When the new magic was new: the Claritas Corporation and the clustering of America

Fenwick McKelvey Associate Professor

Communication Studies Concordia University

fenwick.mckelvey@concordia.ca

Department of Communication Studies CJ 3.230 7141 Sherbrooke St W Montreal, Quebec, Canada H4B 1R6

Abstract: In 1982, geodemographics was "the new magic." The system promised to pinpoint voters. One of its key developers, Jonathan Robbin, boasted, "Tell me someone's zip code, and I can predict what they eat, drink, drive-even think." What was the secret? Robbin and his company, the Claritas Corporation, were among the first to merge newly digitized census data and computational social science into a geodemographic system called PRIZM. It produced new categories of populations known as clusters. These clusters provided a novel and legible form of computer demographics for marketers reliant on direct mail. Drawing on interviews and historical research, this article chronicles the understudied history of the Claritas Corporation. At a time of growing distress about microtargeting and behavioral advertising, the Claritas Corporation is a critical case to understand how computing changed how marketers and politicians distinguished, described, and marketed to Americans.

Keywords: geodemographics, clustering,

microtargeting, business history

## Introduction

"Clusters" was a good title for the *New Yorker*'s 1982 profile of the Claritas Corporation. The title came from Claritas's main product: clusters. Claritas sold its clusters as the latest innovation in marketing, part of what it called the new magic. From the outside, clusters could appear magical, conjuring new types of Americans from computer analysis of US Census data. The clusters were distinct behavioral profiles associated to zip codes across the US, and Claritas claimed that Americans' behavior could be predicted solely by their association with a cluster. These clusters could be ranked too. Claritas called its richest cluster "Blue Blood Estates," which *New Yorker* writer Lincoln Caplan described as "affluent/upper, suburban residential, predominately white."[17, p. 32]

Clusters, according to the *New Yorker*, were "market-rating classifications based on theory." [17, p. 32] The magazine's definition interpreted the firm's founder Jonathan Robbin's description of a cluster as a product of computational social science. Clusters referred to groupings of zip codes sharing common demographic attributes. Robin Page, another Claritas executive, described them more loosely as a "phenomenological what's-it."<sup>1</sup> Blue Blood Estates was one name he cocreated to market Robbin's results to other marketers. The meaning of the cluster concept rests somewhere between Robbin's technical and Page's social definitions.

Claritas's clusters were both technical and social—a combination of early multivariate statistics and compelling data narratives. Claritas popularized clustering, and its associated field of geodemographics, by blending technique and rhetoric, striking a balance between social fact and statistical frame. Historian Alain Desrosières notes that statistical techniques are constructs that hold to the world with some regularity. If, following Desrosières, the "average man" holds together "both the random, unpredictable aspects of individual behavior and the contrasting regularity...of the statistical summation of these individual

acts," then the cluster holds together behavioral aspects of census data with the regularity of postal geography.[26, p. 10] Desrosières emphasizes the close coordination between technical and social processes that produces these social facts, but Claritas were storytellers too. Clusters were given colorful names that described these social facts as if they were portraits of average Americans. Claritas sold clustering using what Michael L. Butterworth defines as the "statistical frame," where math and numbers function rhetorically to bolster expertise and punditry.[16]

Claritas sold aggregated census data as individualized accounts of Americans, anticipating multicultural advertising today and the discourse of post-race.[20,34] After the 1960s, "a decade that witnessed the 'discovery' of poverty, major civil rights mobilizations, and then Black, Red, Gray,

<sup>&</sup>lt;sup>1</sup> Interview of David Miller conducted by Fenwick McKelvey on 3 February 2021.

and Gay power," historian Sarah Igo writes, "it would be difficult to speak credibly . . . of a unitary America."[34, p. 287] Clusters were part of a shift to thinking of an American population that, Igo continues, "could be fissured into ever smaller and more specific fragments for reasons of profit as well as politics."[34, p. 287] The Claritas clusters marked an important milestone in the use of geographic systems and computational social science to offer new, more multidimensional accounts of America for marketing purposes.

My approach differs from most accounts of the Claritas Corporation. The firm is best known for its role in the best-selling book *The Clustering of America* by Michael Weiss, which popularized clusters.[33] Claritas was also the de riguer case nearly four decades ago when describing how data and computers enable more sophisticated forms of surveillance, or dataveillance. Claritas was also key to seminal privacy

scholar Oscar Gandy Jr.'s development of the concept of the panoptic sort to describe how computers aided in redlining and new ways to manage populations through data.[15,30,37,50,65] Indebted to this research, I rely on interviews and historical accounts to find a balance between viewing the firm's at-times overstated claims about clusters critically and acknowledging the careful work it took to create them. I see the Claritas Corporation as comparable to the Simulmatics Corporation, which historian Jill Lepore argues represents a beginning of data science.[44] The Claritas Corporation offers another starting point for data science.[29,46,64] Unlike Simulmatics, however, Claritas remains active, having survived numerous mergers and restructurings to continue providing a version of its clustering system still in use today.

This history begins with a focus on clustering's antecedents then moves to

Claritas's first product, REZIDE, which matched census data to zip codes. Clusters found patterns in this merged data, a technical innovation in marketing that Claritas had to figure out how to market. Clusters eventually brought the firm national attention and helped to popularize what we now call microtargeting, especially in politics. I conclude by discussing the firm's reproduction of its analysis for the 1980 census at the start of a decade that ended with the consolidation of the geodemographics industry and the popularization of clustering as an influential, contested, and perhaps intersectional account of America.

The main ingredients: Statistics, data, and advertising

Clustering depended on innovations in computational social science, the digitization of government data, and a growing demand for precision in marketing. The Claritas Corporation, at its height, had over 50 employees, but it is founder Jonathan Robbin who weaves together these three main ingredients. Robbin's early career, firstly, illustrates the growing utility of computer analysis in social research that, secondly, repurposed newly digital census and zip code data for, thirdly, marketing and advertising. Table 1 offers a timeline of major events in the firm's history and major developments in US government data practices important for this first section.

Date	Event
1950	US Census is the first non-
	military application of a
	UNIVAC digital computer
1952	IBM releases the model 701, its
	first fully electronic mainframe
	computer.
1960	Computer used to process the
	majority of 1960 US census
	data.[19]

1961	Jonathan Robbin founds the
	Research Data Processing
	Corporation.
1963	US Postal Service introduces zip
	code system for mail addressing.
1964	Research Data Processing
	Corporation becomes General
	Analytics Corporation.
1966	US Census Advisory Committee
	on Small Area Data selects New
	Haven, Connecticut, to
	experiment with new methods for
	the 1970 census.[66]
1970	US Census begins releasing 1970
	census data on magnetic tapes
	with more detailed data released
	up to 1973. Tapes cost \$60USD
	in 1972 to \$70USD thereafter.
1971	Claritas Corporation founded.
1974	Claritas Corporation publishes
	REZIDE and Claritas

Neighborhood Lifestyle Cluster System.

