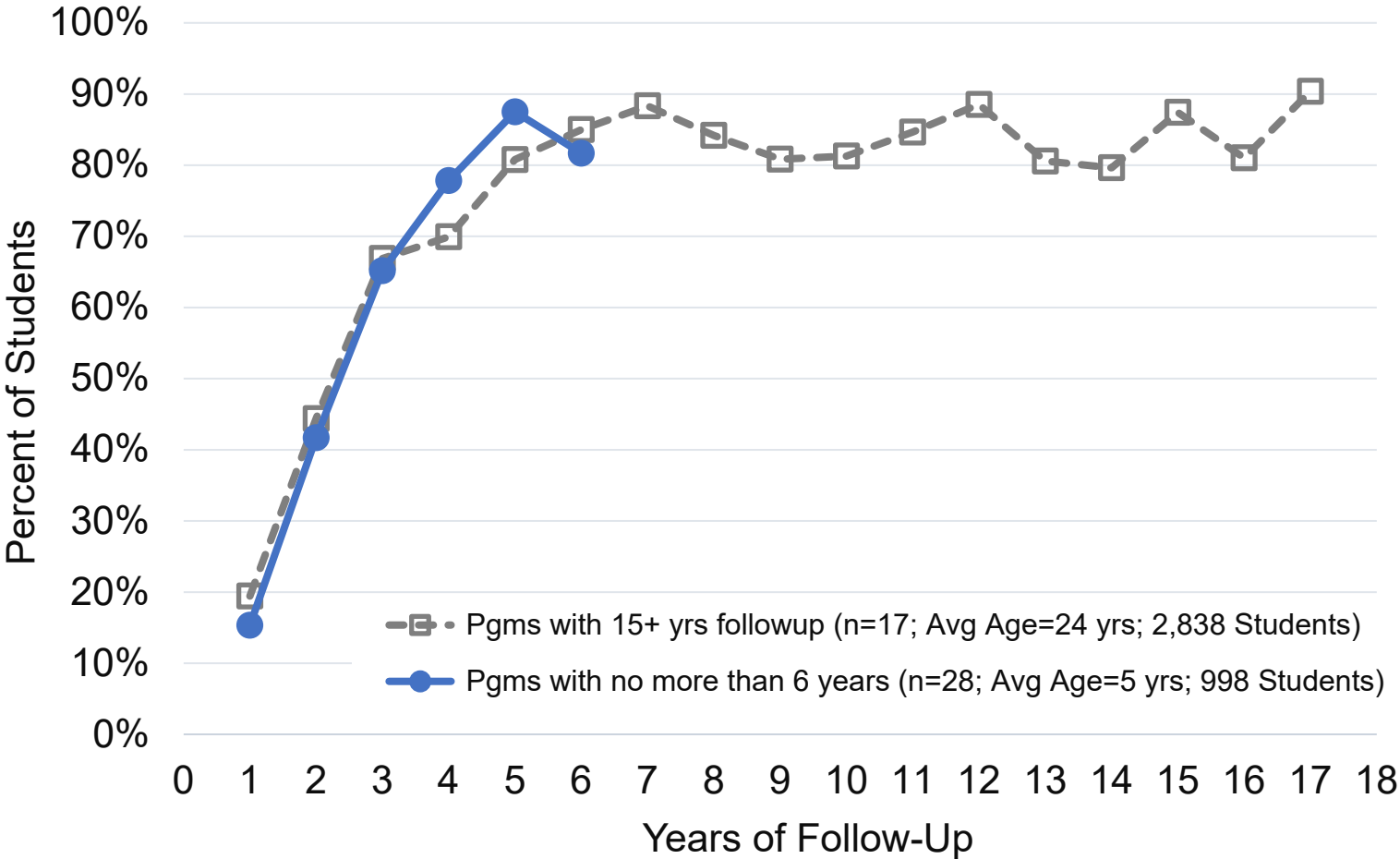
- Current explicit goals:
  - transfer to 4-year institution
  - completion of bachelor's degree

Recommendation: Consider explicit goals that include other metrics that examine the goal of enhancing diversity in the biomedical workforce, such as:

- Degree earned – is it a STEM bachelor's degree?
- Data on students' activities after completion of program:
  - are they entering the biomedical workforce (should be considered a success!)
  - are they continuing into biomedical/biobehavioral graduate programs (success!)

