



The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.



Economic Research Service
U.S. DEPARTMENT OF AGRICULTURE

Economic
Research
Service

Economic
Information
Bulletin
Number 223

June 2021

The Food Retail Landscape Across Rural America

Alexander Stevens, Clare Cho, Metin Çakır, Xiangwen Kong,
and Michael Boland





Economic Research Service

U.S. DEPARTMENT OF AGRICULTURE

Economic Research Service

www.ers.usda.gov

Recommended citation format for this publication:

Stevens, Alexander, Clare Cho, Metin Çakır, Xiangwen Kong, and Michael Boland June 2021.
The Food Retail Landscape Across Rural America, EIB-223, U.S. Department of Agriculture,
Economic Research Service.



Cover photo images from Getty Images.

Use of commercial and trade names does not imply approval or constitute endorsement by USDA.

To ensure the quality of its research reports and satisfy governmentwide standards, ERS requires that all research reports with substantively new material be reviewed by qualified technical research peers. This technical peer review process, coordinated by ERS' Peer Review Coordinating Council, allows experts who possess the technical background, perspective, and expertise to provide an objective and meaningful assessment of the output's substantive content and clarity of communication during the publication's review.

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotope, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at [How to File a Program Discrimination Complaint](https://www.ers.usda.gov/how-to-file-a-program-discrimination-complaint) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.

USDA is an equal opportunity provider, employer, and lender.



The Food Retail Landscape Across Rural America

Alexander Stevens, Clare Cho, Metin Çakır, Xiangwen Kong, and Michael Boland

Abstract

In this report, we examine the landscape of food retailers across the contiguous United States, with a focus on rural America and grocery stores. Changes in food retailers have raised concerns about food access and have led Federal policymakers to introduce several pieces of legislation to improve access to healthy foods, such as the Healthy Food Financing Initiative. We use the National Establishment Time Series (NETS) dataset to create a more complete picture of food retailers, while using store-level information to examine sales and employment, and to distinguish between national, regional, and local chains and single location stores. We find that in rural and urban nonmetro counties, grocery stores outnumbered other forms of food retailers, but that grocery stores declined from 1990 to 2015 while dollar stores and supercenters increased steadily. We also found that although single location grocery stores outnumbered chains in 2015, they have been decreasing throughout this period, resulting in single location grocery stores as a share of food retailers decreasing from 87 to 82 percent.

Keywords: Food retailers, rural America, nonmetro, metro, grocery stores, supercenters, dollar stores, chains, National Establishment Time Series, NETS.

Acknowledgments

The authors thank the following individuals in USDA, Economic Research Service for their input: John Pender, Fred Gale, Anne Effland, Tim Park, Christian Gregory, Jayachandran Variyam, Katherine Ralston, and Jana Goldman. The analysis, findings, and conclusion expressed in the paper should not be attributed to Nielsen or Walls & Associates.

Contents

Summary	iii
Introduction	1
Data and Methodology	3
Food Retailers in Rural America	5
Grocery Stores: Single Location vs Local Chain vs Regional Chain vs National Chain	7
Changes Among Food Retailers in Rural America: 1990 to 2015	10
Grocery Stores: Single Location vs Local Chain vs Regional Chain vs National Chain	15
Discussion and Conclusion	19
References	20
Appendix A: Supplemental Figures	23
Appendix B: Comparing National Establishment Time Series to Other Datasets	36



The Food Retail Landscape Across Rural America

Alexander Stevens, Clare Cho, Metin Çakır,
Xiangwen Kong, and Michael Boland

What Is the Issue?

Consumers in sparsely populated rural counties may face challenges as the retail industry consolidates and large chain stores replace small independent establishments. Concerns about poor diets and adverse health outcomes have led Federal policymakers to introduce several pieces of legislation to improve access to healthy foods, such as the Healthy Food Financing Initiative. While much attention is focused on food access in metro counties, some studies suggest rural consumers may face higher travel costs in counties served by few retailers, especially in regions with high poverty rates and decreasing population. This study documents long-term trends in the number of stores, types of stores, sales, and employment for food retail in rural and urban nonmetro counties. While we do not address the causes and consequences of these trends, we provide clarity on the changes in the landscape of the food retail industry in nonmetro counties that will help to inform further research on the food access and health outcomes consequences of these changes.

What Did the Study Find?

In this report, we document the number of food retailers from 1990 to 2015 distinguishing between grocery stores, convenience stores, specialty food stores, supercenters, and dollar stores based on North American Industry Classification System (NAICS) and store names. We also compare rural and urban nonmetro counties based on the USDA, Economic Research Service (ERS) Rural-Urban Continuum Codes (RUCC). We find the following:

In 2015, there were 23 counties without any food retailers; all were rural nonmetro (nonmetro counties with an urban population less than 2,500 people). There were 44 counties without any grocery stores; 40 were rural nonmetro and 4 were urban nonmetro (nonmetro counties with an urban population of 2,500 people or more). There were 41 nonmetro counties with 1 food retailer and 115 with 1 grocery store. However, the median nonmetro county had 16 food retailers and 7 grocery stores.



ERS is a primary source of economic research and analysis from the U.S. Department of Agriculture, providing timely information on economic and policy issues related to agriculture, food, the environment, and rural America.

Grocery stores were the most prevalent food retailer in nonmetro counties. Others, by prevalence, were convenience stores, specialty food stores, dollar stores, and supercenters.

Single location grocery stores were more numerous than chain stores (including local, regional, or national chains) in nonmetro counties. Single location stores comprised about 73 percent of all grocery stores in urban nonmetro counties, less than the 82 percent share nationwide. Single location stores had lower average sales and employment than chain stores.

Across the United States, the number of food retailers increased for all store types over the last 25 years, although there were fluctuations throughout this period. The number of grocery stores and convenience stores peaked in 2009 and have been declining since then. Specialty food stores peaked in 2011, while dollar stores and supercenters increased steadily throughout this period.

Among urban nonmetro counties, the percentage of counties with fewer than 8 food retailers per 10,000 people increased from 21 percent to 33 percent. The number of food retailers per capita decreased by 16 percent for these counties. Among rural nonmetro counties, the percentage of counties with fewer than 8 food retailers per 10,000 people increased from 11 percent to 27 percent. The number of food retailers per capita decreased by 19 percent for these counties. The percentage of rural nonmetro counties with no food retailers increased from 1 percent to 3 percent.

In nonmetro counties, the number of grocery stores declined relatively steadily from 1990 to 2015 while the other food retail store types increased. In rural nonmetro counties, the share of grocery stores declined by 15 percentage points.

The median number of grocery stores per capita decreased by 40 percent for rural and urban nonmetro counties.

Although single location grocery stores outnumbered chains in rural and urban nonmetro counties, they decreased from 1990 to 2015, resulting in single location stores' share of stores decreasing from 87 to 82 percent. In rural nonmetro counties, the number of local and regional chains decreased slightly while national chains increased.

Average employment among grocery stores exhibited an upward trend in nonmetro counties. Average sales in 2015 dollars declined in nonmetro counties.

National and regional chains made up about 75 percent of average sales and employment for all 25 years.

How Was the Study Conducted?

This study uses data from the National Establishment Time Series (NETS) to examine the food retail landscape across the 48 contiguous States from 1990 to 2015, focusing on rural nonmetro counties and grocery stores. Retailers are divided into five categories: grocery stores, convenience stores, specialty food stores, warehouse clubs and supercenters, and dollar stores using North American Industry Classification System (NAICS) codes and store names. Grocery stores are separated into four categories: single location, local chain, regional chain, and national chain. We conduct our analysis using descriptive statistics on three categories based on population size: large urban nonmetro, small urban nonmetro, and rural nonmetro counties.

The Food Retail Landscape Across Rural America

Introduction

Previous research has examined the association between communities with limited access to food retailers and adverse health outcomes.¹ Concerns for the diet and health of these communities have led policymakers to introduce several pieces of legislation to improve access to healthy foods. In 2010, the Federal Government created the Healthy Food Financing Initiative (HFFI) to attract grocery stores to communities with limited access and to give existing retailers incentives to sell healthy products in underserved communities (HHS 2017). The 2014 Farm Bill authorized \$125 million to HFFI each year, and the 2018 Farm Bill reauthorized the program until 2023 subject to annual appropriations (Aussenberg, 2014). Many States have also passed similar legislation to improve access to healthy food (CDC, 2011). For example, in 2009, the Illinois Senate passed a bill providing \$10 million from their appropriations bill to provide grants and loans for general capital or development projects related to supermarkets and grocery stores.²

The economic literature has found number of potential reasons why rural counties tend to face more limited access to food retailers. Several studies have found that communities with limited food access have some shared characteristics, such as higher poverty rates and decreasing populations (Ver Ploeg, 2009; Dutko et al., 2012). For decades, some rural communities faced steady outmigration, particularly of younger adults with higher levels of educational attainment (Mills and Hazarika, 2001; Huang et al., 2002; McGranahan and Beale, 2002). Beginning with the onset of the Great Recession in December 2007, rural areas experienced a greater loss in employment than urban areas. While the Great Recession ended in June 2009, slower employment growth continued resulting in widening employment gap through 2013 (Hertz et al., 2014). The slower employment growth during the recovery was partially due to the slower rate of population growth in rural communities, with population growth starting to fall in 2006 and the total population declining from 2010 to 2017 (Cromartie, 2018). Declining populations can decrease the customer base for food retailers, which can lead to store closures and limited food access.

Rural food retailers face more challenges than declining populations. Commuters further diminish the customer base of these stores by purchasing their groceries from neighboring cities where they work (Bailey 2010). In addition to facing declining populations, grocery stores in rural areas have been combating changes in food purchasing patterns. Spending on food away from home (FAFH) has increased steadily since 1987 across the United States (U.S.), with FAFH expenditures surpassing food-at-home (FAH) expenditures in 2010 (Elitzak and Okrent, 2018). Adding to rural grocery stores' challenges, grocery stores have faced competition from an increasing number of non-traditional retailers selling food, which are associated with worse diet quality (Caspi et. al., 2017; Houghtaling et. al., 2020; Volpe et. al., 2017; Jilcott et. al., 2017). Grocery stores' share of FAH expenditures has been declining since the late 1990s, while consumer spending at nontraditional retailers, particularly supercenters, has been increasing (Volpe et al., 2017; Harris et al., 2002; Martinez, 2007; Çakır et. al., 2020). In nonmetro areas, grocery stores and particularly national chain grocery stores make up a smaller share of the market while supercenters have a larger share than in metro areas (Volpe et al., 2017; Kolak et. al., 2018; Çakır et. al., 2020). Recently, there have been a number of

¹See Walker et al. (2010) and Caspi et al. (2012) for literature reviews of some of these studies.

²See Table 1 in Centers for Disease Control (2011) for legislation that were passed at the time this report was written.

anecdotal stories in news articles discussing the effect of dollar stores and supercenters in rural communities, offering food and other general merchandise at lower prices, but potentially causing smaller local grocery stores to close (Morris, 2017; Corkery, 2018; Haddon and Rizzo, 2017). These challenges may contribute to the decline in rural grocery stores.

Grocery stores in rural communities are also more likely to be independently owned (Powell et al., 2007; Cho and Volpe, 2017). Independent retail grocers are defined as those that are closely held and not affiliated with national retail supermarkets except through the wholesalers that they purchase from and have not been widely studied (Volpe et al., 2015).^{3 4} These stores may feel additional pressure from larger, chain grocery stores entering the community or nearby. Clark et al. (2008) conducted a survey of rural grocery stores in Kansas and found that the most prevalent challenge for store owners was competition from large chain grocery stores (80 percent), although only 23 percent of the surveyed stores listed it as the “most significant challenge” following operating costs/utilities and labor availability/costs at 25 and 24 percent, respectively. The Great Recession added financial strain to these independent stores as the number of independent grocery stores stagnated across the United States during this period while the number of chain stores continued to increase steadily (Cho and Volpe, 2017).