Table 1: Timeline of major events in theClaritas Corporation*1. Early computational social science in* 

New York

Jonathan Robbin's career coincides with the beginnings of computational social science. Robbin worked at the hubs of computing research near New York City, including Harvard University, Columbia University, and IBM. Research contracts introduced Robbin to early applications of computing to study demographics and population. By 1957, Robbin had started a PhD at New York University supervised by psychologist Edward Borgatta, influential in the field's adoption of statistics.[7] Robbin aided Borgatta in data processing for many of his early studies that relied on census analysis.[8-11]

Robbin's research used three key techniques instrumental to his later clustering work: factor analysis, cluster analysis, and social area analysis. While all three methods existed well before Robbin's interest began, these complex mathematical techniques were only beginning to be more readily available thanks to early microcomputing. Factor analysis is a statistical technique used to isolate latent variables or combinations of variables known as factors. Robbin and Borgatta used factor analysis to construct categorical moods out of standardized personality tests.[10] Cluster analysis classifies data into groups, or clusters, that share common values. Robbin claims to have written some of the first programs for factor and cluster analysis on IBM machines. Finally, Robbin learned a subfield of urban sociology known as social area analysis.[60] The method's origins date to Chicago sociologist Robert Park, who popularized the concept of the

public as a substitute for the more pejorative term *crowd*.[55] Social area analysis tried to further refine "the public" by classifying census tracts by profession, population, and ethnicity—factors later used by Claritas.[63] The same techniques another political marketer Vincent Barabba began to apply in politics starting in 1965 and later for Ronald Reagan.[35, 42-44]

Robbin might have stayed in academia had Borgatta stayed in New York. Instead, he moved out west, and Robbin dropped out without another quantitative supervisor at hand. Moving from academic to entrepreneur, he launched his first company, Research Data Processing Corporation (RDPC), in 1961. He changed the name to General Analytics Corporation (GAC) in 1964. The firm was one of many early dataconsulting firms of the time, competing with the better-known IBM, Computer Sciences Corporation, Simulmatics Corporations, and Abt Associates. The work brought him into contact with the growing data-processing industry. His son recalls visiting IBM's headquarters to retrieve and run tapes on their corporate computers.<sup>2</sup>

## 2. Digital data in the Great Society

These technical approaches gained value as the Census Bureau published data digitally. GAC benefited from decades of innovation in government data collection and analysis.[12,34,41] Robbin's entrepreneurship started just as the US Postal Service amended addresses in 1963 with zip codes to aid automated mail sorting. During the same period, the US Census Bureau prepared to release the 1970 census on digital media. Robbin's consulting relied on analyzing this government data. GAC's first major project was a 1962 contract for the Penn-Jersey Transportation Agency to analyze commuters' paths through the city. Robbin relied on a predecessor to the zip

code, Metropolitan Postal Zones, to calculate journeys through the city.

GAC's government data analysis contributed to a centerpiece of President Johnson's War on Poverty, the Office of Economic Opportunity (OEO). GAC's work for OEO was a form of policy microtargeting, as OEO's data analysis aimed to "circumvent state and local governments, which many believed had failed to alleviate poverty or, worse, been complicit or instrumental in its persistence" by funding communities directly.[2, p. 359] OEO analyzed massive data to merge government records and locate recipients to target funding at more granular levels. GAC consulted alongside IBM and other early data consultants in the effort.

At OEO, Robbin met Sam Barton. A graduate of applied statistics at Dartmouth and the Stanford Business School, Barton

<sup>&</sup>lt;sup>2</sup> Interview with Adrian Robbin by Fenwick McKelvey on 9 September 2021.

worked at the Computer Sciences Corporation, where he had been assigned to the OEO to assemble social and economic data to calculate the money allocated to cities and counties. He and Robbin connected as fellow academics and statisticians working as consultants. Barton understood Robbin's techniques and knew how to run a business; he eventually joined GAC as its president.<sup>3</sup>

GAC, finally, contributed to the National Advisory Commission on Civil Disorders (or Kerner Commission) started by Johnson after the long, hot summer of 1967. GAC advised the commission as did its contemporary, the Simulmatics Corporation. GAC's submission to the commission is lost, but Robbin told author Erik Larson he built a "riot predictor" for "where the next riots would occur."[43, p. 39] These predictions foreshadowed Robbin's later claims to predict behavior through his firm's statistical analyses.

These projects merged demographics and geographics—or what Claritas called geodemographics—to improve public policy. These methods were useful to the marketing and advertising industries, which is where Robbin and Barton moved after their time at GAC. Barton left first to join the Market Research Corporation of America. Barton recounts that the new job let him return to his interest in market segmentation, a major theme of his career. GAC went public in 1968, changing the company's ownership. Robbin reacquired parts of GAC to start a new company on 22 January 1971. Barton later joined the firm too. That company was the Claritas Corporation. The name comes from the Latin for clarity.[43, p. 43]

<sup>&</sup>lt;sup>3</sup> Interview with Sam Barton by Fenwick McKelvey on 5 December 2020.

3.Data science in marketing and advertising

Robbin and Barton entered marketing and advertising as these industries embraced more scientific techniques for market segmentation.[47] The Advertising Research Foundation launched the Journal of Advertising Research in 1960, a key source for discussion of the industry's technical side. In its issues, article after article advanced an uptake of computational methods. Factor analysis was a popular topic. In a 1961 article, the Advertising Research Foundation's research mathematician Gwyn Collins attributed factor analysis' growing popularity to the 1960 book Modern Factor Analysis by Harry Harmon, which brought together research previously "scattered through the psychological journals."[21, p. 28] The same journals Borgatta published his articles assisted by Robbin. Computers made these difficult techniques more accessible, as explained in another article: "formerly

expensive, exotic and ill-understood, today most analytic methods have—thanks to computers—become affordable and commonplace."[62, p. 13]

Advertisers and marketers applied these new methods to better classify customers, or rather markets, but struggled with how best to contact these markets.[48] Market segmentation was closely tied to mediamagazines and television-that could connect markets to advertisers. Much of market segmentation concerned how certain demographics could be targeted by particular media. Though direct mail was not discussed much in the Journal of Advertising Research, it was an old trade that had received a major boost with the advent of zip codes.[18] Favorable postage rates and growing attention to list building meant that direct mail competed with traditional media for advertising money.[38] Direct mail bypassed newspapers and magazines, offering the possibility of more

individualized messaging and, notably, disaggregating consumers from media. The industry knew that the imminent publication of census data on magnetic tape would be an invaluable resource for direct mail marketing.[39] That data, however, was difficult to access. Enter Claritas, selling a product promising to solve the problem of *both* classifying and locating markets.

