

# TITLE: TO BE DECIDED

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ABSTRACT. In recent papers [1] [2], topological data analysis has proven to be a very effective method for analyzing spatiotemporal patterns in the spread of drug use and disease. We extend these results to the state of Virginia by using a combination of classic tools from statistics and recent tools from topological data analysis (or TDA) by developing a hybrid method for analyzing the evolution of drug overdose data for the state of Virginia. By using the Kepler mapper algorithm along with a multifaceted lens function, combining an isolation forest along with the  $l_2$  norm and a K-Means clustering algorithm we analyze and identify the evolution of patterns and hotspots in the spatiotemporal distribution of the Virginia drug overdose data.

## CONTENTS

1. Introduction	1
References	1

## 1. INTRODUCTION

## REFERENCES

- [1] Nicholas Bermingham, David White, Nathan Willey *Spatiotemporal Spread of the Ohio Overdose Epidemic with Topological Data Analysis*.
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