These studies suggest that the number of grocery stores in rural nonmetro counties has been declining, particularly in recent years after the Great Recession. However, to our knowledge, there have not been any studies examining the structural characteristics of grocery stores and the food industry in rural nonmetro counties. To fill this gap in the literature, this study analyzes the landscape of food retailers in rural nonmetro counties across the United States in 2015. This study compares trends in number of stores, employment, and sales between rural nonmetro retailers and urban nonmetro retailers. The number of people employed at each type of food retailer can be important to rural economies. This paper also looks at the stores per capita to approximate the size of the customer base. However, this measure cannot account for customers shopping in other counties or customers in the county too far away to be considered in the customer base. We examine the number of grocery stores – distinguishing between single location stores and local, regional, and national chains – and non-traditional food retailers. Overall, the analysis is focused on five store formats defined by NAICS codes and store names: supermarkets and other grocery stores, convenience stores, specialty food stores, warehouse clubs and supercenters, and dollar stores.

³Closely held refers to grocers with a small number of shareholders.

⁴Some independent grocers choose to use the brand name of their franchisor such as IGA (Independent Grocers Alliance).

Data and Methodology

We primarily use the National Establishment Time Series (NETS) database to conduct the analysis for this study. NETS database is created by Walls & Associates, who convert Dun & Bradstreet's annual snapshots of establishments by removing any duplicates and imputing missing data fields with the latest contiguous information (Walls & Associates 2009). To our knowledge, this is the only time-series database that provides store-level information that includes sales and employment, including full- and part-time employees.

However, studies have raised concerns on how NETS compares to other datasets (Barnatchez et al., 2017; Crane and Decker, 2019; Cho et al., 2019). Thus, we compare the NETS data on nonmetro counties and compare it to the Bureau of the Census' County Business Patterns, Bureau of Labor Statistics' Quarterly Census of Employment and Wages, and TDLinx. Although NETS reports a higher total number of establishments, their distributions are relatively similar to the other datasets. Appendix B contains details on this comparison.

To capture all potential food retailers, we examine five common store formats: supermarkets and other grocery stores, convenience stores, specialty food stores, warehouse clubs and supercenters, and dollar stores. Table 1 shows the definitions of each type of store. The first four formats have six-digit NAICS codes that are clearly identifiable: 445110, 445120, 445200, and 452910, respectively. However, dollar stores are categorized with auto supply stores and other general stores in NAICS code 452990, or "All Other General Merchandise Stores." To incorporate dollar stores exclusively, for this NAICS code, we restrict our sample to stores with "dollar" in the name. After examining NETS more closely, we discovered some grocery stores, supercenters, and dollar stores had been classified under "Discount Department Stores" (452112); we placed these stores in their respective categories.⁵

Table 1

Definitions of Retail Format

Format	Definition
Grocery stores	This industry comprises establishments generally known as supermarkets and grocery stores primarily engaged in retailing a general line of food, such as canned and frozen foods; fresh fruits and vegetables; and fresh and prepared meats, fish, and poultry.
Supercenters and warehouse clubs	This industry comprises establishments known as warehouse clubs, superstores or supercenters primarily engaged in retailing a general line of groceries in combination with general lines of new merchandise, such as apparel, furniture, and appliances.
Convenience stores	This industry comprises establishments known as convenience stores or food marts (except those with fuel pumps) primarily engaged in retailing a limited line of goods that generally includes milk, bread, soda, and snacks.
Specialty food stores	This industry group comprises establishments primarily engaged in retailing specialized lines of food.
Dollar stores	Stores with "dollar" in the name with North American Industry Classification System code 452990 (All Other General Merchandise Stores) or 452112 (Discount Department Stores).

Source: North American Industry Classification System code definitions.

⁵After aggregating the stores in North American Industry Classification System (NAICS) code 452112 by name, we placed stores with "dollar" in the name with the dollar stores obtained from NAICS code 452990. We also examined the largest 100 retailers to determine whether any of these stores were supercenters (NAICS code 452910) or grocery stores (NAICS code 445110) and placed them in the respective categories. We conducted online searches for the stores whose names we did not recognize from the other categories. The remaining store names in NAICS code 452112 had fewer than nine establishments associated with each retailer. Thus, there may be some smaller stores, particularly single location ones that have been misclassified and are missing from our sample.

We show how the distribution of these food retailers in 2015 and how it has changed from 1990 to 2015, with a focus on grocery stores. Grocery stores were separated into four categories: single location, local chain, regional chain, and national chain. Table 2 illustrates how the stores are classified into each category.⁶ We conduct our analysis for nonmetro counties using the USDA, Economic Research Service’s Rural-Urban Continuum Codes (RUCC). These contiguous U.S. counties are divided into nonmetro counties based on urban population sizes of 20,000 or more people; 2,500 to 19,999 people; and less than 2,500 people.⁷ These counties are referred to as large urban nonmetro, small urban nonmetro, and rural nonmetro counties, respectively.⁸ We use county level projected population from U.S. Bureau of the Census (2020).

Table 2

Classification System for Type of Retail Grocery Store

Retailer type	Number of establishments under each parent company	Number of States with an establishment
Single location	1	1
Local chain	More than 1	1
Regional chain	More than 1	2 to 10
National chain	More than 1	More than 10

Source: Jarmin et. al. (2009).

⁶These are also the categories used by Jarmin et al. (2009).

⁷These categories include Rural-Urban Continuum Codes 4 and 5 for large urban nonmetro, codes 6 and 7 for small urban nonmetro, and codes 8 and 9 for? And (this and doesn’t make sense here) rural nonmetro.

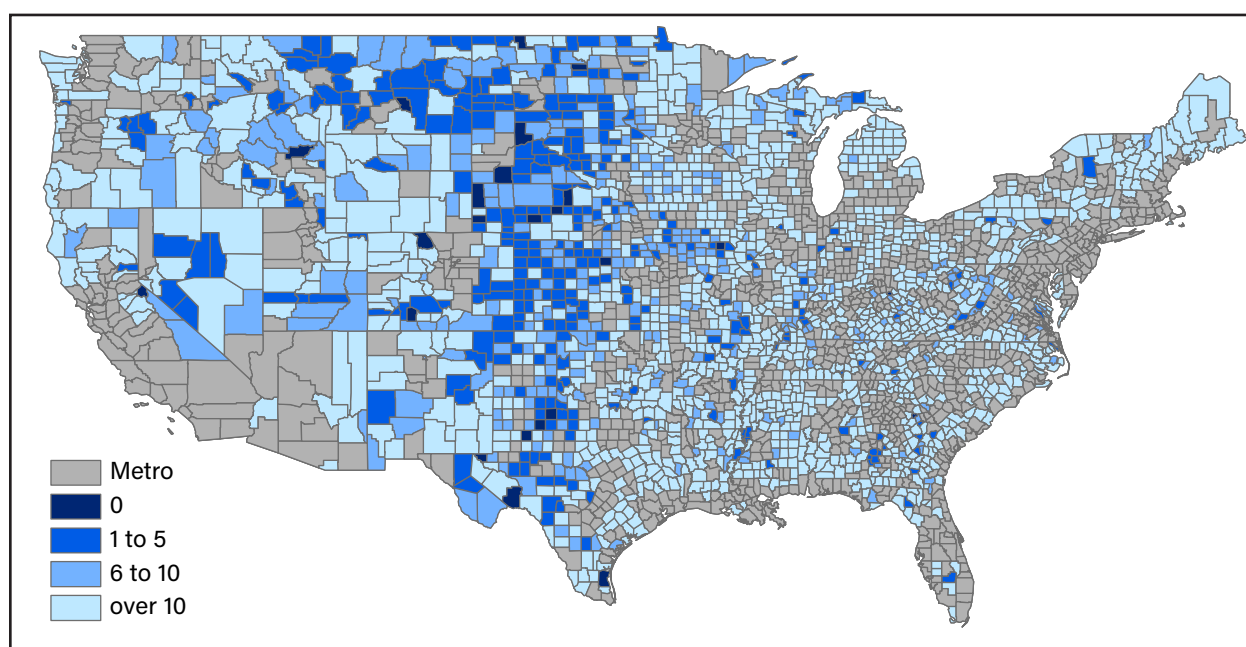
⁸These categories coincide with RUCC codes 4 and 5, 6 and 7, and 8 and 9, respectively.

Food Retailers in Rural America

Most contiguous U.S. counties with limited access to food retailers tend to be in urban nonmetro or rural nonmetro counties in 2015. There were 23 counties without any food retailers, and all these counties were rural nonmetro counties. There were 24 additional counties without any grocery stores with 17 and 4 in rural and urban nonmetro counties, respectively. Figures 1 and 2 illustrate that most of these counties tend to be in Midwestern and Western States.

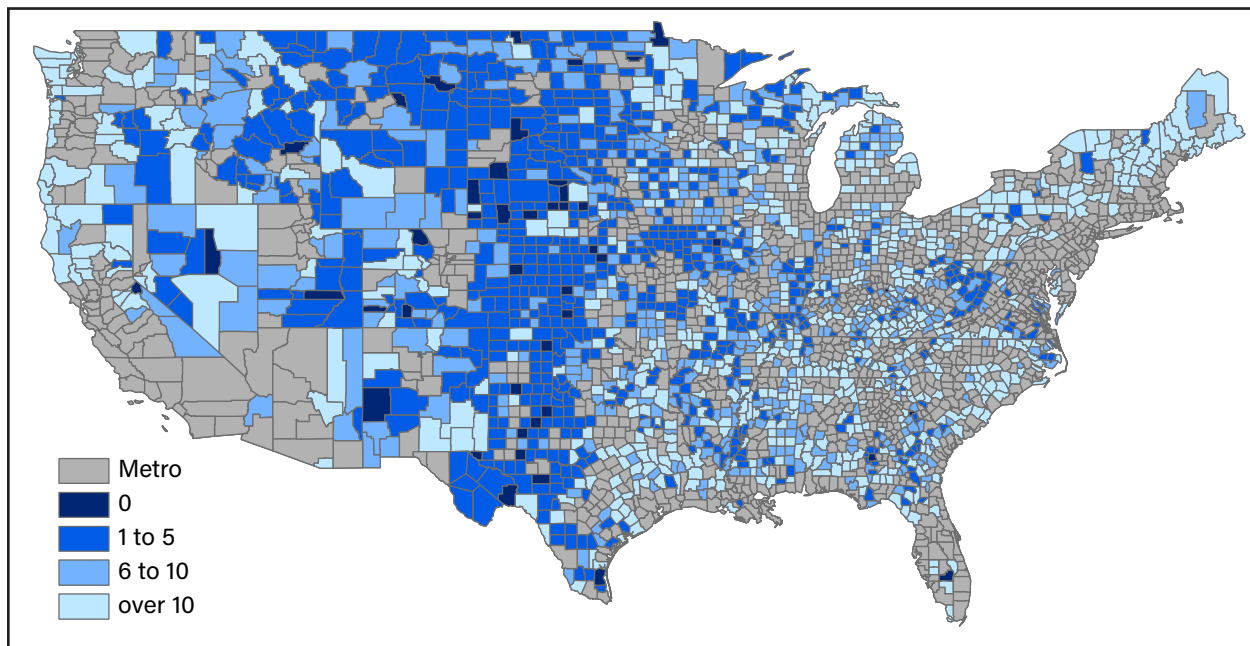
Of the 1,947 nonmetro counties in the contiguous United States, 1,276 had more than 10 food retailers. The number of counties with 1 to 5 and with 6 to 10 food retailers were similar at 306 and 342 counties, respectively. In contrast, most counties had 1 to 5 grocery stores or over 10: 726 and 695 counties, respectively. Like the counties with no food retailers, most of the counties with fewer food retailers and grocery stores were in Midwestern and Western States. These counties tended to have smaller populations as well.

Figure 1
Number of food retailers by county in 2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 2015.