# **Are There Lessons Learned That Can Be Extracted from the B2B R25 Data (1992-2019)?**

# Funding Duration Did Not Have a Strong Effect on the Number of Students Who Transfer





# What Else Might Be Learned?

- Working group examined factors that might define a successful program:
  - Is there an optimum program size?
  - Is there better success if there is another program (NIH/NIGMS or NSF) at the 4-year partner for students to participate in after B2B?
  - What are best practices? (boot camps, peer mentors, quantitative skills training, career development workshops, participation at science conferences, etc.)

Conclusion: Analysis found that variability in outcomes could not pinpoint key factors or optimal sizes.

Recommendation: Analyze existing data for statistical outliers and look at activities or components that enhance (or diminish) success. May require qualitative and/or a case study approach, and intersectional data analysis should be considered.

# Going Forward: Transition from the B2B R25 to T34 Mechanism

- In 2019, B2B program transitioned from the R25 Research Education mechanism to a T34 Training mechanism.
- The transition is meant to align B2B with all other NIGMS training programs.
- Note: Given the recency of the transition, insufficient data is available to evaluate outcomes in the T34 version of the program currently.

# R25 to T34 Transition: Better Student Support!

## R25 Support

- Students paid for research participation up to 20 hrs./week during the school year, and up to 40 hrs./week during summer

## T34 Support

- Full-time, year-round stipend, including living expenses, tuition remission, and health insurance

Better student support is a positive outcome of the transition!

# R25 to T34 Transition: Budget Structure Differences

## R25 Support

- Flexible budget mechanisms
- Capped at \$300k direct costs
- Students paid for research participation hourly
- Explicitly allows payment of peer mentors and supplemental course instructors

## T34 Support

- Structured budget, relationship between budget and number of slots
- No overall budget cap
- Training-related expenses capped at \$10k/trainee, up to \$100k direct costs

1. Because training-related expenses are capped and not specified, we recommend that any identified best practices from successful B2B programs should be communicated to grant applicants with allowable budget approaches.
2. Due to better student support, the number of slots per program may decrease. Could very small programs (<5 slots) be below critical mass for success? Recommend analyzing program size effects.

# R25 to T34 Transition: Positive Data Reporting Changes

## R25 Reporting

- Table 8D required for new/competing applications, but only recommended for progress reports.
- Switched between CareerTrac and xTrain software monitoring over the years.

## T34 Reporting

- Requirement to use Table 8D to report outcomes, including progress reports.
- Requirement to use xTrain for appointing trainees.
- Availability of the xTract system to simplify entering data for Table 8D.
- Required tables now include trainee publications, and trainees must have an ORCID iD.

1. New reporting requirements should yield better data for analysis of B2B program!
2. Recommendation: use new data to try to address factors impacting success that could not be answered using the current data set.

# Working Group Findings and Recommendations

- The B2B program is successful and should be continued!
- Suggestions for improvements:
  - Extract best practices from B2B R25 data as case studies/qualitative analysis and from the new B2B T34 results to inform best practices in the future. Examine factors that could not be addressed currently, especially program size effects.
  - Communicate best practices and budgetary approaches to applicants and current programs.
  - Include explicit goal of enhancing diversity in the biomedical workforce and collect data on STEM degrees earned and outcome after graduation (entry into workforce? graduate school in biomedical/biobehavioral area?).
- A broader examination of the biomedical research workforce and need for community college-prepared employees (Skilled Technical Workforce) should be examined to generally inform NIGMS diversity efforts.

# Acknowledgments

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