Robbin called zip codes *the businessman's* geography because of its utility in direct mail. Claritas's first major product was the National Encyclopedia of Residential ZIP Code Demography, or REZIDE for short. First published in 1974, REZIDE was an encyclopedia of sorts: 3,000 pages of aggregated census data that the company kept publishing until 1986.

The work of REZIDE was simultaneously extremely simple and complex. REZIDE published census data summarized by zip code, summaries the Census Bureau only released on tape. REZIDE selected key characteristics and turned the data into an encyclopedia of zip codes defined by census data. Robbin's son Adrian recalls the tedious work necessary,

> He gave us pretty specific
> instructions. . . . We would have onecolor punch cards and another . . .
> different sequence of red and white
> cards [because] one represented
> census and one represented postal
> [data]. It was kind of tedious work,
> that's why it was well suited to low
> wage kids. . . . We would take
> thousands of these cards . . . then we
> would literally merge them,
> depending on what was written at the
> top of the card.

From these boxes of red and white cards, the Claritas Corporation produced REZIDE. Claritas offered its data for lease and loan on magnetic tape and punched tape. Customers subscribed to REZIDE as a service, entering a contract with Claritas that resembles a modern terms of use. The agreement prohibited subscribers from reproducing, loaning, or sharing the data. REZIDE was an "Information Service" for "the sole and confidential use of the subscriber."

These three beginnings computational methods, government data, and market segmentation—became central to Claritas's next product, clusters.

From Markets to Clusters: the Claritas Neighborhood Lifestyle Cluster System Clusters were developed to sort and simplify census and zip code data. Claritas factor analyzed its census data, according to Robbin, to "partitio[n] over six-hundred demographic and economic indices derived from 1970 census small-area summary data into six domains of related content: socioeconomic status, urbanization, workstyle, ethnicity, family configuration and migration pattern."[56]

## 34 FACTORS ... IN 5 DOMAINS



Figure 1: Explaining Clustering (Source: Campaigns & Elections)

These factors, illustrated by Claritas in a diagram reproduced in Figure 1, characterized each zip code. Claritas grouped variations of these factors into 40 clusters known as the Claritas Neighborhood Lifestyle Cluster System. Every zip code belonged to a cluster. The contiguous United States became a patchwork of clusters scattered across its zip codes.[56-57]

Claritas did not invent clusters in marketing, but it produced them differently. Ruth Ziff, described by a *New York Times* obituary as "a sociologist with a knack for market research," published a 1971 article that noted "in the past decade 'psychographic segmentation' had received widespread prominence in advertising and marketing research."[71, p. 3] Ziff used Qanalysis to convert 214 statements from housewives into six groups such as "outgoing optimists," who were "outgoing, innovative, community-oriented," and "contented cows," who were "relaxed, not worried, relatively unworried about germs and cleanliness."[71, p. 5]

Claritas Neighborhood Lifestyle Cluster System offered a similar approach to traditional market segmentation albeit with less descriptive names *at first*. Claritas defined its clusters using its abbreviated factors: Upscale High-Rise, White Urban.

If Claritas initially lacked evocative names, the system made up for it with a simple value proposition: Claritas could define, locate, and contact its clusters. Clusters appealed to more than just direct mail marketers. Clusters appeal to survey researchers as a sampling frame. Survey data could be scaled too. Results for one zip code could be matched to all the zip codes in the same cluster across the US.

### **PRIZM: Statistical frame and social facts**

Clusters had a "slow start."[43, p. 47] Claritas's first system was too confusing to explain to clients. According to some employees, by the late 1970s, Claritas was struggling with unpaid bills for time-sharing services needed to run their data processing. More so, the company faced a problem of scale. As then-CEO Barton recalled in an interview,

> [Robbin] liked to project himself as a guru, and in a sense he was. He would go up there and after he did a profile for somebody. They couldn't interpret these profiles. . . . [Robbin] could bridge across the segments and see the commonalities, he knew them so well. He would sit there and talk

about what the segment was saying. He would interpret it.<sup>4</sup> Claritas could not clone Robbin; his interpretations did not scale. A Claritas employee explained to writer Erik Larson that, "when you talked about target marketing by neighborhood lifestyles, people just scratched their heads."[43, p. 47]

Barton and Robin Page realized that clusters had to sell themselves. Page knew sales. He worked at Coca-Cola, Procter and Gamble, and the Ford Motor Company before joining Claritas.[54] Barton recalled in an interview that he and Page named and described the 40 clusters to be more legible to advertisers and marketers unfamiliar with the statistical data.

Page and Barton's language was evocative, translating the abstract aggregated census data to something familiar to marketers.[28] Dixie-Style

<sup>4</sup> Interview with Sam Barton by Fenwick McKelvey on 5 December 2020.

Tenements, Share Croppers, Tobacco Roads—the names of the first clusters drew on popular culture and stereotypes to replace the more accurate but obtuse names in the first version.





Figure 2-4. Details of Cluster 23, Bunker's Neighbors (Source: Campaigns & Elections) Cluster 23 was named after then-famous sitcom character Archie Bunker. The profile for Cluster 23 explains, "We have confidently placed Mr. Bunker in a Cluster 23 ZIP in Queens, and have honored him accordingly, but as to the address, our lips are sealed."[57] What else was included in Bunker's Neighbors? As seen in Figure 2, Claritas could locate the relative density of the zip codes across the United States in addition to a breakdown of its factorial component. Bunker's Neighbors was one of the largest clusters in the United States, predominately urban and middle class, and a mix of White and Foreign Stock.

Claritas's turn to clusters as a key product had obvious risks. Clusters were anything but naturally occurring. Barton recalls, you might think "if you had all the stars in the sky, they group together in galaxies that are clearly recognizable. . . . The truth of the matter is that it is a sea of stars . . . that you have to draw the lines."<sup>5</sup> Forty clusters, for example, was a choice made by Claritas and not only a matter of computation. Drawing lines in the sky was just one of the challenges in producing clusters.

