

# Jordan Mark Barbone, M.A.

DATA SCIENTIST, R DEVELOPER

West Chester, PA

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*R programmer with experience in statistical programming, monitoring, and report automation in cognitive and CNS clinical trials*

## Skills

<b>R - Advanced</b>	package development, data analysis, statistical programming, data visualization, ETL/Data integration, tidyverse (dplyr, ggplot2, purrr, tidyr, devtools, etc), Rmarkdown
<b>Other programming experience</b>	Intermediate: Python Basic: SQL, Git, SAS, cmd, Rust
<b>Clinical trials</b>	clinical data management programming, centralized monitoring, eCOA, data review, Rater training and qualification
<b>Psychology</b>	behavioral statistics, research methods, cognitive psychology, learning psychology

## Experience

### Data Scientist

COGSTATE

New Haven, CT (Remote)

Jun 2021 - Present

### Principal Data Analyst

MADRIGAL PHARMACEUTICALS, LLC

Conshohocken, PA

Dec 2019 - Jun 2021

- Develops analyses, solutions, scripts, and packages in R; developing custom functions, analytic packages for creation of daily metrics and reports; unit testing, writing documentation; maintain source code control
- Aggregates and organizes data sources in STDM
- Analyzes efficacy, safety, and exploratory data for: ongoing phase 3 studies in NASH and NAFLD; ad hoc analyses for phase 2; biomarker and PRO
- Uses, reviews, and reports on statistical testing such as: ANCOVA, LS-Means, ROC, Kruskal-Wallis, Wilcoxon rank sum, t-test, correlations (Pearson product, Spearman rho, Kendall's tau)
- Trains and onboards data analyst

### Clinical Data Scientist

SIGNANT HEALTH (FORMERLY BRACKET AND CRF HEALTH)

Wayne, PA

Jan 2019 - Nov 2019

- Interacted with and analyzes CNS, psychiatry, and neurology clinical trial data quality and outcomes information for clinical insights
- Developed and implemented new data products and deliverables for blinded
- Reviewed and developed analyses with SME for detection of errors for study endpoints; collaborated with review of analytic findings
- Trained and supervised of Data Scientists; developed and provided training for new and current processes, programming, and technologies/software; lead, organized team meetings and status updates; wrote and reviewed new process documentation.
- Assisted Program Managers and Project Delivery Managers for process implementation for data products and deliverables for blinded

### Clinical Data Specialist

BRACKET

Wayne, PA

Jan 2018 - Dec 2018

- Interacted with and analyzes CNS, psychiatry, and neurology clinical trial data quality and outcomes information for clinical insights; collaborated with other Bracket stakeholders and teams to execute and provide ongoing analysis related to study deliverables or internal needs.
- Developed training material development and QC; performed data review, eCOA user acceptance testing; study staff contact, sponsor contact, contact with outside experts, report writing.
- Maintained and classified clinical information/materials. Reviewed scale administration and scoring to provide clinical feedback and remediation for raters.

### Clinical Associate

BRACKET

Wayne, PA

May 2016 - Dec 2017

- Participated in applicable aspects of clinical content development and delivery, including training material development and QC, data review, eCOA user acceptance testing, study staff contact, sponsor contact, contact with outside experts, and report writing
- Maintained and classified clinical information/materials for CNS, psychiatry, and neurology clinical trials
- Provided data review for Bracket's Endpoint Reliability programs; clinical analysis on study endpoint data for administration and scoring calibration to standard training principles; and provided remediation as needed to recalibrate to study standards.

## Clinical Assistant

Wayne, PA

BRACKET

Aug 2015 - May 2016

- Developed object specific video material, clinical content for training and qualification programs for study staff in clinical trials; addressed and reviewed data quality issues; clinical scheduling; ensured compliance with quality assurance, participate in reporting, analysis activities and research activities (e.g., collection and dissemination of literature and/or data); prepared reports of clinical activities.

## Writing Tutor

224 Lawrence Center, West Chester,  
PA 19383

LEARNING ASSISTANCE & RESOURCE CENTER

Aug 2014 - May 2015

- Tutored in 1-2 person sessions to develop skills necessary for effective writing, as well promoted independent and active learning.
- Monitored efficiency of the Academic Development Program and growth of students through maintaining daily session activity logs, utilizing Bloom's Taxonomy, biweekly student reports, and semester evaluations.