Figure 2
Number of grocery stores by county in 2015

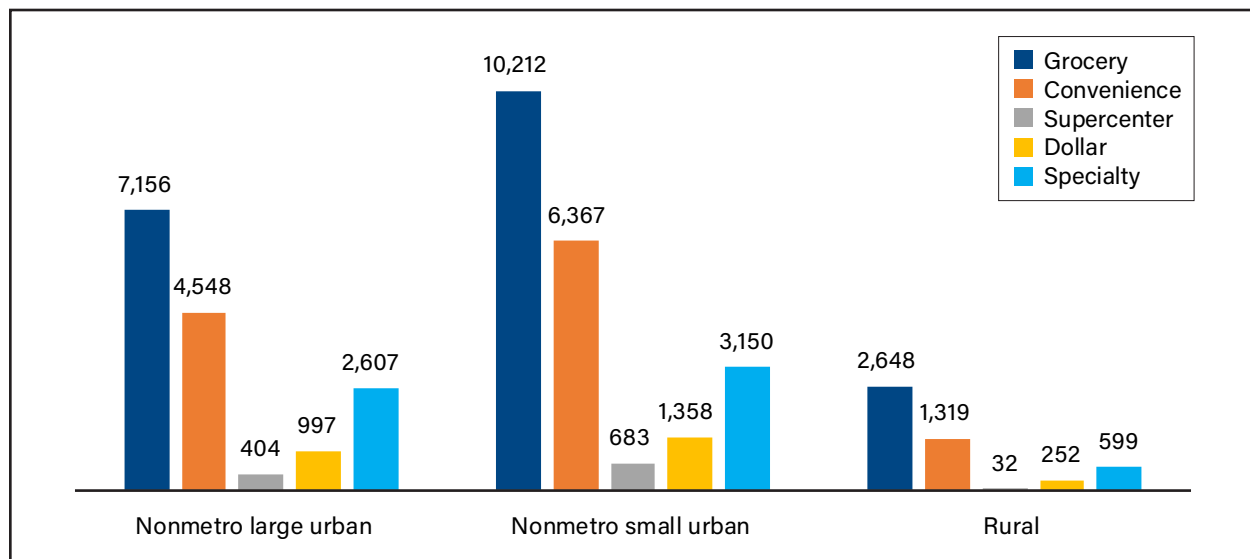


Source: USDA, Economic Research Service, using data from National Establishment Time Series from 2015.

Figure 3 shows a closer examination of the distribution of food retailers across urban nonmetro and rural nonmetro counties. It illustrates that the overall distribution of store types across urban nonmetro and rural nonmetro counties are relatively consistent. The total number of grocery stores exceeds other forms of food retailers, including convenience stores. Initially, this seems to contradict the literature, which has found that these areas with smaller populations tend to have less access to grocery stores and are dominated by convenience stores instead. However, this is likely because of the differences in NAICS codes used in the studies. The convenience stores examined in this study (NAICS code 445120) are comprised of stores that do not have a fuel pump. Most of the convenience stores in urban nonmetro and rural nonmetro areas likely consist of those attached to a gas station, which would be under NAICS code 447110. As a result, convenience stores that are not attached to a gas station are the second most prevalent food retailer found across urban nonmetro and rural nonmetro counties. As expected, supercenters are the least prevalent store type found in urban nonmetro and rural nonmetro counties.

In addition, Figure 3 presents the number of store types by the rurality of contiguous U.S. counties in 2015. The figure shows that small urban nonmetro counties have a greater number of stores across all five types than large urban nonmetro counties and that rural nonmetro counties have a small number of stores than both types of urban nonmetro counties. However, this is largely due to the number of counties within each area category. The number of counties in the large urban nonmetro category is about one-third the number of counties in the small urban nonmetro category, and about half the number of rural nonmetro counties. For a clearer picture, Table 3 presents the average number of stores per county by store types. As expected, the average number of stores in each county is the highest in large urban nonmetro counties, followed by small urban nonmetro and rural nonmetro across all store types. The distribution of the average number of stores found in each regional category follows the total national distribution, with each regional category having the highest average number of grocery stores and the lowest number of supercenters.

Figure 3

Number of stores by type in urban and rural nonmetro counties in 2015

Source: USDA, Economic Research Service, using data from National Establishment Time Series from 2015.

Table 3

Average number of stores per county by store type

	Grocery	Convenience	Supercenter	Dollar	Specialty	# of counties
Metro	93.2	43.1	3.5	8.7	37.0	1,160
Large urban nonmetro	23.3	14.9	1.3	3.3	8.4	303
Small urban nonmetro	10.0	6.2	0.7	1.3	3.1	1,017
Rural nonmetro	4.2	2.1	0.0	0.4	0.9	627

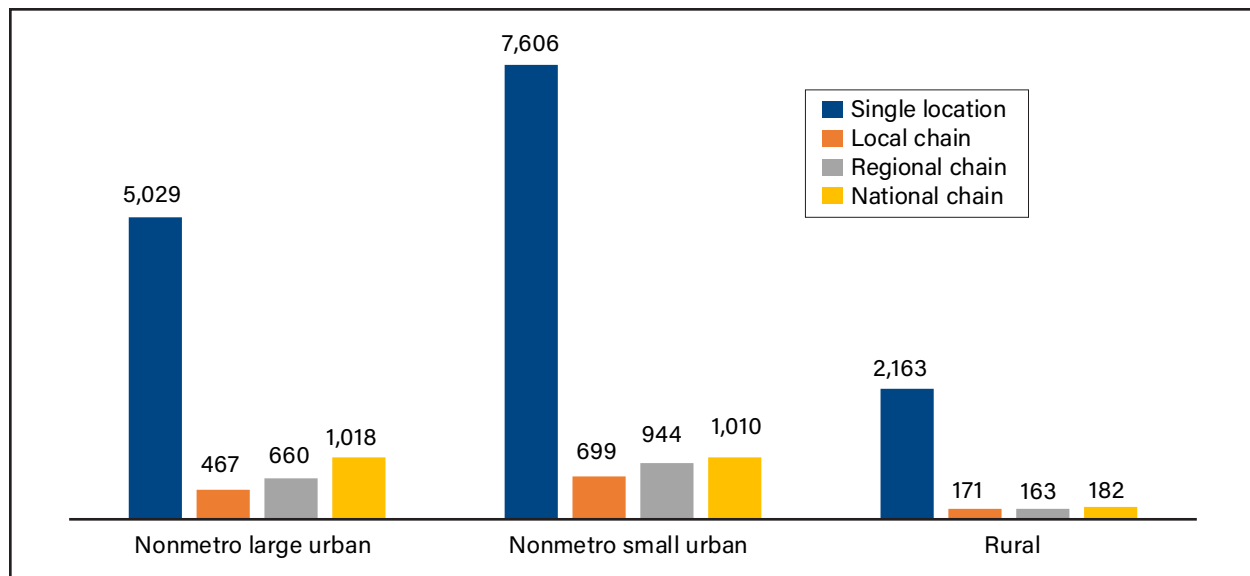
Source: USDA, Economic Research Service, using data from National Establishment Time Series from 2015.

Grocery Stores: Single Location vs Local Chain vs Regional Chain vs National Chain

Mergers and acquisitions within the food retail industry have been increasing over the last 20 years (U.S. Department of Agriculture Economic Research Service, 2014). However, it is unclear how this trend has affected rural communities, where grocery stores are more likely to be independently owned (Powell et al., 2007; Cho and Volpe, 2017). Thus, we conducted a closer examination of grocery stores across urban nonmetro and rural nonmetro counties by chain status.

Figure 4 illustrates that in 2015, the number of single location grocery stores was much higher than the number of stores in a local, regional, or national chain in all urban nonmetro and rural nonmetro counties. However, single location stores are relatively more prevalent in rural areas, comprising about 82 percent of all stores, compared with about 70 percent in large urban nonmetro counties and 74 percent in small urban nonmetro counties. National and regional chains were the second and third most prevalent in urban nonmetro counties, respectively. In rural nonmetro counties, local chains were relatively more prevalent while the number of national chains was ranked fourth.

Figure 4

Number of stores by type in urban and rural nonmetro counties in 2015

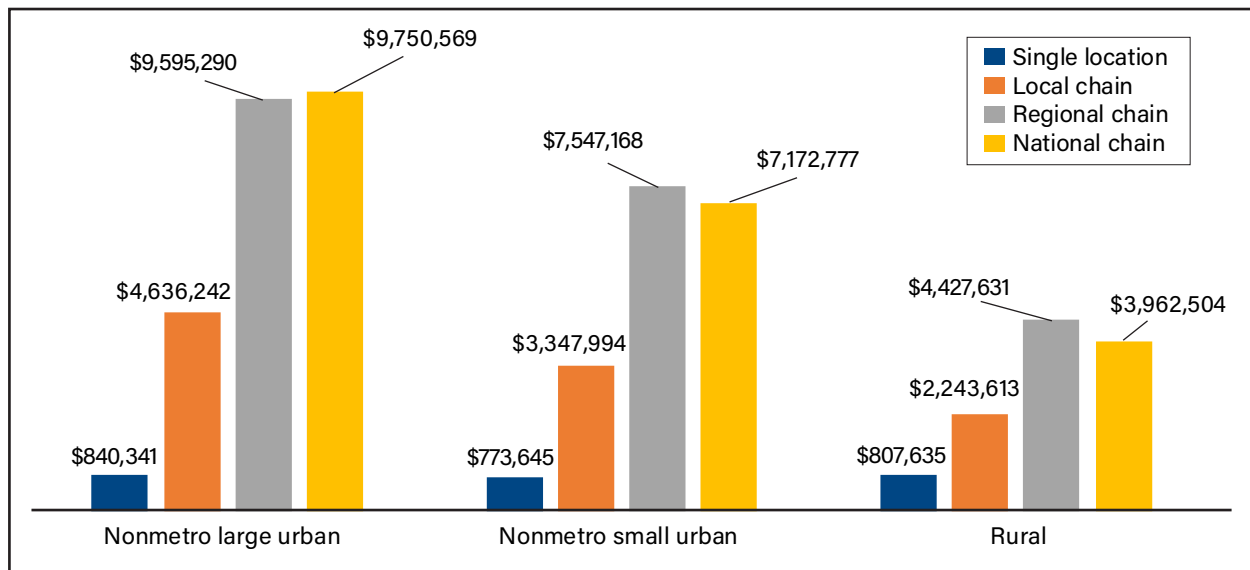
Source: USDA, Economic Research Service, using data from National Establishment Time Series from 2015.

Figure 5 presents the annual average sales per store by store types and across counties. The dollar value of sales includes not only food sales but sales from all goods and services at the stores. Single location stores had average sales of about \$800,000 a year across all counties. However, average sales of chain stores display substantial regional variation. National and regional chains had average sales of \$9.6 million, \$7.55 million, and \$4.43 million in sales across large urban nonmetro, small urban nonmetro, and rural nonmetro counties, respectively. Local chains had relatively lower average sales at \$4.64 million, \$3.35 million, and \$2.24 million across large urban nonmetro, small urban nonmetro, and rural nonmetro counties, respectively.

Average employment per store across store types in urban nonmetro and rural nonmetro counties also exhibited similar trends (fig. 6). Single location stores had the lowest average employment of eight people across all three county types, followed by the local chain stores. However, regional chains had the largest average employment across urban nonmetro and rural nonmetro counties, although the levels were like national chains. Employment includes full-time and part-time employees. The relationship between full-time and part-time employment between different formats may be more complicated.