Treating statistical results as descriptions of a population was fraught. Robbin's inspiration—social area analysis—was criticized for translating census data into behavioral insights. A review of a key social area analysis text noted the method "has subsequently, and justifiably, been severely criticized as an *ex post facto* rationalisation of the results of the statistical analyses."[13, p. 274] Likewise, clusters depended on the idea that aggregated data could predict individual behavior—a big assumption that Robbin and others constantly tried to justify in their explanations.

Census data had limitations constraining what types of clusters could be produced. Since census data supplied roughly even gender counts, it was hard to define clusters along gendered lines. There were no Contented Cows like Ziff's profiles. No Claritas clusters defined by women's lifestyles, despite the salience of sex and gender to the question of individual behavior. The census also undercounted Black Americans, as well as peoples living in American territories, clearly signaling bias in the clusters' primary data.[40] None of the forty clusters mentioned Black Americans. Instead, the cluster names mostly acted as placeholders, using stereotypes roughly related to class for the clusters ranked in descending value from Blue Blood Estates (cluster 1) to Hard Scrabble (cluster 40).

<sup>&</sup>lt;sup>5</sup> Interview with Sam Barton by Fenwick McKelvey on 5 December 2020.

Clusters did not account for the deeper social structures nor the problem of the color line, to recall W. E. B. Du Bois, that *had* sorted and *was* sorting Americans.[3] Clusters developed around the color lines set by Jim Crow Laws and shifted due to white flight in reaction to desegregation and urban decline.[24] Not everyone could choose to live in Blue Blood Estates due to redlining nor did the label of Hard Scrabble come without consequences to those last-ranked zip codes.

Clustering, instead, presented these dynamics as stable (at least until the next census) while also reflecting the fissuring described by Sarah Igo above. Clusters provided a statistical frame for a nation struggling with diversity. Clustering promised a more complex account—one *not* solely determined by ethnicity, race, or class, but sensitive to how these factors worked in combination. In this way, clusters resembled the concept of intersectionality found in critical race theory, which was developing concurrently. Oscar Gandy Jr. notes that many developments in microtargeting resemble developments in intersectional studies.[30, p. 273]

Now and then, clustering presents a risk, now known as ghosting, where interpreted data masks deeper structures sorting people like racism and the economy. Media theorist Wendy Chun, building on Gandy Jr., stresses that techniques without "a clear determination not to discriminate" perpetuate prejudices, replacing rather than addressing outmoded technologies of race. Clustering's similarity to intersectionality just as easily match efforts of post-race racism.[20, pp. 57–58] These tensions rose as Claritas moved from being a niche player to the forefront of the geodemographics industry.

## The new magic: Washington comes to Claritas

The Claritas Corporation first gained national attention for popularizing clusters for political communication.[67] Claritas's scientific approach appealed to a campaigning industry trying to professionalize.[61] Political campaigns had already recognized the promise of direct mail, and, by the late 1970s, campaigns relied on direct mail for targeted voter contact.[36, p. 190] Robbin knew this too. As early as 1972, Robbin had described how Claritas techniques could help political campaigns find their supporters.[58]

Democratic consultant Matthew Reese joked, "If you want to pick cherries, go where the cherries is."[45] Clusters were his preferred form of cherry picking. Reese introduced Claritas to American political consulting.[36, pp. 103–104] Reese and Robbin hit it off, as Reese appealed to Robbin's sense of showmanship. Other partners at Claritas were disinterested or outright wary of the deal. Robbin offered Reese an exclusive license to use Claritas's clustering system in politics, resulting in the core product of Reese's Targeting Solutions Inc. The mix worked, and Robbin developed a more public persona, selling clustering and geodemographics as the new magic.

A 1978 Missouri campaign against rightto-work legislation tested this new magic. Reese and his associate William Hamilton worked with Robbin in campaigning against the legislation on behalf of the United Labor Committee of Missouri. They identified potential supporters in complex, middleincome territories. Combining survey data with the cluster system, as Claritas had done in the past, the campaign targeted probable supporters for a get-out-the-vote campaign and shifted resources away from costly television advertising.

The campaign won. The results, according to Robbin, led to a "stunning

turnaround."[57, p. 32] To those on the ground, the win was less decisive. Many corporate supporters did not campaign, while the American Federation of Labor and Congress of Industrial Organizations actively organized against the bill.[14, pp. 88–96] Thus, the firm's true impact cannot be determined, but Claritas used the win to evangelize the new magic, resulting in coverage in major papers.[17,67,45,68,70]

Tensions inherent to clustering simmered beneath Robbin's promotional efforts. In an article for *Campaigns & Elections*, Robbin focused expressly on distinguishing the multidimensional cluster from "one-dimensional analysis" that selected voters by established social categories. In conventional targeting,

> The voting public is sorted into onedimensional pigeon holes such as "women," "blacks," "blue-collar" or "senior citizens."... How useful are such crude categorizations in

explaining the political orientations of individuals? Reviewing my own family, acquaintances, and colleagues, I find it difficult to make the big inferential leap on such sparse data.[57, p. 28] Robbin's description of clustering used a statistical frame to address America's

changing political culture.

What better way to describe Americans than as clusters? Countering the demands of Black and feminist voices for recognition, Robbin appeared to argue for their political irrelevance. "You know the basic constituencies and politics—blacks, veterans, businessman, women?"—Robbin is quoted in the *New Yorker*—"They don't exist. The real interests are in the community. The true coalitions form according to lifestyle." Robbin warned of political redlining, but continued, "the clusters portray reliable reality, and we have to live with them."[17, p. 34] Robbin was a consummate salesman. Though it reveals less about his personal politics, this quote illustrates clustering's statistical frame and, perhaps, the novelty of a portrait of America that was post-race, post-gender, and postclass even if these were technically essential factors.

Clusters could be, and were, interpreted through a vision of a new individualistic, post-racial America where race could be seen as "one-dimensional." The statistical frame had political utility after, quoting historian Daniel L. Rodgers, "the nation disaggregated into a constellation of private acts."[59, p. 17] Rodgers stresses that Ronald Reagan's political ascendancy was premised on a "rhetorical act" to give "the nation's freedoms and its future promise back to 'the people.'"[58, p. 34] Clustering offered a way to simultaneously reclaim the people while reframing them as something more atomistic. "To insist on the concrete reality of 'the people' was, for Reagan and

Conservative Republicans, an essential precondition to the act of wading the government and the people apart into sharply antagonistic political fields." [59, p. 34] To some political operators, clustering and other forms of digital redlining allowed for the perpetuation of racist political maneuvering while ostensibly committing to the notion of a post-racial society. But clustering's nuances hampered its political adoption. Reese had limited success selling the new magic later on.[35, p. 126] As one political marketer explained, the oblique references to race might have helped in corporate marketing where race was "distasteful whereas in politics its accepted fact".[35, p. 127]

Against competing narratives about American markets, the challenge for Claritas in the 1980s was to maintain their account of clusters as real while its ground truth, the census data and technology, shifted.

