SAS® GLOBAL FORUM 2018

USERS PROGRAM

Medicare Part D Opioid Prescribing Rates in Appalachia

April 8 – 11 | Denver, CO

#SASGF

SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration. Other brand and product names are trademarks of their respective companies.

Medicare Part D Opioid Prescribing Rates in Appalachia

Manuel Figallo, Jonathan McCopp, Ray Mierwald, Shanika Palm

SAS Institute Inc. | Visual Connections, LLC

ABSTRACT

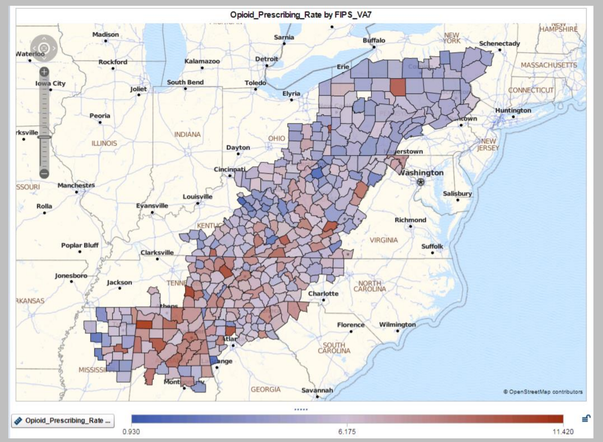
Government agencies have estimated that opioids now kill more Americans than car accidents. In this e-poster session, attendees learn how to use SAS® Studio, SAS® Visual Analytics, and SAS® Visual Statistics to quickly prototype SAS® solutions to better understand the opioid crisis in America for Medicare programs that provide prescription drugs.

Using U.S. Federal Government Public Use Files or PUFs, attendees are led through the process of accessing PUF data using APIs, data explorations, clustering and machine learning models, and simple reporting to gain insights into this pressing government challenge.

Handouts with step-by-step instructions are provided so that attendees can reproduce the analysis with PUF data on their own and even incorporate it as part of their own work. As a result of attending this session, attendees will gain a better understanding of the opioid epidemic, as well as a clear sense of how prototypes built with SAS can improve the overall quality of a solution.

BACKGROUND

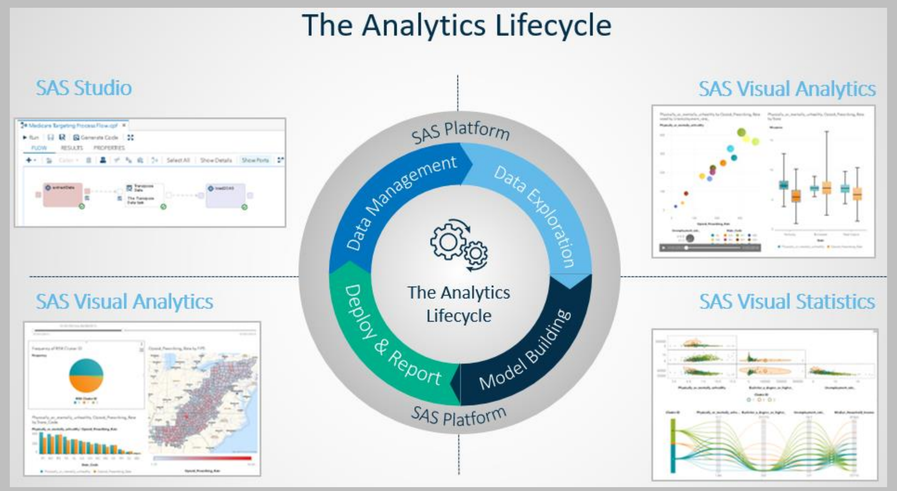
Medicare Part D is an optional program providing prescription drug coverage to 44m Medicare beneficiaries at a cost of $77.4b. Beneficiaries enroll in stand-alone drug plans or Medicare Advantage plans that offer Part D coverage. Coverage consists of 4 phases with annually defined gross drug cost spending thresholds. CMS holds 80% liability in the Catastrophic coverage phase after the beneficiary out of pocket spending hits an annually defined threshold. Low income beneficiaries are eligible for Cost Sharing and a Premium Subsidy



- Opioid Epidemic in Medicare Part D:
  - 1 in 3 Medicare Part D beneficiaries received a prescription opioid in 2016
  - 1 in 10 Medicare Part D beneficiaries received opioids for 3 months or more
  - A 2017 OIG report found over 500,000 non-hospice/non-cancer beneficiaries received a morphine equivalent dose of over 120mg a day for at least 3 months

METHODS

- The data for this analysis was compiled from federal government Public Use File (PUF) data sources. Medicare Part D claims data is from the Chronic Conditions Warehouse. American Community Survey data provided poverty and education variables. The Bureau of Labor Statistics data was used for unemployment rates. Additional modeling data was from the Behavioral Risk Factor Surveillance System and the Area Health Resource Files.
- Files were transformed from long to wide to enhance modeling and reporting capabilities and summarized to the FIPS county level. Log transformations were performed to create normally distributed data.
- API data calls were used to import the data which was loaded into the SAS LASR Server for Data Exploration, Model Building, and Reporting.
- Opioid prescribing rate is the product of total Medicare Part D opioid prescriptions by county over the total number of Medicare Part D prescriptions by county.
- Target counties are those with high opioid utilization and low economic indicators because CMS has more liability for low income beneficiaries in the Medicare Part D program.
- We are utilizing the Analytics Lifecycle as a way to rapidly deploy a solution using SAS Studio, SAS Visual Analytics, and SAS Visual Statistics.