## Education

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### Master of Arts

West Chester, PA

WEST CHESTER UNIVERSITY OF PENNSYLVANIA

Aug 2017 - May 2019

- General Psychology
- Thesis: The effects of participant-selected background music on executive function task performance
- Advisor: Geeta Shivde, Ph.D.
- GPA: 4.00

### Non-degree Graduate Student

West Chester, PA

WEST CHESTER UNIVERSITY OF PENNSYLVANIA

Aug 2016 - Jun 2017

- Classes in Statistics, Research Methods, and Psychometrics
- GPA: 4.00

### Bachelor of Arts

West Chester, PA

WEST CHESTER UNIVERSITY OF PENNSYLVANIA

Aug 2011 - May 2015

- Major in Psychology, Minor in Biology
- Cumulative GPA: 3.470, Major GPA: 3.834

## Tutoring

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### Effective Writing

West Chester, PA

LEARNING ASSISTANCE AND RESOURCE CENTER, WEST CHESTER UNIVERSITY OF PENNSYLVANIA

Aug 2014 - May 2015

### Psychology of Learning

West Chester, PA

PSI CHI, PSYCHOLOGY DEPARTMENT, WEST CHESTER UNIVERSITY OF PENNSYLVANIA

Aug 2014 - May 2015

### Introduction to Biopsychology

West Chester, PA

PSYCHOLOGY DEPARTMENT, WEST CHESTER UNIVERSITY OF PENNSYLVANIA

Aug 2014 - Dec 2014

### Biopsychology of Motivation & Emotion

West Chester, PA

PSYCHOLOGY DEPARTMENT, WEST CHESTER UNIVERSITY OF PENNSYLVANIA

Aug 2014 - Dec 2014

### Behavioral Statistics

West Chester, PA

WEST CHESTER UNIVERSITY OF PENNSYLVANIA

Aug 2014 - May 2015

### Research Methods in Psychology

West Chester, PA

WEST CHESTER UNIVERSITY OF PENNSYLVANIA

Aug 2014 - May 2015

## Papers

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### PEER REVIEWED PUBLICATIONS

Solomon, T. M., **Barbone, J. M.**, Feaster, H. T., Miller, D. S., deBros, G. B., Murphy, C. A., & Michalczyk, D. (2019). Comparing the standard and electronic versions of the Alzheimer's disease assessment scale cognitive subscale: A validation study. *The Journal of Prevention of Alzheimer's Disease*, 6(4), 237–241. <https://doi.org/10.14283/jpad.2019.27>

Irani, F., **Barbone, J. M.**, Beausoleil, J., & Gerald, L. (2017). Is asthma associated with cognitive impairments? A meta-analytic review. *Journal of Clinical and Experimental Neuropsychology*, 39(10), 965–978. <https://doi.org/10.1080/13803395.2017.1380339>

## MASTER'S THESIS

**Barbone, J. M.** (2019). *The effects of participant-selected background music on executive function task performance* (Master's thesis, West Chester University of Pennsylvania). <https://doi.org/10.13140/RG.2.2.34109.41446>

## Posters

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### MADRIGAL - LIVER DISEASE

Harrison, S. A., Taub, R. A., Karsdal, M. A., Franc, J., Bashir, M., Mu, **Barbone, J. M.**, Neff, G., Gunn, N. T., & Moussa, S. (2020, November). Algorithm for predicting advanced NASH fibrosis on screening biopsy in resmetirom phase 3 MAESTRO-NASH clinical trial. *Poster presented at the AASLD Liver Meeting Digit Experience conference*. American Association for the Study of Liver Diseases (AASLD).

Younossi, Z. M., Stepanova, M., Taub, R. A., **Barbone, J. M.**, Moussa, S., & Harrison, S. A. (2020, November). Improvement of health-related quality of life is associated with improvement of fat fraction by MRI-PDFF in patients with nonalcoholic steatohepatitis treated with resmetirom. *Poster presented at the AASLD Liver Meeting Digit Experience conference*. American Association for the Study of Liver Diseases (AASLD).

Harrison, S. A., Taub, R., **Barbone, J. M.**, Franc, J., & Karsdal, M. A. (2020, March). Resmetirom, a beta selective thyroid hormone receptor agonist, reduces net collagen III deposition in nonalcoholic Steatohepatitis. *Poster to have been presented at american association for the study of liver diseases (AASLD) emerging topic conference 2020, nuclear receptors in Nonalcoholic Fatty Liver Diseases (conference cancelled)*.