## Tribal, territorial, and socially hierarchical: clusters as contentious social facts

Claritas became a national leader in geodemographics using the proverb "birds of a feather flock together" to sell its analysis as natural and intuitive. Claritas renamed its clusters the PRIZM system, short for Potential Rating In ZIP Markets. What better match for Claritas meaning clarity than the metaphor of a clear prism revealing the hidden spectrum of light? In 1980, the *New York Times* reported on a presentation by Claritas with their confidence in clustering on full display:

> Robin B. Page began his presentation by denouncing the concept that all women 18 to 49 in households earning \$10,000 or more a year are a single market segment. He called it a myth. Flat out. Actually, he said, such a demographic segment is made up of

many different kinds of women, and trying to reach them all the same way is terribly wasteful. Then he proceeded to describe Prizm. . . . The company believes that "people are tribal, territorial and socially hierarchical." This led Jonathan A. Robbin, the company's founder and chairman, to formulate what is now known as the Claritas Theorem: "The demographic variables which define homogeneous neighborhoods are significantly correlated to resident consumer patterns.[27, p. 13]

Their confidence worked. In a few short years, Claritas moved from a struggling firm to industry leader. But the pitch downplayed both the fraught technical work and the demographic trends above to suggest clusters were naturally occurring and sorting a matter of personal choice.

The 1980s marked major changes for the Claritas Corporation. It grew dramatically. The 1974 edition of REZIDE lists four employees in its front matter, thanking two other assistants. The 1983 edition listed nine members of the senior management team and mentions six other staff. Claritas had 53 full-time employees according to a 1983 profile. More so, the direct mail industry grew rapidly from \$16.4 billion in expenditures in 1977 to \$25 billion in 1981, a 52% increase in five years.[18, p. 42] Claritas, as one of the few companies working in geodemographics, grew to meet this demand. It now had clients at major companies across the US.

*Recalculating clusters, consistency, and change* 

The 1980 census proved to be the first major test of clusters' reality. A bigger, more established company had to replicate its first

<sup>6</sup> Interview of David Miller conducted by Fenwick McKelvey on 3 February 2021.

clusters. Replicating the clustering, having them roughly match the past run, and refining the methods was an impressive technical feat. The results could have easily gone askew. David Miller, another experimental psychologist who joined Claritas in December 1980 and led the new version of PRIZM, recalls in an interview that an early version of the 1980 system proved "too different" for customers and required more work to ensure the 1980 edition matched expectations.<sup>6</sup>

By 1983, companies had been working with PRIZM for years, so those evocative names like Blue Blood Estates and Tobacco Roads had to be found again. (Claritas, much later, optimized its clustering algorithms, but for the 1980 census the unsupervised machine learning was not particularly sophisticated in how it clustered.) As Sam Barton explains about working on the 1980 census, "We found that how [Robbin] said it [worked], which is nice and beautiful with one shot, did not work that way. There is just shades of difference all across the space. You need some sort of overlay algorithm to define what the cutoff points are, at that point you're working with the individual input variables."<sup>7</sup> The results of the rerun took as much data work as marketing toil.

Work began around 1983 when the Census Bureau published the most relevant parts of the census for Claritas. David Miller worked closely with Robbin to produce the new edition of Claritas. He recalls that, for as much as Claritas advertised complexity, the model only had three major factors in the 1980 census: economics, ethnicity, and urbanization as well as, to a lesser degree, affluence, and life stage. In other words, most zip codes could be characterized by income levels, the ethnicity of the population, and whether they were urban or rural. America proved less complicated than clusters implied.

Many of the original cluster names endured, such as God's Country, Old Melting Pot, Downtown Dixie-Style, Blue Blood Estates, Coalburg and Corntown, Bohemian Mix, and Share Croppers. Others disappeared. New Beginnings replaced Bunker's Neighbors.[69, pp. 240–241] Claritas also offered up these clusters in more detail, by census tract as well as zip code.

With a growing desire for more precise markets, Claritas faced pressure to increase the number of clusters. Technically, Claritas could find more clusters, but overly detailed data, according to Miller, would have been useless to marketers who would not have the profiles to match with the clusters.

<sup>&</sup>lt;sup>7</sup> Interview with Sam Barton by Fenwick McKelvey on 5 December 2020.

Marketers and advertisers did not need nor have the resources to target every cluster. The enduring bottleneck in marketing, then and now, is that campaigns do not have the resources to target infinite audiences. The PRIZM system worked best when marketers could identify primary and secondary markets as well as who to avoid.

# From mainframes to microcomputers at Claritas

As Claritas redeveloped its PRIZM system, the firm also changed how it delivered the results. PRIZM should be understood as an early "killer app" for the personal computer. If VisiCalc was a charisma machine for stock traders (as vividly described by William Deringer), so too was PRIZM for marketers.[25] Claritas sold its PRIZM system with an Apple II computer included and a Pascal-based system to interact with the data. The system offered a more

interactive way for customers to play with the data, popularizing computer systems' "fantastical capacities" like how stockbrokers used spreadsheets to play with numbers.[25, p. 61] As Adrian Robbin explained in an interview, "if you're a customer you would buy an analysis and you would get an Apple computer [with] a little library of disks and you go run all this stuff at your office."8 These disks could be customized for high-profile customers. Claritas employees accompanied the machines to teach marketers, in effect helping computing move from the mainframe to the desktop.

Claritas moved its data processing in house. In 1982, it outsourced operations to "a mainframe IBM 3330 in Pennsylvania."[1] Soon after, it was part of the privatization of time-sharing, buying new minicomputing services from Wang

<sup>&</sup>lt;sup>8</sup> Interview with Adrian Robbin by Fenwick McKelvey on 9 September 2021.

Computer Systems. Its first machine was likely the VS 300 with 64 megabytes of RAM and a massive-for-the-time onegigabyte storage system. These advances happened at the start of the database revolution, when census-driven companies like Claritas developed into what we now call data brokers.