Figure 5

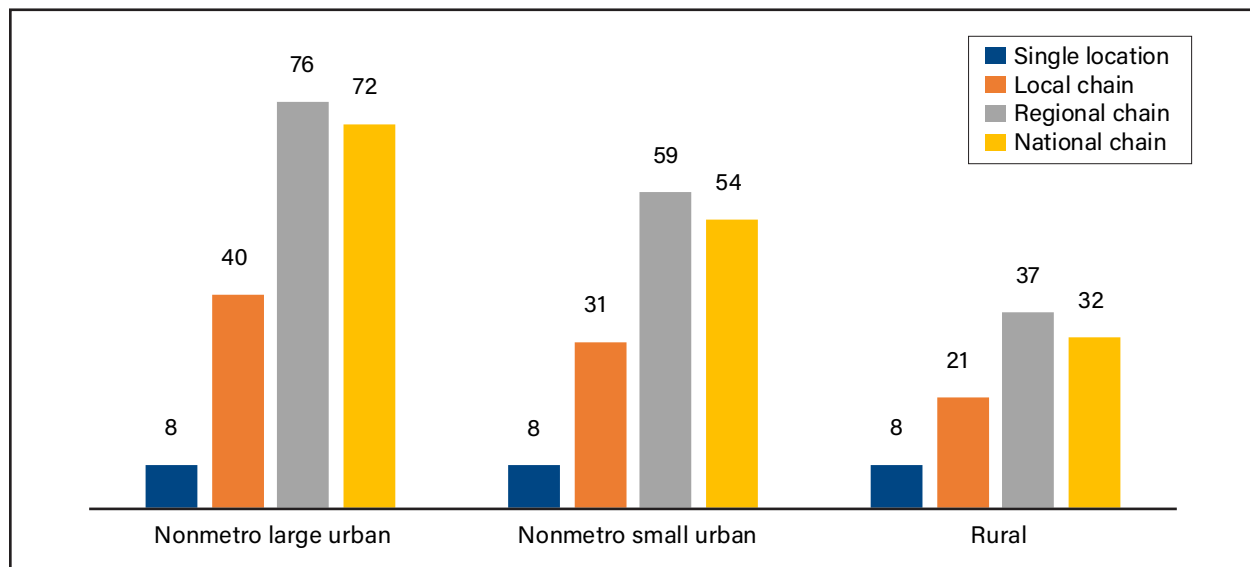
Average sales among grocery stores by chain status in urban and rural nonmetro counties in 2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 2015.

Figure 6

Average employment among grocery stores by chain status in urban and rural nonmetro counties in 2015

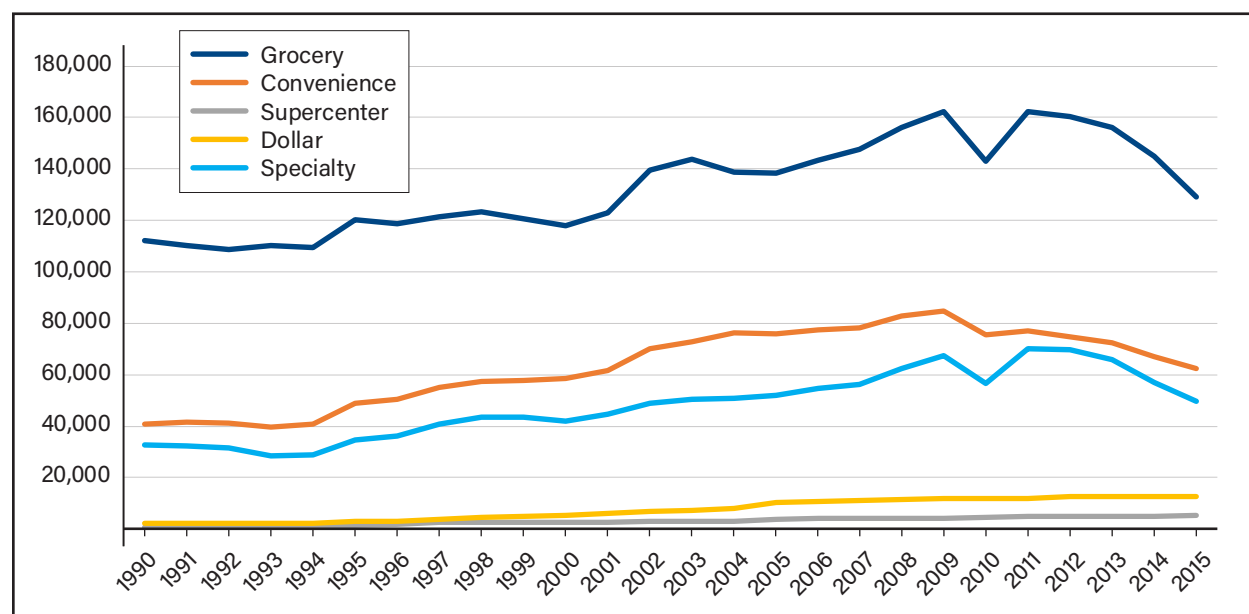


Source: USDA, Economic Research Service, using data from National Establishment Time Series from 2015.

Changes Among Food Retailers in Rural America: 1990 to 2015

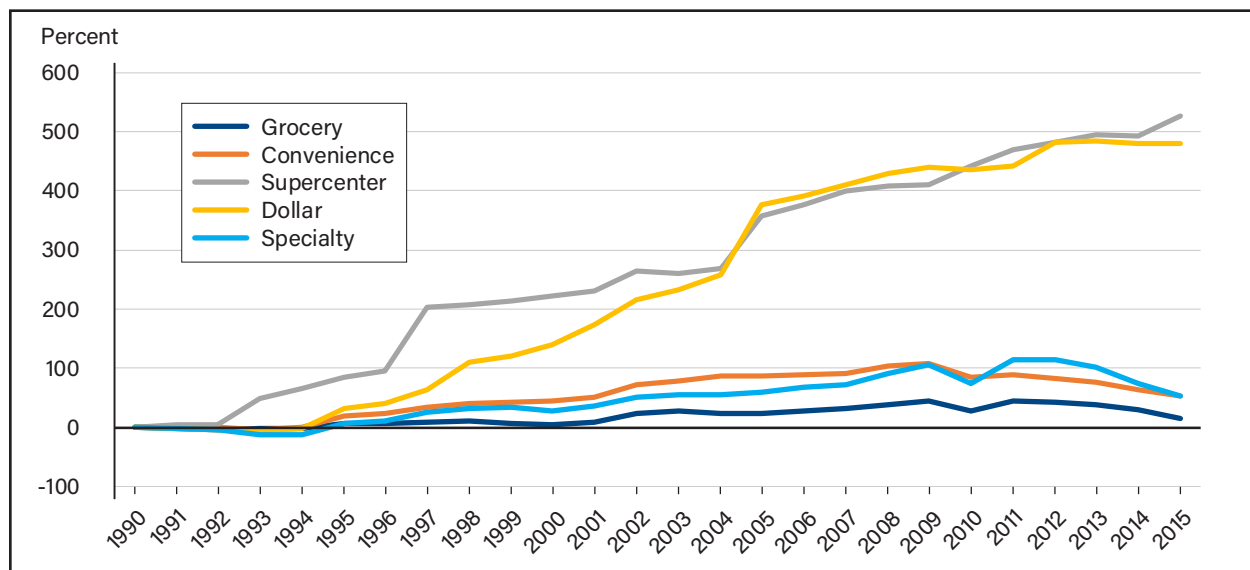
Over the 25-year period, the composition of food retailers' formats has changed as well as store sales and employment. The number of food retailers increased for all store types, although there were fluctuations during this period (fig. 7) while food retailers per capita remained roughly constant (fig. A1). The number of grocery stores and convenience stores peaked in 2009 and have been declining since then. From 1990 to 2015, grocery stores increased by 15 percent, while convenience stores increased by 53 percent (fig. 8). However, grocery stores were the only format to decline in stores per 10,000 people, decreasing by 10 percent (fig. A2). Specialty food stores peaked in 2011, and by 2015, increased by 53 percent from 1990 levels. Because they were almost non-existent in 1990, dollar stores and supercenters had a 480-percent and 526-percent respective growth rates over the 1990 to 2015 period.

Figure 7
Total number of establishments by store type, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

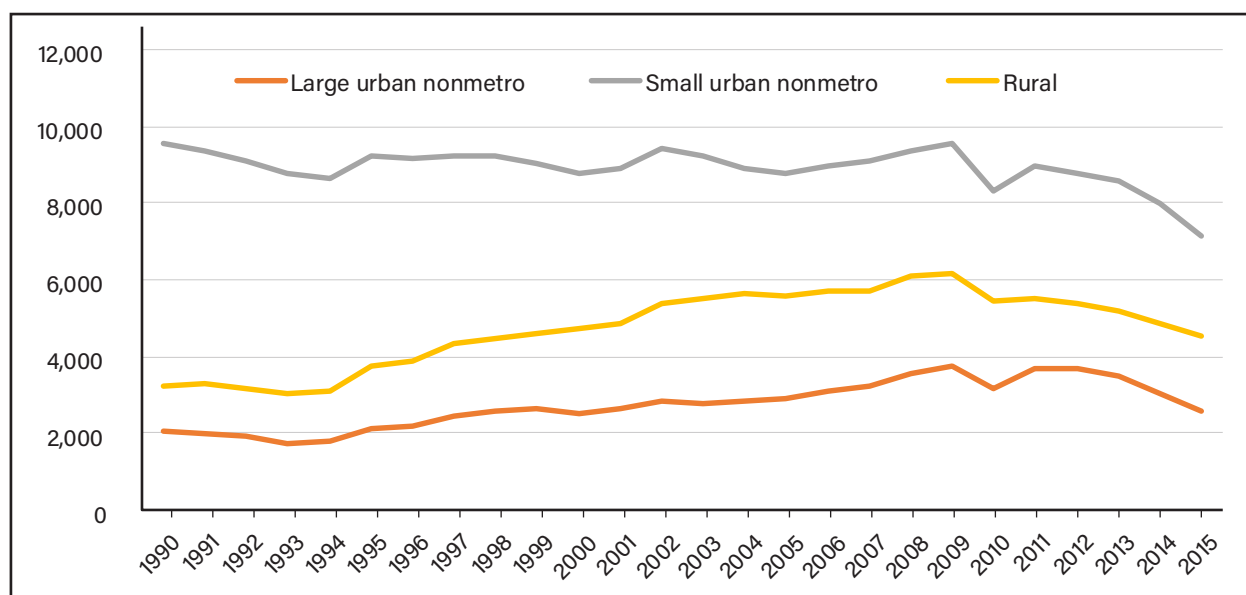
Figure 8

Percentage growth in number of establishments from 1990 by store type, 1990-2015

Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

The growth of grocery stores displays different trends across regions. The number of grocery stores declined relatively steadily in urban nonmetro and rural nonmetro counties from 1990 to 2015 (fig. 9), although the total number of grocery stores in the United States had mostly increased during this same period (fig. 7). The number of small urban nonmetro counties had the greatest decline in the number of establishments (5,729) or 36 percent. Rural nonmetro counties had the smallest decline (1,674 establishments), but this is largely because of the low initial number of establishments as these counties had a 39-percent decline. The number of large urban nonmetro counties declined by 25 percent or 2,405 establishments. In stores per capita terms, rural and urban nonmetro counties had similar patterns with declining grocery stores per capita (figs. A13 and A14). Rural nonmetro counties saw the largest percentage increase in supercenters per capita at 237 percent while large urban nonmetro counties saw the largest percentage increase in dollar stores per capita at 296 percent.