### SIGNANT HEALTH (BRACKET) - ECOA DATA QUALITY

Roy, M., Brown, J., Hong, B., Benecke, R., Chen-Tackett, Z., Zhou, W., **Barbone, J. M.**, Feaster, H. T., & Sachs, G. (2020, September). eCOA prompted MADRS interview: Balancing through assessment and efficiency. *Poster presented at ISCTM*.

Crittenden, K., Machizawa, S., Feaster, H. T., **Barbone, J. M.**, Hong, B., Verma, P., & Zhou, W. (2020, April). Cross-cultural differences in PANSS item ratings: Comparisons of six geo-cultural regions. *Poster presented at the 2020 Schizophrenia International Research Society (SIRS) Conference, Florence, Italy*. <https://doi.org/10.1093/schbul/sbaa031.103>

Solomon, T. M., Feaster, H. T., Karas, S. M., Garcia-Valdecasas, M., **Barbone, J. M.**, DiGregorio, D. T., DeBonis, D., & Miller, D. S. (2019, July). The evolution of technology in data quality programs for Alzheimer's disease clinical trials: What have we learned and where are we going. *Poster presented at the Alzheimer's Association International Conference (AAIC), Los Angeles, CA, USA*. <https://doi.org/10.1016/j.jalz.2019.06.4332>

Feaster, H. T., **Barbone, J. M.**, Miller, D. S., & Solomon, T. M. (2019, June). Rater remediation on the ADAS-cog leads to longitudinal improvement in clinical trial data quality. *Poster presented at the Alzheimer's Association International Conference (AAIC), Los Angeles, CA, USA*. <https://doi.org/10.1016/j.jalz.2019.06.3923>

Karas, S. M., **Barbone, J. M.**, Solomon, T. M., Hong, B., & Feaster, H. T. (2019, June). Impact of data quality programs on MMSE inclusion criteria in Alzheimer's disease clinical research trials. *Poster presented at the Alzheimer's Association International Conference (AAIC), Los Angeles, CA, USA*. <https://doi.org/10.1016/j.jalz.2019.06.862>

**Barbone, J. M.**, Solomon, T. M., Feaster, H. T., Garcia-Valdecasas-Colell, M., & Miller, D. S. (2018, October). MMSE screening data quality for Alzheimer's disease studies across countries. *Presented at the 11th Clinical Trials on Alzheimer's Disease (CTAD), Barcelona, Spain*. <https://doi.org/10.13140/RG.2.2.27921.68966>

Garcia-Valdecasas-Colell, M., **Barbone, J. M.**, Solomon, T. M., Feaster, H. T., & Tott, N. (2018, October). Identifying impact of rater change on MMSE and CDR data in multi-national Alzheimer's disease clinical trials. *Presented at the 11th Clinical Trials on Alzheimer's Disease (CTAD), Barcelona, Spain*. <https://doi.org/10.13140/RG.2.2.21210.80327>