## Market consolidation and internationalization

By the end of the 1980s, Claritas would be even bigger, still offering the PRIZM system as well as a new data bank service. Robbin and Barton would be gone; the company had been bought and sold and become part of a much more established geodemographics industry, within which Claritas had at least three major competitors.[4, p. 138] As one major review of marketing innovations noted, "most of the new technology was used during the 1960s and 1970s on an experimental, piecemeal basis. In the 1980s further advances in technology and the sharing of information allowed companies to begin to implement more sophisticated and integrated programs."[52, p. 118] As the field stabilized, so too did the Claritas Corporation.

Sam Barton and Jonathan Robbin left to specialize in wealthy market segmentation. Robbin left Claritas in 1989 but might have been less involved with the company starting earlier. At his next company, Auricom, Robbin developed the Active Investors List to market to the affluent. Barton, too, left to move into increasingly more sophisticated applications of market segmentation. His current venture, Plutometry, is a marketing analytics firm catering to the retail financial market.

Their departures followed the acquisition of Claritas and the gradual consolidation of the geodemographics industry. Time Warner sold in the company in 1979 then transferred its holdings to Dutch business information conglomerate VNU. VNU bought Claritas outright in 1986, starting a period of consolidation in geodemography. VNU purchased Nielsen Media Research in 1999, adding more ingredients to a corporate soup of marketing data and segmentation.[53]

Claritas's acquisition internationalized clustering. The company moved into Canada in 1996, offering PRIZM: Canadian Edition to compete with national geodemographic systems like PSYTE.[51] David Miller, who had helped Robbin with the 1980 census, moved to London that same year. Miller worked across Europe to develop local Claritas systems. The technique remained the same: merge census data with targeted geography and then produce national clusters sold to advertisers. Over the years, Miller had to digitize all sorts of formats and regional data systems. In 1998, Claritas had a presence in at least nine European countries.

Now Claritas is just one firm in the increasingly complex data brokerage and

market intelligence industry, PRIZM is just one of its market segmentation products, and census data is just one of its data sources. The breadth of their data, the scope of their products, and the pace of their release have all increased.

#### Conclusion

What to make of Claritas's clustering now? At once, the firm foreshadowed contemporary anxieties about microtargeting [6,42], data capitalism [49], and how Facebook and other programmatic advertisers "make up people" to borrow a phrase from Ian Hacking.[22,31,46] My history, then, sheds light on the beginnings of these contemporary anxieties and illustrates how Claritas may have contributed to them by selling clusters And yet Claritas did not make up its clusters. It produced social facts then marketed clusters to marketers. Claritas rightly saw that balancing social facts and statistical frames is a critical skill, one that is still needed to

assess the consequences of new firms like the infamous Cambridge Analytica or even Facebook and Google, whose advertising products similarly promise new market insights through the detection of similarities in behavior.

Clusters have had a lasting impact on accounts of American demographics. Michael Weiss's best-selling trilogy of books centered on clustering to give credibility to what Robbin might call "multidimensional" profiles of communities, voters, and zip codes. Now it's common to think of America as being *sorted*—a popular idea at least partially attributed to the social sorting hypothesis, recently made prominent by 2018 book *The Big Sort* that argued American neighborhoods have become more geographically homogeneous.[5] Claritas helped address that sort without explaining its cause.

Clusters had real consequences for cities. In 1997, Milwaukee business leaders, local foundations, and the University of Wisconsin tried to contest Claritas's and other geodemographic firms' classification of the city for fear that businesses might avoid it due to unfair profiling of Black neighborhoods. Cities did not want to be associated with clusters in decline. These disputes about Claritas's methods, however, did not address the cultural appeal of clusters and how their statistical frame met a contradictory demand for a more *and* less divided America.

To close, I wish to emphasize how clusters are a critical concept in what I see as a computational imaginary in America, where data mining and computational techniques ease the task of making up people. Historian Sarah Igo asks perhaps the most fundamental question for Claritas in this line,

> had techniques like cluster analysis, enabled by powerful hard drives and updated marketing techniques,

> > 27

turned up a newly diverse American? Or did they instead reveal a multiplicity that had always been there but was shielded from view by the assumptions and technological limitations of early surveyors?[34, p. 288]

Claritas, clearly, preferred the latter interpretation of clustering as found in its marketing and Robbin's own bullish quotes. Here I offer another hypothesis that might give new meaning to historian Hunter Heyck's quip that computers were "the modeler's muse."[32, p. 191] Computers were the marketer's muse too. Clusters did not "reveal a multiplicity" so much as prove how multivariate statistics and an infoglut could produce a multiplicity of multiplicities. The firm's legacy, perhaps, shows a professionalism in not being too imaginative or far out with its clusters.

The lasting challenge is that clusters
– as new portraits of Americans, as technical

innovations, and as attempts to embrace diversity – remain as ever in the service of marketing and advertising, as if the political imagination of America's population is inextricable from the hunt for the next mark.

**Biography**: Fenwick McKelvey is an Associate Professor in Information and Communication Technology Policy in the Department of Communication Studies at Concordia University. He is co-director of the Applied AI Institute and leads Machine Agencies at the Milieux Institute.

Acknowledgements: This article draws on research supported by the Fonds de recherche du Québec. Thanks to Robert Hunt and Théo Lepage-Richler for their helpful edits and feedback, to all the interviewees for their time and generosity, to the participants in the IT of Demography Workshop, and to the reviewers and editors especially Emily Rose Merchant.

## References

- H. Allen, "You Are Where you Live," Washington Post, May 02, 1982. Accessed: Nov. 07, 2021. [Online]. Available: https://www.washingtonpost.com/archi ve/lifestyle/1982/05/02/you-are-whereyou-live/a899b77b-ef2f-4936-a96f-7131761cf97c/
- [2] M. J. Bailey and N. J. Duquette, "How Johnson Fought the War on Poverty: The Economics and Politics of Funding at the Office of Economic Opportunity," *J. Econ. Hist.*, vol. 74, no. 2, pp. 351–388, Jun. 2014, doi: 10.1017/S0022050714000291.
- S. Banet-Weiser, R. Mukherjee, and H. Gray, "Introduction: Postrace Racial Projects," in *Racism postrace*, R. Mukherjee, S. Banet-Weiser, and H. Gray, Eds. Durham: Duke University Press, 2019, pp. 1–22.
- [4] H. M. Beville, Audience Ratings: Radio, Television, and Cable. Hillsdale, New Jersey: Lawrence Erlbaum Associates, Publishers, 1988.
- [5] B. Bishop, *The Big Sort: Why the Clustering of Like-Minded America Is Tearing Us Apart.* New York: Houghton Mifflin Harcourt, 2008.
- [6] B. Bodó, N. Helberger, and C. H. de Vreese, "Political micro-targeting: a Manchurian candidate or just a dark horse?," *Internet Policy Rev.*, vol. 6, no. 4, Dec. 2017, Accessed: Jan. 16, 2018. [Online]. Available: https://policyreview.info/articles/analys is/political-micro-targetingmanchurian-candidate-or-just-darkhorse
- [7] G. W. Bohrnstedt, "Borgatta, Edgar F.," in SAGE Research Methods Foundations, P. Atkinson, S. Delamont, A. Cernat, J. W. Sakshaug,

and R. A. Williams, Eds. London: SAGE Publications Ltd, 2020. doi: 10.4135/9781526421036926258.