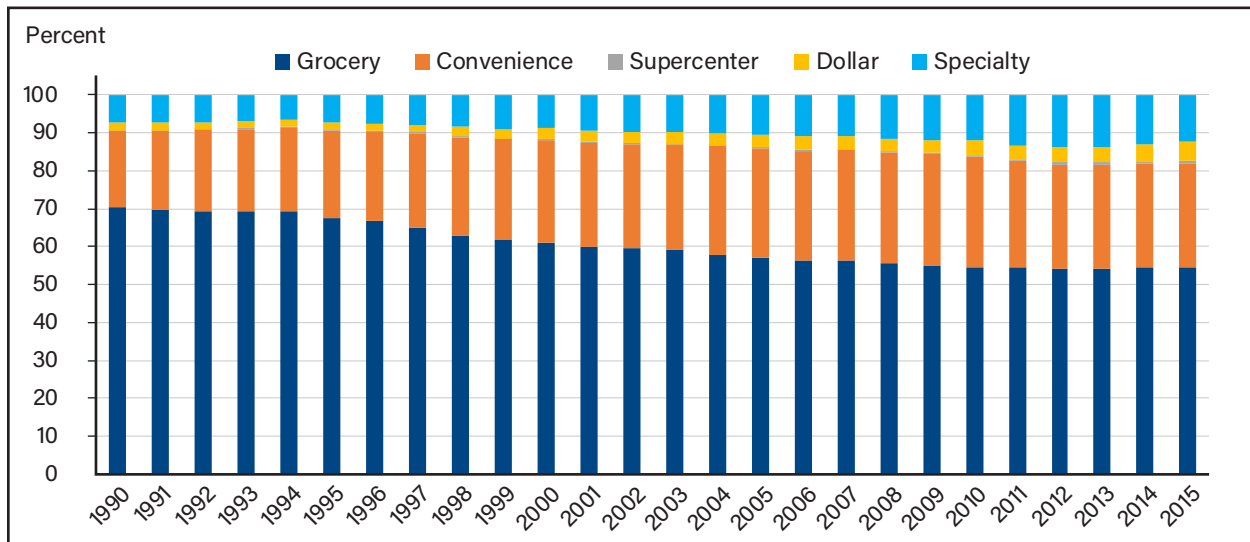
Figure 9

Number of grocery stores across urban and rural nonmetro counties, 1990-2015

Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

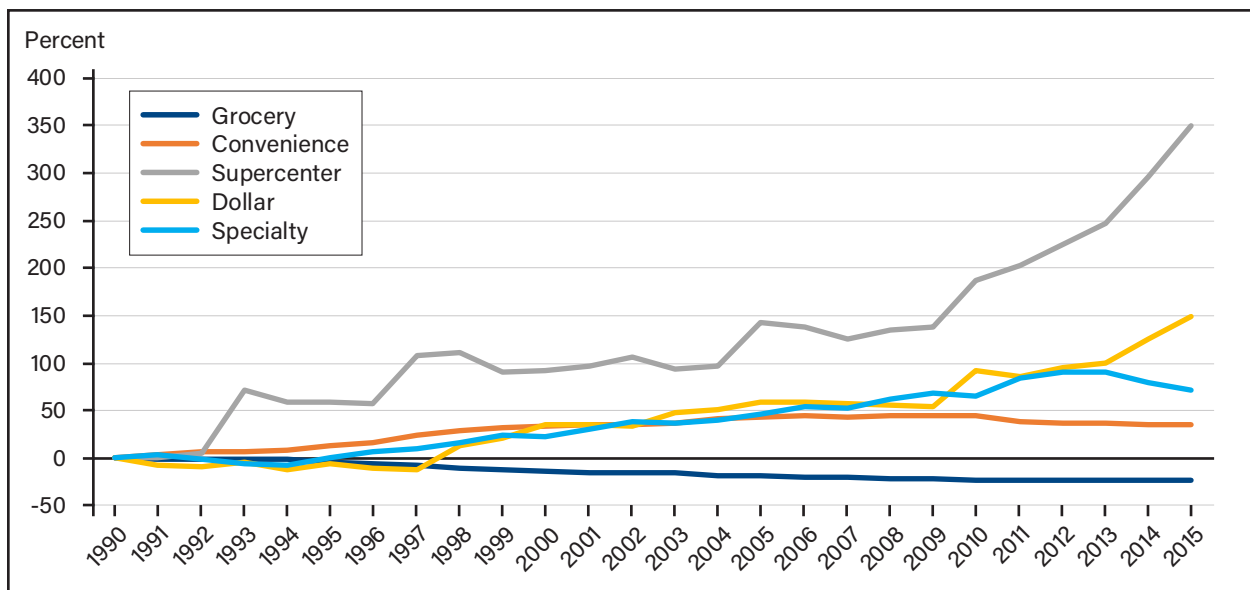
Although the number of grocery stores decreased in urban nonmetro and rural nonmetro counties from 1990 to 2015, the remaining food retail store types increased. As a result, the share of grocery stores declined 15 percent in total and 36 percent in stores per capita during this period in rural nonmetro counties (fig. 10). All other food retail store types increased during this period, with convenience stores having the greatest percentage increase from 20 to 27 percent. Specialty food stores increased by 5 percentage points from 7 percent. Dollar stores and supercenters had the greatest percentage growth from 1990 to 2015, because the share of stores that were dollar stores and supercenters were initially low (fig. 11). However, supercenters also sell other goods and provide other services apart from food retail. Thus, their share of stores increased by 3 percentage points and 1 percentage point, respectively. The number of urban nonmetro counties showed similar trends to rural nonmetro counties, with dollar stores showing a larger percentage growth in larger counties (figs. A3 and A4).

Figure 10
Share of stores by type in rural nonmetro counties, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Figure 11
Percentage growth in share of stores from 1990 by type in rural nonmetro counties, 1990-2015

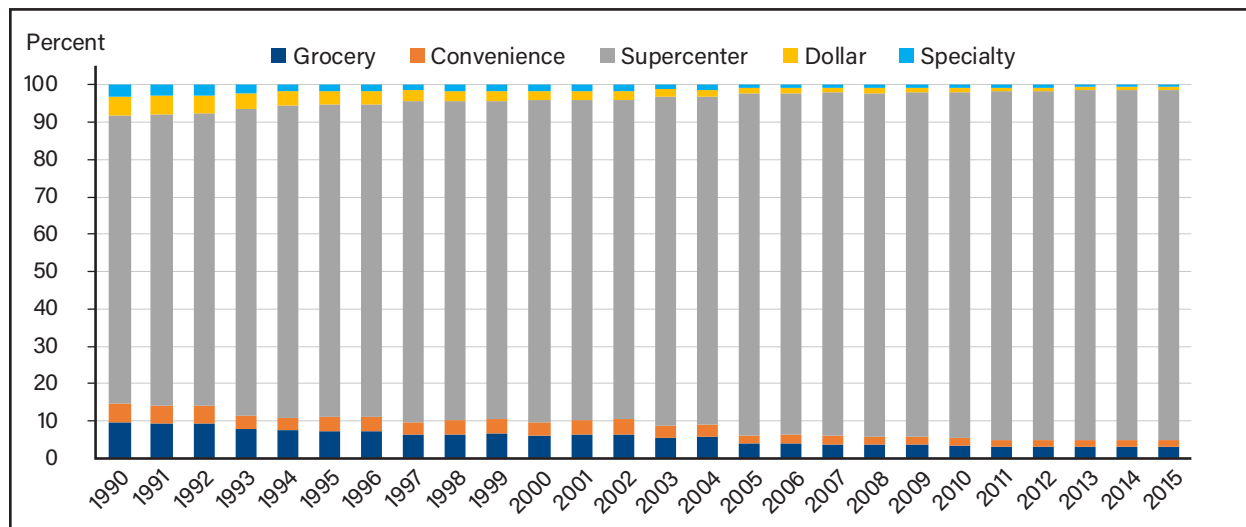


Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Figure 12 presents the average share of annual sales by store type in rural nonmetro counties between 1990 and 2015. Supercenters have the largest share of food retail sales consistently across all 25 years because the sales value includes all sales at the retailer, including more expensive items that likely would not be found at the other store types (e.g., televisions). The percentage growth in share of sales among supercenters steadily increased over the years while the share of sales among the other store types decreased (fig. 13). However, it is important to note that sales for grocery stores and convenience stores increased between 1990 and 2015, although by less than 1 percentage point. The average share of annual sales by store type in urban nonmetro counties showed similar trends to rural nonmetro counties are shown in Figures A5 and A6, although the average sale share of grocery stores was slightly higher.

Figure 12

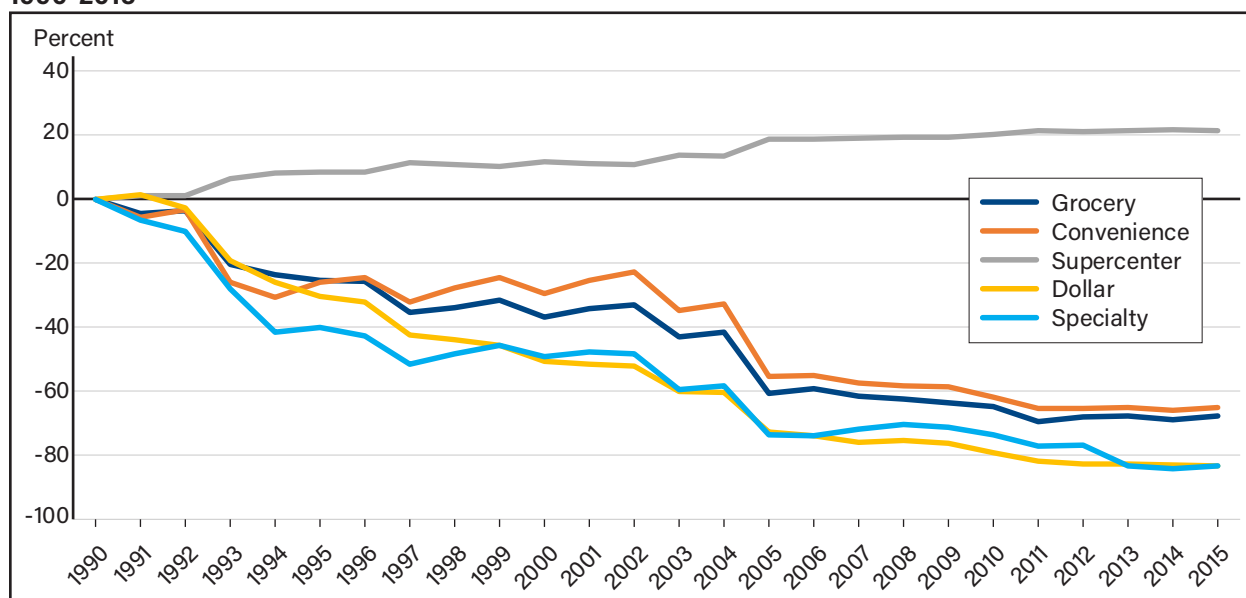
Average share of sales by store type in rural nonmetro counties, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Figure 13

Percentage growth in average share of sales from 1990 by store type in rural nonmetro counties, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Grocery Stores: Single Location vs Local Chain vs Regional Chain vs National Chain

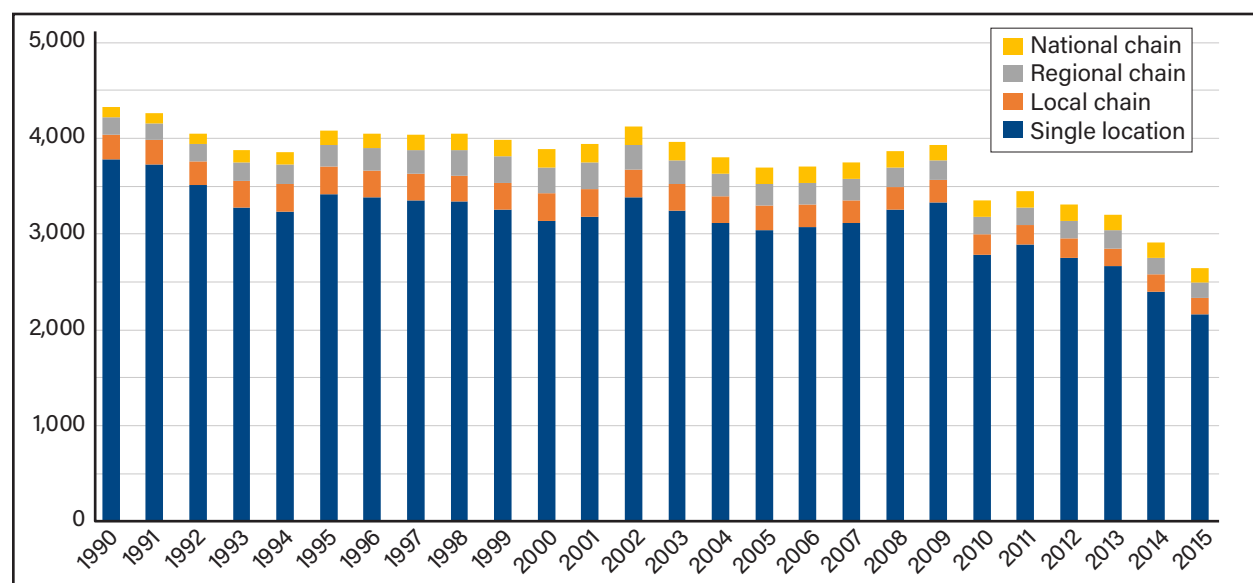
Next, we examine trends in the number, sales, and employment of grocery stores by their chain category. Although single location grocery stores outnumbered chains in urban nonmetro and rural nonmetro counties, they decreased from 1990 to 2015.⁹ Figure 16 illustrates that single location grocery stores in rural nonmetro counties decreased by 1,164 stores, resulting in the single location stores' share of stores decreasing from 87 percent to 82 percent. The number of single location grocery stores fluctuated from 1990 to 2009 but declined continuously thereafter.