- Wessels, A. M., **Barbone, J. M.**, DiGregorio, D. T., Miller, D. S., Mullen, J. A., Sims, J. R., & Solomon, T. M. (2018, October). Lanabecestat- Rater performance and error characteristics of efficacy assessments in the DAYBREAK-ALZ study. *Presented at the 11th Clinical Trials on Alzheimer's Disease (CTAD), Barcelona, Spain*. Retrieved from <https://bit.ly/32p18au>
- Feaster, H. T., **Barbone, J. M.**, Garcia-Valdecasas-Colell, M., & Solomon, T. M. (2018, July). Electronic ADAS-Cog (eADAS-Cog) data quality: How do countries compare? *Poster presented at the 2018 Alzheimer's Association International Conference, Chicago, IL, USA*. <https://doi.org/10.1016/j.jalz.2018.06.1373>
- Karas, S. M., **Barbone, J. M.**, DeBonis, D., & Solomon, T. M. (2018, July). The use of statistical modeling to complement data quality programs. *Poster presented at the 2018 Alzheimer's Association International Conference, Chicago, IL, USA*. <https://doi.org/10.1016/j.jalz.2018.06.066>
- Solomon, T. M., Karas, S. M., **Barbone, J. M.**, DiGregorio, D. T., Miller, D. S., & Feaster, H. T. (2018, July). Analysis of the rates and types of errors on the enhanced eCOA version of the Alzheimer's Disease Assessment Scale - Cognitive subscale and Mini-mental State Examination used in dementia clinical trials. *Poster presented at the 2018 Alzheimer's Association International Conference, Chicago, IL, USA*. <https://doi.org/10.1016/j.jalz.2018.06.070>
- Solomon, T. M., **Barbone, J. M.**, Miller, D. S., & Feaster, H. T. (2018, June). Pilot validation of an Electronic Alzheimer's Disease Assessment Scale - Cognitive Subscale (eADAS-Cog). *Poster presented at the 2018 Alzheimer's Association International Conference, Chicago, IL, USA*. <https://doi.org/10.1016/j.jalz.2018.06.719>
- Seichepine, D. R., Solomon, T. M., Jacobs, E. B., **Barbone, J. M.**, DiGregorio, D. T., & Miller, D. S. (2018, February). Comparison between "flat" and "enhanced" eCOA of MMSE Attention and Calculation in clinical trials of Alzheimer's disease. *Presented at the ISCTM 14th annual scientific meeting, Washington, D.C., USA*. <https://doi.org/10.13140/RG.2.2.16193.61289>
- Solomon, T. M., Feaster, H. T., **Barbone, J. M.**, & Miller, D. S. (2017, November). Utilizing audio review to improve ADCS-ADL data quality. *Poster presented at Clinical Trials on Alzheimer's Disease conference (CTAD), Boston, MA, USA*. Retrieved from <https://bit.ly/3m1Ku0c>
- Enger, B., & **Barbone, J. M.** (2017, October). Distribution of performance and incorrect ratings in qualification video scoring. *Poster presented at CNS Summit, Boca Raton, FL, USA*. <https://doi.org/10.13140/RG.2.2.14096.46088>
- Solomon, T. M., **Barbone, J. M.**, Karas, S. M., & Feaster, H. T. (2017, October). Longitudinal impact of audio review on data quality. *Poster presented at Clinical Trials on Alzheimer's Disease conference (CTAD), Boston, MA, USA*. Retrieved from <https://bit.ly/2DYaFtd>
- Feaster, H. T., Solomon, T. M., Abi-Saab, D., Vogt, A., **Barbone, J. M.**, Harrison, J., & Miller, D. S. (2017, July). The impact of electronic clinical outcome assessments (eCOA) on Alzheimer's disease clinical trial data quality. *Poster presented at the Alzheimer's Association International Conference, London, England, UK*. <https://doi.org/10.1016/j.jalz.2017.06.1828>
- Butler, A., Feaster, H. T., Miller, D. S., & **Barbone, J. M.** (2017, May). Using iterative user experience design to improve electronic clinical outcomes assessment data quality. *Presented at the ISPOR 22nd annual international meeting, Boston, MA, USA*. Retrieved from <https://bit.ly/3isANeP>

## WCUPA - ASTHMA AND MUSIC COGNITIVE

- Barbone, J. M.**, & Shivede, G. (2019, May). The effects of participant selected background music on executive task performance. *Poster presented at the Association for Psychological Science, Washington, D.C., USA*. <https://doi.org/10.13140/RG.2.2.26125.79842>
- Barbone, J. M.** (2018, November). Trends in self-reported use of music while studying: Implications for research. *Poster presented at the Research and Creative Activity Day at West Chester University, West Chester, PA, USA*. <https://doi.org/10.13140/RG.2.2.14075.57124>
- Irani, F., **Barbone, J. M.**, & Beausoleil, J. (2015, August). The impact of asthma on cognitive functioning. *Paper presented at the American Psychological Association Convention, Toronto, Canada*.