- [8] E. F. Borgatta, "Mood, Personality, and Interaction," *J. Gen. Psychol.*, vol. 64, no. 1, pp. 105–137, Jan. 1961, doi: 10.1080/00221309.1961.9920431.
- [9] E. F. Borgatta, "The Coincidence of Subtests in Four Personality Inventories," *J. Soc. Psychol.*, vol. 56, no. 2, pp. 227–244, Apr. 1962, doi: 10.1080/00224545.1962.9919393.
- [10] E. F. Borgatta, "Mood, Personality, and Interaction," J. Gen. Psychol., vol. 64, no. 1, pp. 105–137, Jan. 1961, doi: 10.1080/00221309.1961.9920431.
- [11] E. F. Borgatta and R. F. Bales, "Interaction of Individuals in Reconstituted Groups," *Sociometry*, vol. 16, no. 4, p. 302, Nov. 1953, doi: 10.2307/2785935.
- [12] S. Braman, *Change of state: information, policy, and power.* Cambridge, MA: MIT Press, 2006.
- [13] T. S. Brindley and J. W. Raine, "Social Area Analysis and Planning Research," *Urban Stud.*, vol. 16, no. 3, pp. 273– 289, 1979.
- [14] D. Burnham, *The rise of the computer state*, 1st ed. New York: Random House, 1983.
- [15] R. Burrows and N. Gane, "Social Class and Other Classifications: Geodemographics, Software and Class," *Sociology*, vol. 40, no. 5, pp. 793–812, 2006.
- [16] M. L. Butterworth, "Nate Silver and Campaign 2012: Sport, the Statistical Frame, and the Rhetoric of Electoral Forecasting," *J. Commun.*, vol. 64, no. 5, pp. 895–914, Oct. 2014, doi: 10.1111/jcom.12113.
- [17] L. Caplan, "Clusters," New Yorker, Jan. 25, 1982. Accessed: Dec. 12, 2019. [Online]. Available:

https://www.newyorker.com/magazine/ 1982/02/01/clusters

- [18] A. N. Case, "'The solid gold mailbox': direct mail and the changing nature of buying and selling in the postwar United States," *Hist. Retail. Consum.*, vol. 1, no. 1, pp. 28–46, Jan. 2015, doi: 10.1080/2373518X.2015.1012863.
- [19] Census History Staff US Census Bureau, "History - U.S. Census Bureau." https://www.census.gov/history/ (accessed Feb. 14, 2022).
- [20] W. H. K. Chun, Discriminating data: correlation, neighborhoods, and the new politics of recognition. Cambridge, Massachusetts: MIT Press, 2021.
- [21] G. Collins, "Factor Analysis," vol. 1, no. 5, pp. 28–32, 1961.
- [22] K. Cotter, M. Medeiros, C. Pak, and K. Thorson, "Reach the right people': The politics of 'interests' in Facebook's classification system for ad targeting," *Big Data Soc.*, vol. 8, no. 1, p. 2053951721996046, Jan. 2021, doi: 10.1177/2053951721996046.
- [23] M. Crain, *Profit over Privacy: How* Surveillance Advertising Conquered the Internet. Minneapolis: University of Minnesota Press, 2021.
- [24] K. Crowder, "The Racial Context of White Mobility: An Individual-Level Assessment of the White Flight Hypothesis," *Soc. Sci. Res.*, vol. 29, no. 2, pp. 223–257, Jun. 2000, doi: 10.1006/ssre.1999.0668.
- [25] W. Deringer, "Michael Milken's Spreadsheets: Computation and Charisma in Finance in the Go-Go '80s," *IEEE Ann. Hist. Comput.*, vol. 42, no. 3, pp. 53–69, Jul. 2020, doi: 10.1109/MAHC.2020.2982650.
- [26] A. Desrosières, The politics of large numbers: a history of statistical reasoning. Cambridge: Harvard University Press, 2011.

- [27] P. H. Dougherty, "ZIP Area: A Key to Markets," *The New York Times*, New York Times Digital (Full Text), p. 13, Jul. 17, 1980.
- [28] P. Dourish and E. Gómez Cruz, "Datafication and data fiction: Narrating data and narrating with data," *Big Data Soc.*, vol. 5, no. 2, p. 2053951718784083, Jul. 2018, doi: 10.1177/2053951718784083.
- [29] N. A. Draper, *The identity trade:* selling privacy and reputation online. New York: New York University Press, 2019.
- [30] O. H. Gandy Jr., The Panoptic Sort: A Political Economy of Personal Information, 2nd edition. New York, NY: Oxford University Press, 2021.
- [31] I. Hacking, "Making up people," in Reconstructing individualism: autonomy, individuality, and the self in Western thought, T. C. Heller and C. Brooke-Rose, Eds. Stanford: Stanford University Press, 1986, pp. 161–171.
- [32] H. Heyck, Age of system: understanding the development of modern social science. Baltimore: Johns Hopkins University Press, 2015.
- [33] M. B. Holbrook, "Market clustering goes graphic: The Weiss trilogy and a proposed extension," *Psychol. Mark.*, vol. 18, no. 1, pp. 67–85, 2001.
- [34] S. E. Igo, The Averaged American: Surveys, Citizens, and the Making of a Mass Public. Cambridge: Harvard University Press, 2007.
- [35] S. Issenberg, *The Victory Lab: The Secret Science of Winning Campaigns*. New York: Crown, 2012.
- [36] D. W. Johnson, Democracy for hire: a history of American political consulting. New York, NY: Oxford University Press, 2016.
- [37] C. Kaplan, "Precision Targets: GPS and the Militarization of U.S. Consumer Identity," Am. Q., vol. 58,

no. 3, pp. 693–714, 2006, doi: 10.1353/aq.2006.0061.