Cho and Volpe (2017) found that the decline in independent stores began 2 years earlier in 2007. Cho and Volpe (2017) use the TDLinX definition of independent stores: those whose owners operate fewer than four establishments and only classifies an establishment as a grocery store if it has over \$1 million in sales. In contrast, we classify establishments that are the sole establishment under the parent company as single location stores in this study, which is consistent with Jarmin et. al. (2009). Furthermore, NETS does not impose any sales requirements to classify grocery stores, resulting in NETS containing a greater number of single location stores. Thus, it is likely that NETS includes single location stores that may have been able to stay open at the onset of the Great Recession but closed as the recession ended.

In rural nonmetro counties, the number of local and regional chains also decreased by 91 and 16 stores, respectively. However, the decrease was small enough that the share of local stores remained virtually the same while the share of regional chains increased by 2 percentage points. National chains increased by 47 stores, increasing from about 2 percent to 6 percent. Urban nonmetro counties exhibited the same trends except for national chains in small urban nonmetro counties, which decreased in number but increased in shares (figs. A7 and A8). The main difference in the distribution of stores between rural nonmetro counties and both types of urban nonmetro counties was that the total number of stores was greater in urban nonmetro counties and that the share of single location grocery stores was smaller while the share of national chains was larger.

Figure 14

Total number of grocery stores by chain status in rural nonmetro counties, 1990-2015

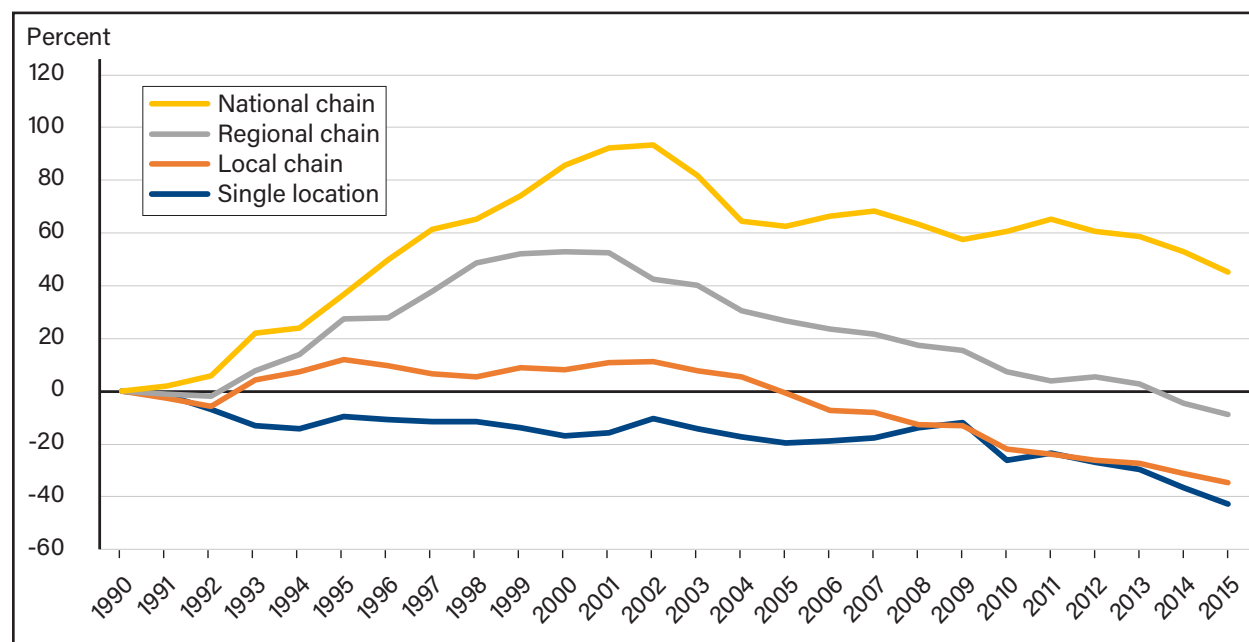


Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

⁹Urban nonmetro counties exhibited similar trends to rural nonmetro counties in the number of grocery stores and their average sales and employment. Thus, we have included these graphs in Appendix A to conserve space in the main manuscript.

Figure 15

Percentage growth in total number of grocery stores from 1990 by chain status in rural nonmetro counties, 1990-2015



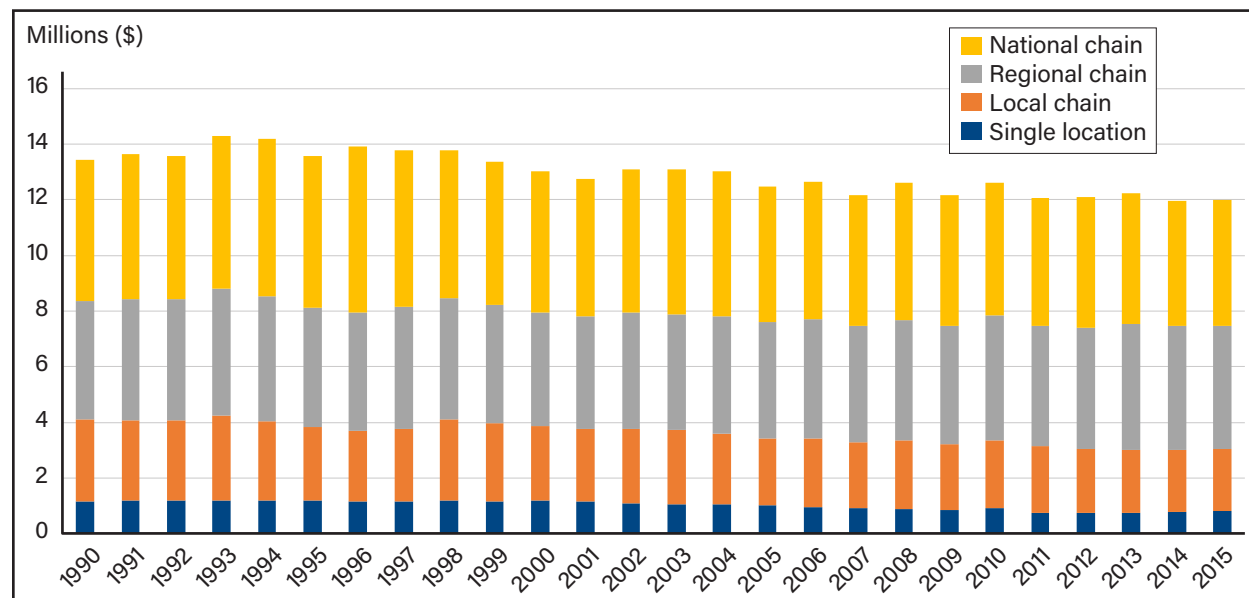
Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

From 1990 to 2015, average sales in 2015 dollars trended downward among grocery stores with a similar pattern holding for urban nonmetro counties (figs.16 and A9).¹⁰ The average sales among national and regional chains were approximately 75 percent of average sales in these counties for all 25 years. The share of regional chains was the only chain type; the remaining chain types decreased in rural nonmetro counties (fig.17). The pattern was similar for urban nonmetro counties where the average sales decreased among all stores except regional chains (fig. A10).

¹⁰2015 dollars calculated using the Consumer Price Index (BLS, 2020)

Figure 16

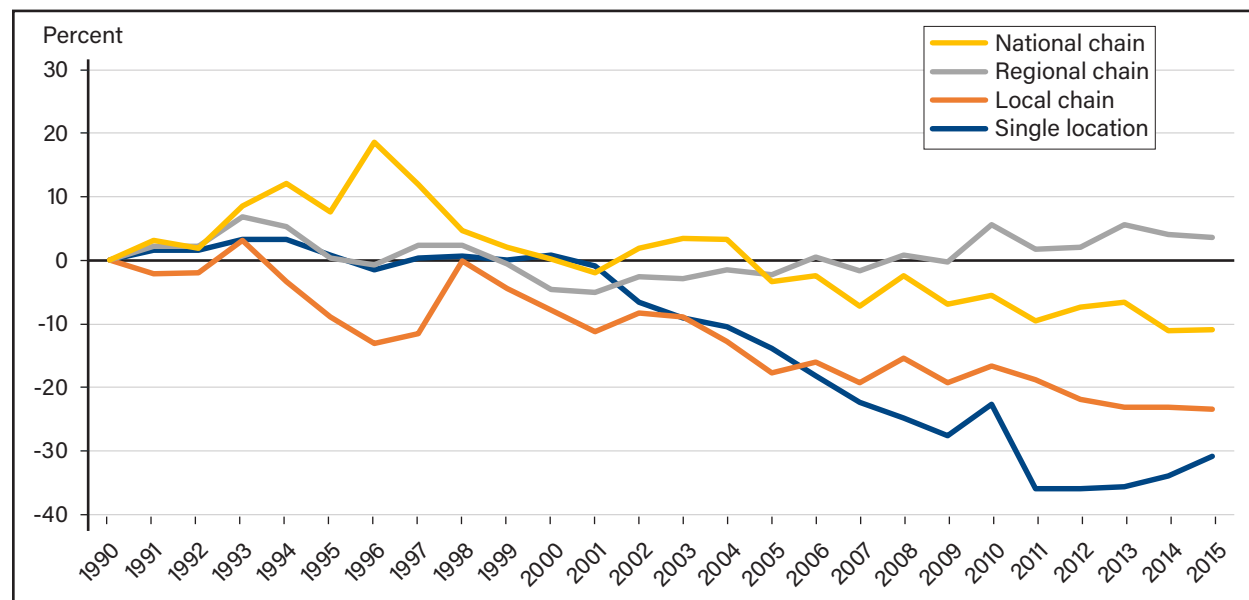
Average sales in 2015 dollars among grocery stores by chain status in rural nonmetro counties, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Figure 17

Percentage growth in average sales in 2015 dollars among grocery stores from 1990 by chain status in rural nonmetro counties, 1990-2015