**Barbone, J. M.,** Saxena, S., & Irani, F. (2015, July). Does asthma effect neuropsychological performance? A meta-analysis. *Poster presented at the American Psychological Association Convention, Toronto, Canada.*

Mulligan, R. D., **Barbone, J. M.,** Saxena, S., Carey-Jr, D., Clappsy, J., & Irani, F. (2015, March). Asthma cognition data collection. *Poster presented at the west chester university psychology research day, west chester, PA, USA.* Retrieved from <https://bit.ly/2ZAD5kn>

**Barbone, J. M.,** Saxena, S., & Irani, F. (2015, February). Neuropsychological performance in individuals with asthma: Two meta-analyses. *Poster presented at the Eastern Psychological Association Conference, Philadelphia, PA, USA.* Retrieved from <https://bit.ly/3hu6J0i>

## Extracurricular activities

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### Chapter Graduate Liaison

PSI CHI CHAPTER, PSYCHOLOGY DEPARTMENT, WEST CHESTER UNIVERSITY OF PENNSYLVANIA

West Chester, PA

Dec 2017 - May 2019

### Graduate Member

PSI CHI CHAPTER, PSYCHOLOGY DEPARTMENT, WEST CHESTER UNIVERSITY OF PENNSYLVANIA

West Chester, PA

Aug 2017 - Dec 2017

### Peer Mentor

WEST CHESTER UNIVERSITY OF PENNSYLVANIA

West Chester, PA

Jan 2015 - May 2015

### Chapter Secretary

PSI CHI CHAPTER, PSYCHOLOGY DEPARTMENT, WEST CHESTER UNIVERSITY OF PENNSYLVANIA

West Chester, PA

May 2014 - May 2015

### Club Publicity Chair

WEST CHESTER UNIVERSITY OF PENNSYLVANIA

West Chester, PA

May 2014 - May 2015

### Student Member

STUDENT LIFE COMMITTEE, PSYCHOLOGY DEPARTMENT, WEST CHESTER UNIVERSITY OF PENNSYLVANIA

West Chester, PA

Sep 2013 - May 2014

### Undergraduate Member

PSI CHI CHAPTER, PSYCHOLOGY DEPARTMENT, WEST CHESTER UNIVERSITY OF PENNSYLVANIA

West Chester, PA

Mar 2013 - May 2014

### Undergraduate Member

WEST CHESTER UNIVERSITY OF PENNSYLVANIA

West Chester, PA

Aug 2012 - May 2014

## Awards

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### WCUPA Psychology Service Award

PSYCHOLOGY DEPARTMENT, WEST CHESTER UNIVERSITY OF PENNSYLVANIA

West Chester, PA

Apr 2015

- Dedicated service to the Psychology Department through positions an undergraduate club, a student-faculty committee, and the honor society

### Psychology Research Achievement Award

PSYCHOLOGY DEPARTMENT, WEST CHESTER UNIVERSITY OF PENNSYLVANIA

West Chester, PA

Apr 2015

- Involvement in research activities, poster presentations, and work on conducting and reporting on a meta-analysis for publication

### CRLA Certified Tutor Level II

LEARNING ASSISTANCE AND RESOURCE CENTER, WEST CHESTER UNIVERSITY OF PENNSYLVANIA

West Chester, PA

Apr 2015

- Successfully completed standardized CRLA training for tutors

### Dean's List

COLLEGE OF ARTS AND SCIENCES, WEST CHESTER UNIVERSITY OF PENNSYLVANIA

West Chester, PA

Dec 2014

- Completed 12 or more graded hours in an academic semester and achieve a semester GPA of 3.670 or better

### CRLA Certified Tutor Level II

LEARNING ASSISTANCE AND RESOURCE CENTER, WEST CHESTER UNIVERSITY OF PENNSYLVANIA

West Chester, PA

Dec 2014

- Successfully completed standardized CRLA training for tutors

### Dean's List

COLLEGE OF ARTS AND SCIENCES, WEST CHESTER UNIVERSITY OF PENNSYLVANIA

West Chester, PA

May 2013

- Completed 12 or more graded hours in an academic semester and achieve a semester GPA of 3.670 or better

## Programming courses

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## Data Scientist with R Track

[HTTPS://WWW.DATACAMP.COM/STATEMENT-OF-ACCOMPLISHMENT/TRACK/B95FA8556C521B7AEF3E27A695E162EB588622F1](https://www.datacamp.com/statement-of-accomplishment/track/B95FA8556C521B7AEF3E27A695E162EB588622F1)

DataCamp

## Statistician with R Track

[HTTPS://WWW.DATACAMP.COM/STATEMENT-OF-ACCOMPLISHMENT/TRACK/F5C18FDED8EFD5CE7DC57F91D14CDE3166F6439B](https://www.datacamp.com/statement-of-accomplishment/track/F5C18FDED8EFD5CE7DC57F91D14CDE3166F6439B)