- [38] R. B. Kielbowicz, "Origins of the Junk-Mail Controversy: A Media Battle over Advertising and Postal Policy," J. *Policy Hist.*, vol. 5, no. 2, pp. 248–272, Apr. 1993, doi: 10.1017/S0898030600006734.
- [39] I. C. Kildegaard, "Coming: the U.S. on Tape," J. Advert. Res., vol. 7, no. 4, pp. 60–62, Dec. 1967.
- [40] M. L. King and D. L. Magnuson, "Perspectives on Historical U.S. Census Undercounts," *Soc. Sci. Hist.*, vol. 19, no. 4, pp. 455–466, 1995, doi: 10.2307/1171475.
- [41] C. Koopman, How we became our data: a genealogy of the informational person. Chicago: The University of Chicago Press, 2019.
- [42] D. Kreiss, "Micro-targeting, the quantified persuasion," *Internet Policy Rev.*, vol. 6, no. 4, Dec. 2017, Accessed: Jan. 16, 2018. [Online]. Available: https://policyreview.info/articles/analys is/micro-targeting-quantifiedpersuasion
- [43] Erik Larson, *The naked consumer*. New York: H. Holt, 1992. Accessed: Nov. 01, 2021.
- [44] J. Lepore, *If Then: How Simulmatics Corporation Invented the Future*. New York: Liveright, 2020.
- [45] R. Maxa, "Can Matt Reese and a System Called Claritas Answer the Prayers of Democrats Everywhere? The Search for Votes is Never Ending," *Washington Post*, Jul. 22, 1979.
- [46] L. McGuigan, "Automating the audience commodity: The unacknowledged ancestry of programmatic advertising," *New Media Soc.*, vol. 21, no. 11–12, pp. 2366–

2385, Nov. 2019, doi: 10.1177/1461444819846449.

- [47] L. McGuigan, Selling the American People: Dreams and Designs to Optimize Advertising. Cambridge: MIT Press, forthcoming.
- [48] C. M. Mellor, "The Decline of Demographics? (Book Review)," J. Advert. Res., vol. 6, no. 4, pp. 45–46, Dec. 1966.
- [49] S. Myers West, "Data Capitalism: Redefining the Logics of Surveillance and Privacy," *Bus. Soc.*, vol. 58, no. 1, pp. 20–41, Jan. 2019, doi: 10.1177/0007650317718185.
- [50] P. Novotny and R. H. Jacobs,
  "Geographical Information Systems and the New Landscape of Political Technologies," *Soc. Sci. Comput. Rev.*, vol. 15, no. 3, pp. 264–285, Oct. 1997, doi: 10.1177/089443939701500304.
- [51] N. Parker, "PRIZM CE: A New Segmentation Product for Canada," *Directions Magazine*, Sep. 21, 2004. https://www.directionsmag.com/article/ 3431 (accessed Nov. 07, 2021).
- [52] L. A. Petrison, R. C. Blattberg, and P. Wang, "Database marketing: Past, present, and future," *J. Direct Mark.*, vol. 11, no. 4, pp. 109–125, Jan. 1997, doi: 10.1002/(SICI)1522-7138(199723)11:4<109::AID-DIR12>3.0.CO;2-G.
- [53] K. Pope, "VNU to Buy Nielsen Media In Deal Valued at \$2.5 Billion," *Wall Street Journal*, Aug. 17, 1999. Accessed: Jun. 14, 2022. [Online]. Available: https://www.wsj.com/articles/SB93479 0785976203829
- [54] K. Powell, "Robin Page Obituary," Legacy.com, Apr. 01, 2004. https://www.legacy.com/us/obituaries/a tlanta/name/robin-pageobituary?pid=2085039 (accessed Nov. 15, 2021).

- [55] V. Price, Public Opinion. SAGE, 1992.
- [56] J. Robbin, "Curriculum Vitae," 2004. https://ricercar.com/JRCV-D.html (accessed Nov. 11, 2021).
- [57] J. Robbin, "Geodemographics: The new magic," *Campaigns & Elections*, vol. 1, no. 1, pp. 25–45, 1980.
- [58] J. Robbin, "A Guide to the Use of Census Data for Political Campaign Planning and Management." Claritas Corporation, 1972.
- [59] D. T. Rodgers, *Age of fracture*, 1. Harvard University Press paperback ed. Cambridge, Mass.: Harvard Univ. Press, 2012.
- [60] G. Sabagh, P. Orleans, J. B. Birdsell, A. Tietze, and R. Turner, "Eshref Shevky, Anthropology and Sociology: Los Angeles," Dec. 1970.
- [61] A. Sheingate, Building a Business of Politics: The Rise of Political Consulting and the Transformation of American Democracy. New York, NY: Oxford University Press, 2016.
- [62] J. N. Sheth, "The Multivariate Revolution in Marketing Research," J. Mark., vol. 35, no. 1, pp. 13–19, 1971.
- [63] E. Shevky and M. Williams, *The social areas of Los Angeles: analysis and typology*. Berkeley: University of California Press, 1949.
- [64] J. Turow, The Daily You: How the Advertising Industry is Defining Your Identity and Your Worth. New Haven: Yale University Press, 2012.
- [65] E. Uprichard, R. Burrows, and S. Parker, "Geodemographic Code and the Production of Space," *Environ. Plan. Econ. Space*, vol. 41, no. 12, pp. 2823–2835, Dec. 2009, doi: 10.1068/a41116.
- [66] R. B. Voight, "The New Haven Census Use Study: An Experience in the Practical Applications of Statistical Data," *Rev. Inst. Int. Stat. Rev. Int.*

*Stat. Inst.*, vol. 38, no. 3, p. 369, 1970, doi: 10.2307/1402202.

- [67] W. Weaver Jr., "A Pinpoint System Is Developed For Finding Voters for an Issue: Supposedly Reversed Opinion Old Method Computerized Other Factors Held Immeasurable," *New York Times*, New York, N.Y., United States, Feb. 03, 1979. Accessed: Jan. 04, 2013. [Online]. Available: http://search.proquest.com.ezproxy.lib. ryerson.ca/hnpnewyorktimes/docview/ 120979396/abstract/13B6DDCED9478 52693/1?accountid=13631
- [68] W. Weaver Jr., "New Polling Technique Offers a Way to Reach Similar Voters Over U.S.: Attitudes in 40 Classifications," *New York Times*, New York, p. D17, Jun. 24, 1980.
- [69] M. J. Weiss, *The Clustering of America*. New York: HarperCollins, 1988.
- [70] M. Zientara, "Techniques locates candidates' potential backers," *Computerworld*, p. 13, Sep. 24, 1979.
- [71] R. Ziff, "Psychographics for Market Segmentation," J. Advert. Res., vol. 11, no. 2, pp. 3–9, Apr. 1971.