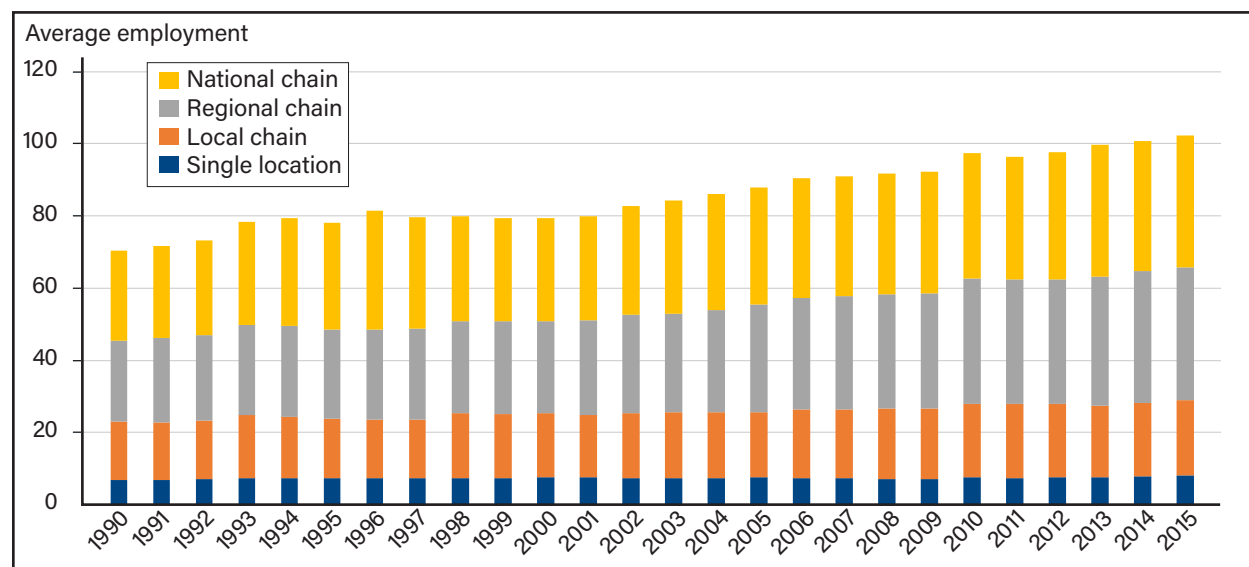


Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

While sales were decreasing trends in average employment, including full- and part-time, per store were increasing. Figures 18 and A11 show that average employment increased overall, with slight fluctuations, and national and regional chains were almost 75 percent of average employment in rural nonmetro and urban nonmetro counties for all 25 years. Figures 19 and A12 show that regional chains had the greatest percentage increase in number from 1990 to 2015, suggesting that these stores became larger and employed more people over the 25 years.

Figure 18

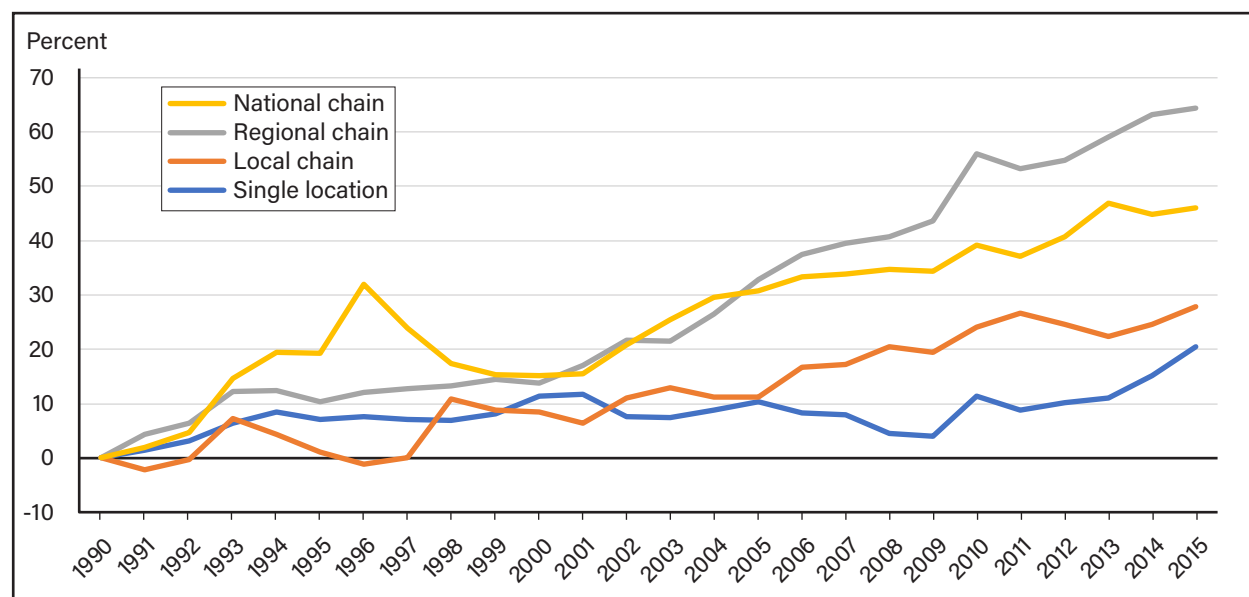
Average employment among grocery stores by chain status in rural nonmetro counties, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Figure 19

Percentage growth in average employment among grocery stores by chain status in rural nonmetro counties, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Discussion and Conclusion

In the contiguous United States, most counties without access to a grocery store or a food retailer are rural nonmetro and urban nonmetro. However, there is also substantial heterogeneity in the number and size of food retailers in rural nonmetro and urban nonmetro counties. For example, in 2015, there were as many rural nonmetro and urban nonmetro counties with fewer than 5 grocery stores as those with more than 10 stores. Grocery stores outnumbered other non-traditional food retailers across urban nonmetro and rural nonmetro counties every year from 1990 to 2015. However, the number of grocery stores has been declining in these counties, particularly after the Great Recession. As a result, the share of grocery store sales in total food sales has been declining during this time, replaced primarily by convenience stores. These trends suggest that access to grocery stores has been declining over the last 25 years.

Examining grocery stores by chain status indicates that single location grocery stores outnumbered local, regional, and national chains in urban nonmetro and rural nonmetro counties. However, the number of single location grocery stores has been declining—particularly after 2009—which was also the main source of the large decline in the total number of grocery stores. Share of sales and employment also declined for single location grocery stores while it increased for chain stores with regional chains having the largest increase.

This paper does not examine the causes or effects of the changes in food retail. However, further research could examine competition by chain status for grocery stores. Although the average employment among single location stores decreased while it increased the most for regional chains, it is unclear if the reduction among single location stores was caused by the increase in regional chains. Future studies examining the competitive effects among grocery stores by chain status would help explain the structural changes in the food industry in rural nonmetro counties. This report simplifies the rural-urban continuum, though further research could examine the trends with different rural-urban categorizations and for low-income areas. Further research should also examine the effects of these structural changes on food access for consumers in nonmetro counties.

References

- Aussenberg, R. A. (2014). "SNAP and related nutrition provisions of the 2014 Farm Bill (PL 113-79)." Congressional Research Service Report: 7-5700.
- Bailey, J. M. 2010. *Rural Grocery Stores: Importance and Challenges*. Center for Rural Affairs: Lyons, NE.
- Barnatchez, K., L. Crane, and R. Decker (2017). "An Assessment of the National Establishment Time Series (NETS) Database." Finance and Economics Discussion Series 2017-110. Washington: Board of Governors of the Federal Reserve System.
- Bureau of Labor Statistics. 2019. Quarterly Census of Employment and Wages: Questions and Answers. Last updated September 26, 2019. Accessed on October 10, 2019.
- Bureau of Labor Statistics. 2020. "Consumer Price Index Database," U.S. Department of Labor, BLS. Available online.
- Çakır, M., X. Kong, C. Cho, and A. Stevens (2020). "Rural Food Retailing and Independent Grocery Retailer Exits." *American Journal of Agricultural Economics*.
- Caspi, C. E., G. Sorensen, S.V. Subramanian, I. Kawachi. 2012. "The Local Food Environment and Diet: A Systematic Review." *Health & Place*, 18(5), 1172-1187.
- Caspi, C. E., Lenk, K., Pelletier, J. E., Barnes, T. L., Harnack, L., Erickson, D. J., & Laska, M. N. June 5, 2017. "Association Between Store Food Environment and Customer Purchases in Small Grocery Stores, Gas-Marts, Pharmacies and Dollar Stores." *International Journal of Behavioral Nutrition and Physical Activity*, 14(1): 76, doi:10.1186/s12966-017-0531-x
- Census Bureau. 2018. County Business Patterns: Data User Guide. Last updated on May 24, 2018. Accessed on February 8, 2019.
- Census Bureau. 2018b. Economic Census: Frequently Asked Questions. Last updated on November 13, 2018. Accessed on February 8, 2019.
- Centers for Disease Control and Prevention. 2011. "State Initiatives Supporting Healthier Food Retail: An Overview of the National Landscape."
- Cho, C., P. McLaughlin, E. Zeballos, J. Kent, and C. Dicken. March 2019. *Capturing the Complete Food Environment with Commercial Data: A Comparison of TDLinx, ReCount, and NETS Databases*, TB-1953, U.S. Department of Agriculture, Economic Research Service.
- Cho, C. and R. Volpe. November 2017. *Independent Grocery Stores in the Changing Landscape of the U.S. Food Retail Industry*, ERR-240, U. S. Department of Agriculture, Economic Research Service.
- Clark, P., L. Tsoodle, and D. Kahl. 2008. Rural Grocery Sustainability Project Owner Survey. Manhattan, Kansas: Kansas State University, Center for Engagement and Community Development.
- Corkery, M. 2018. "Grocery Wars Turn Small Chains Into Battlefields." *The New York Times*. Accessed on February 8, 2019.