DataCamp

## R Programmer Track

[HTTPS://WWW.DATACAMP.COM/STATEMENT-OF-ACCOMPLISHMENT/TRACK/09B64B5B5242159381D75837ED90198454E9FC58](https://www.datacamp.com/statement-of-accomplishment/track/09B64B5B5242159381D75837ED90198454E9FC58)

DataCamp

## Data Analyst with R Track

[HTTPS://WWW.DATACAMP.COM/STATEMENT-OF-ACCOMPLISHMENT/TRACK/3041F1BFC05674C2E957C479FDDBB8F55573DB45](https://www.datacamp.com/statement-of-accomplishment/track/3041F1BFC05674C2E957C479FDDBB8F55573DB45)

DataCamp

## R Programming

[HTTPS://WWW.DATACAMP.COM/STATEMENT-OF-ACCOMPLISHMENT/TRACK/327633AAE130FC18FD36A34A476D535CEFCF930D](https://www.datacamp.com/statement-of-accomplishment/track/327633AAE130FC18FD36A34A476D535CEFCF930D)

DataCamp

## Importing & Cleaning Data with R Track

[HTTPS://WWW.DATACAMP.COM/STATEMENT-OF-ACCOMPLISHMENT/TRACK/525FABE528901A0BBB048608D5C84E9C553E1805](https://www.datacamp.com/statement-of-accomplishment/track/525FABE528901A0BBB048608D5C84E9C553E1805)

DataCamp

## Machine Learning Fundamentals in R Track

[HTTPS://WWW.DATACAMP.COM/STATEMENT-OF-ACCOMPLISHMENT/TRACK/57ECB920DD927F26CBF2D25CAA0F689F131653B3](https://www.datacamp.com/statement-of-accomplishment/track/57ECB920DD927F26CBF2D25CAA0F689F131653B3)

DataCamp

## Statistical Fundamentals with R Track

[HTTPS://WWW.DATACAMP.COM/STATEMENT-OF-ACCOMPLISHMENT/TRACK/4A64ACC738CC6DCF6E19E5E7F9955C7A6DE410A0](https://www.datacamp.com/statement-of-accomplishment/track/4A64ACC738CC6DCF6E19E5E7F9955C7A6DE410A0)

DataCamp

## Statistical Fundamentals with R Track (Old Track)

[HTTPS://WWW.DATACAMP.COM/STATEMENT-OF-ACCOMPLISHMENT/TRACK/67629E7267C73B14E0DBD964A4B9D35F0957BDF0](https://www.datacamp.com/statement-of-accomplishment/track/67629E7267C73B14E0DBD964A4B9D35F0957BDF0)

DataCamp

## Python Programming Track

[HTTPS://WWW.DATACAMP.COM/STATEMENT-OF-ACCOMPLISHMENT/TRACK/D7E95156F4DD81D658D48DFBBC1B8792D7164D7D](https://www.datacamp.com/statement-of-accomplishment/track/D7E95156F4DD81D658D48DFBBC1B8792D7164D7D)

DataCamp

## SQL Fundamentals Track

[HTTPS://WWW.DATACAMP.COM/STATEMENT-OF-ACCOMPLISHMENT/TRACK/C5EE6F9F354942E37AE6D84115227D6B98BA5F78](https://www.datacamp.com/statement-of-accomplishment/track/C5EE6F9F354942E37AE6D84115227D6B98BA5F78)

DataCamp

## SAS Programming 1: Essentials

[HTTPS://GITHUB.COM/JMBARBONE/BARBONE-CV/BLOB/MASTER/DOCS/EPG194\\_CERTIFICATE OF COMPLETION.PDF](https://github.com/JMBarbone/Barbone-CV/blob/master/docs/EPG194_CERTIFICATE%20OF%20COMPLETION.pdf)

SAS

## SAS Programming for R Users

[HTTPS://GITHUB.COM/JMBARBONE/BARBONE-CV/BLOB/MASTER/DOCS/ESP4RV\\_CERTIFICATE OF COMPLETION.PDF](https://github.com/JMBarbone/Barbone-CV/blob/master/docs/ESP4RV_CERTIFICATE%20OF%20COMPLETION.pdf)

SAS