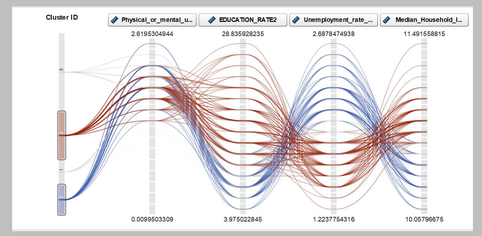
SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration. Other brand and product names are trademarks of their respective companies.

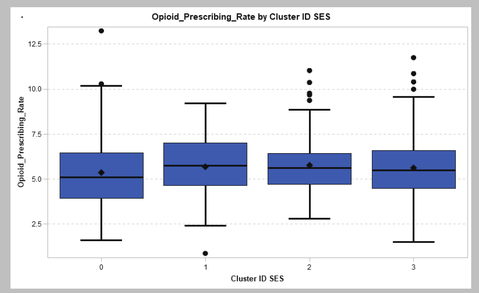
Medicare Part D Opioid Prescribing Rates in Appalachia

Manuel Figallo, Jonathan McCopp, Ray Mierwald, Shanika Palm

SAS Institute Inc. | Visual Connections, LLC

RESULTS





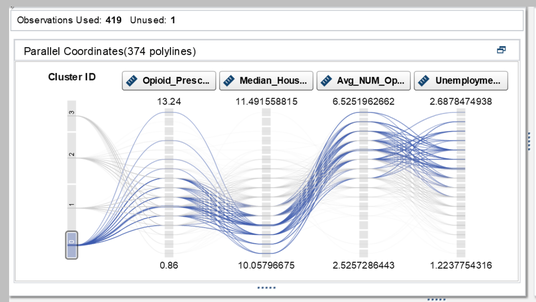
- The rate of all prescriptions that are opioids in Appalachia is 6.1%. The unweighted county mean is 5.6% with a MAX value of 13.2% and a MIN of .9%.
- Opioid prescription rate is not different between economic groupings of Appalachian counties or Appalachian regions

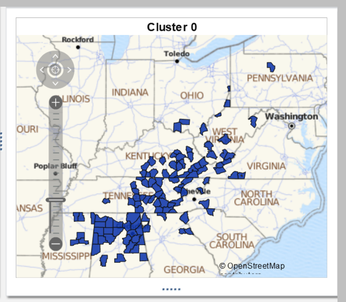
A K-Means Clustering model was developed to group socio-economic variables into clusters to evaluate if these clusters could be used to target counties for further analysis.

- Initial clustering on socio-demographic variables were created but not indicative of a higher opioid prescribing rate.
- Interpretation of this finding could be that the Appalachian area does not have enough variance in socio-economic status or that the opioid epidemic in the Part D program does not differ between socio-economic groupings.
- A second K-Means Clustering model was created that includes socio-economic variables as well as opioid prescribing rate and average opioid prescriptions by provider. This model was built into reports that can be deployed in SAS Visual Analytics to help inform areas where opioid misuse could have a high cost liability for CMS.

CONCLUSIONS

- Opioid rates in Appalachia are not correlated with economic status, geography, or socio-economic status
- CMS' Medicare Part D liability is greater for those with low income status so targeting should consider economic status.
- Use of the Analytics Life Cycle enabled creation of a prototype model that can be rapidly created and deployed.





Cluster 0 Details

Cluster ID SES..	County	State	Region	FIPS Code	Opioid_Pr...	Median_Hous...	Avg_NUM_Opioid_Presc_...	Unemployment_rate_
0	Scott	Tennessee	South	47151	13.24	33254	682.11363636	9.6
0	Franklin	Alabama	South	01059	11.75	38535	352.5	6.4
0	Loudon	Tennessee	South	47105	11.03	52787	259.67961165	5.7
0	Coffee	Tennessee	South	47031	10.86	44452	243.54205607	5.6

- Future models would consider spatial regression as well as inclusion of Medicare Part D plan sponsors, plan sponsor parent organizations, and/or pharmacy benefit managers because utilization review is the responsibility of the Part D plan.

REFERENCES

U.S. Department of Health and Human Services Office of the Inspector General. (2017, July). *Opioids in Medicare Part D: Concerns About Extreme Use and Questionable Prescribing*. (Publication Number OEI-02-17-00250.). https://oig.hhs.gov/oei/reports/oei-02-17-00250.pdf

U.S. Department of Health and Human Services *Agency Financial Report FY 2017.* https://www.hhs.gov/sites/default/files/fy-2017-hhs-agency-financial-report.pdf

https://github.com/sasgovernment

SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration. Other brand and product names are trademarks of their respective companies.

SAS® GLOBAL FORUM 2018

April 8 – 11 | Denver, CO
Colorado Convention Center

#SASGF

SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration. Other brand and product names are trademarks of their respective companies.