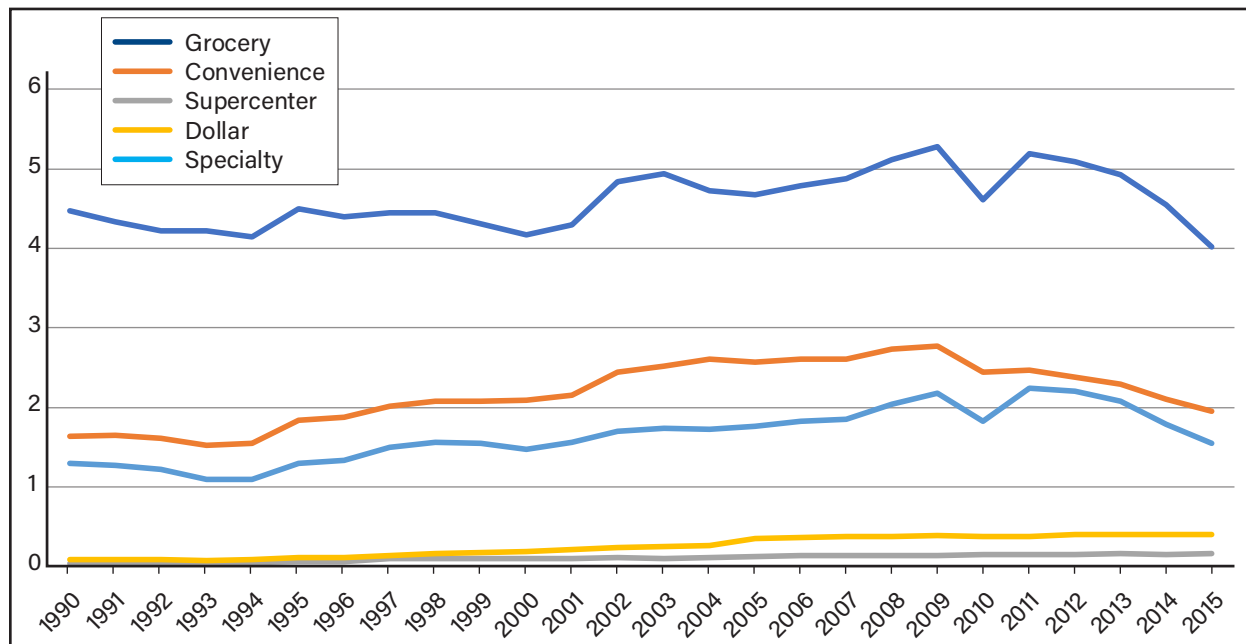
- Crane, L. D., and R. A. Decker. 2019. "Business Dynamics in the National Establishment Time Series (NETS)," Finance and Economics Discussion Series 2019-034. Washington: Board of Governors of the Federal Reserve System. Available online.
- Cromartie, J. November 2018. *Rural America At A Glance 2018 Edition*, EIB-200, U.S. Department of Agriculture, Economic Research Service.
- Dutko, P., M. Ver Ploeg, T. Farrigan. August 2012. *Characteristics and Influential Factors of Food Deserts*, ERR-140, U.S. Department of Agriculture, Economic Research Service.
- Elitzak, H. and A. Okrent. 2018. *America's Eating Habits: Food Away From Home, Chapter 3: A Retrospective of Food-Away-From-Home Expenditures from 1987 to 2017*, EIB-196, U.S. Department of Agriculture, Economic Research Service.
- Haddon, H. and L. Rizzo. 2017. "Regional Grocery Stores Feel the Squeeze." The Wall Street Journal. Accessed on February 8, 2019.
- Harris, J., P. Kaufman, S. Martinez, and C. Price. January 2002. "The U.S. Food Marketing System, 2002: Competition, Coordination, And Technological Innovations Into The 21st Century," *Agricultural Economics Reports*, United States Department of Agriculture, Economic Research Service.
- Hertz, T., L. Kusmin, A. Marre, and T. Parker. August 2014. *Rural Employment Trends in Recession and Recovery*, ERR-172, U. S. Department of Agriculture, Economic Research Service.
- Houghtaling, B., Kniola, D., & Misyak, S. (2020). "Supplemental Nutrition Assistance Program (SNAP)-Authorized Grocery, Convenience, Dollar, and Restaurant or Delivery Service Settings Are Associated With Increased Obesity Prevalence in Virginia." *American Journal of Health Promotion*.
- Huang, T., Orazem, P., & Wohlgemuth, D. 2002. "Rural Population Growth, 1950-1990: The Roles of Human Capital, Industry Structure, and Government Policy." *American Journal of Agricultural Economics*, 84(3), 615-627.
- Jarmin, R.S., Klimek, S.D. and Miranda, J. 2009. "The Role of Retail Chains: National, Regional and Industry Results." *Producer Dynamics: New Evidence from Micro Data*, 237-262, University of Chicago Press.
- Jilcott Pitts, S.B., Wu, Q., Truesdale, K.P., Laska, M.N., Grinchak, T., McGuirt, J.T., Haynes-Maslow, L., Bell, R.A., and Ammerman, A.S. 2017. "Baseline Assessment of a Healthy Corner Store Initiative: Associations between Food Store Environments, Shopping Patterns, Customer Purchases, and Dietary Intake in Eastern North Carolina." *International Journal of Environmental Research and Public Health*, 14: 1189.
- Kolak, M., M. Bradley, D. Block, L. Pool, G. Garg, C. K. Toman, K. Boatright, D. Lipiszko, J. Koschinsky, K. Kershaw, M. Carnethon, T. Isakova, and M. Wolf. 2018. "Urban foodscape trends: Disparities in healthy food access in Chicago, 2007–2014," *Health & Place*, 52: 231-239.
- Martinez, S. W. May 2007. *The U.S. Food Marketing System: Recent Developments*, ERR-42, U. S. Department of Agriculture, Economic Research Service.
- McGranahan, D. A. and C. L. Beale. 2002. "Understanding Rural Population Loss." *Rural America* 17(4): 2-11.

- Mills, B. and G. Hazarika. 2001. "The Migration of Young Adults from Non-Metropolitan Counties." *American Journal of Agricultural Economics*, 83(2): 329-340.
- Morris, F. 2017. "How Dollar General is Transforming Rural America." National Public Radio. Accessed on February 8, 2019.
- Nielsen. 2010. "TDLinx Data Dictionary." Internal document provided to ERS.
- Powell, L. M., S. Slater, D. Mirtcheva, Y. Bao, and F. Chaloupka. 2007. "Food Store Availability and Neighborhood Characteristics in the United States." *Preventive Medicine*, 44(3): 189-195.
- U.S. Census Bureau (2020). Population Estimates, September 18, 2020.
- U.S. Department of Health and Human Services (HHS). "Healthy Food Financing Initiative." Last reviewed on June 14, 2017, accessed on February 4, 2019.
- U.S. Department of Agriculture Economic Research Service. 2014. "Retail Trends." *USDA ERS - Retailing and Wholesaling* (October). Available online. Accessed October 10, 2019.
- Ver Ploeg, M. June 2009. *Access to Affordable and Nutritious Food: Measuring and Understanding Food Deserts and Their Consequences*, Report to Congress, U.S. Department of Agriculture, Economic Research Service.
- Volpe, R., A. Kuhns, and T. Jaenicke. March 2017. *Store Formats and Patterns in Household Grocery Purchases*, EIB-167, U.S. Department of Agriculture, Economic Research Service.
- Volpe, R., C. Risch, and M. Boland, M. June 2015. "The Determinants of Price Adjustments in Retail Supermarkets." *Managerial and Decision Economics*, 38(1), 37-52.
- Walker, Renee E., C. R. Keane, J. G. Burke. 2010. "Disparities and access to healthy food in the United States: A review of food deserts literature." *Health & Place*, 16(5), 876-884.
- Walls & Associates. 2009. "Understanding Data in the NETS Database." Internal document provided to ERS.

Appendix A: Supplemental Figures

Figure A1

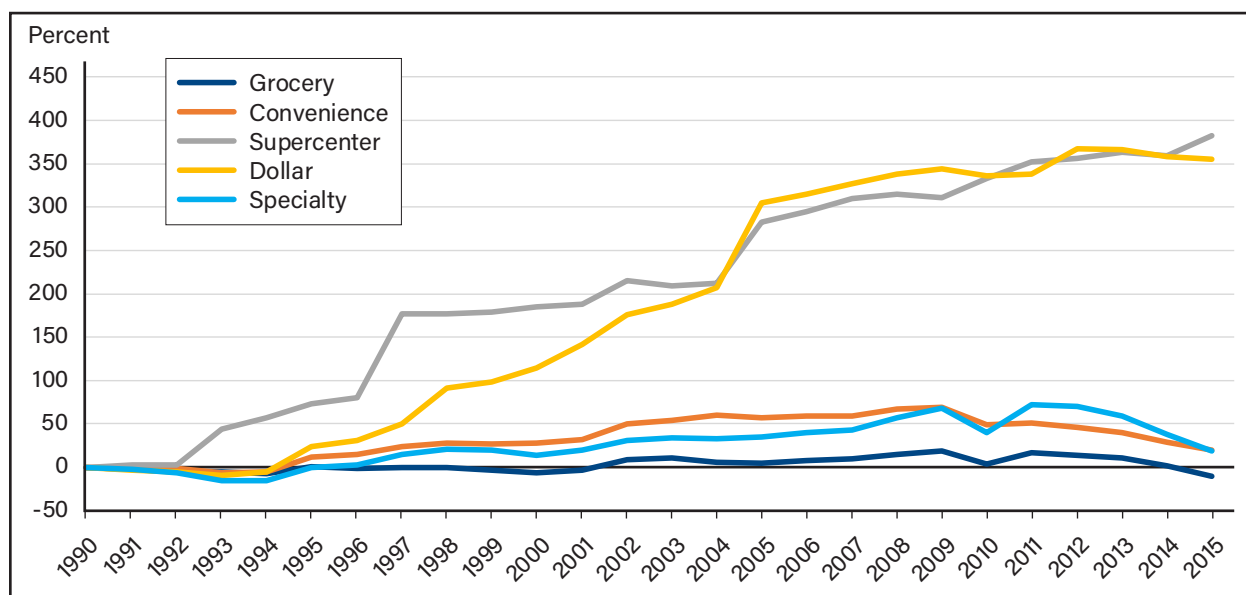
Number of establishments per 10,000 people by store type, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Figure A2

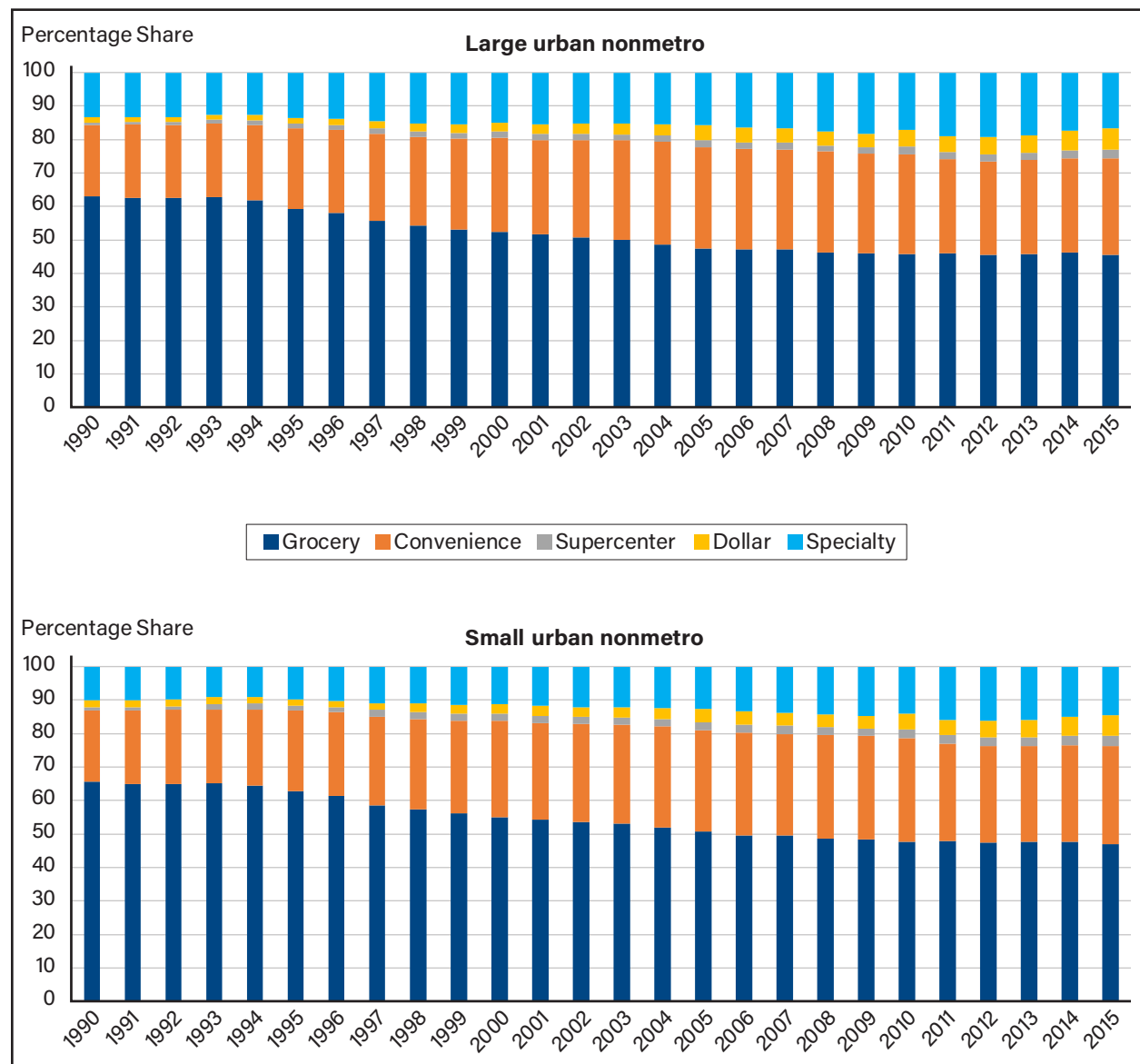
Percentage growth in number of establishments per 10,000 people by store type, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Figure A3

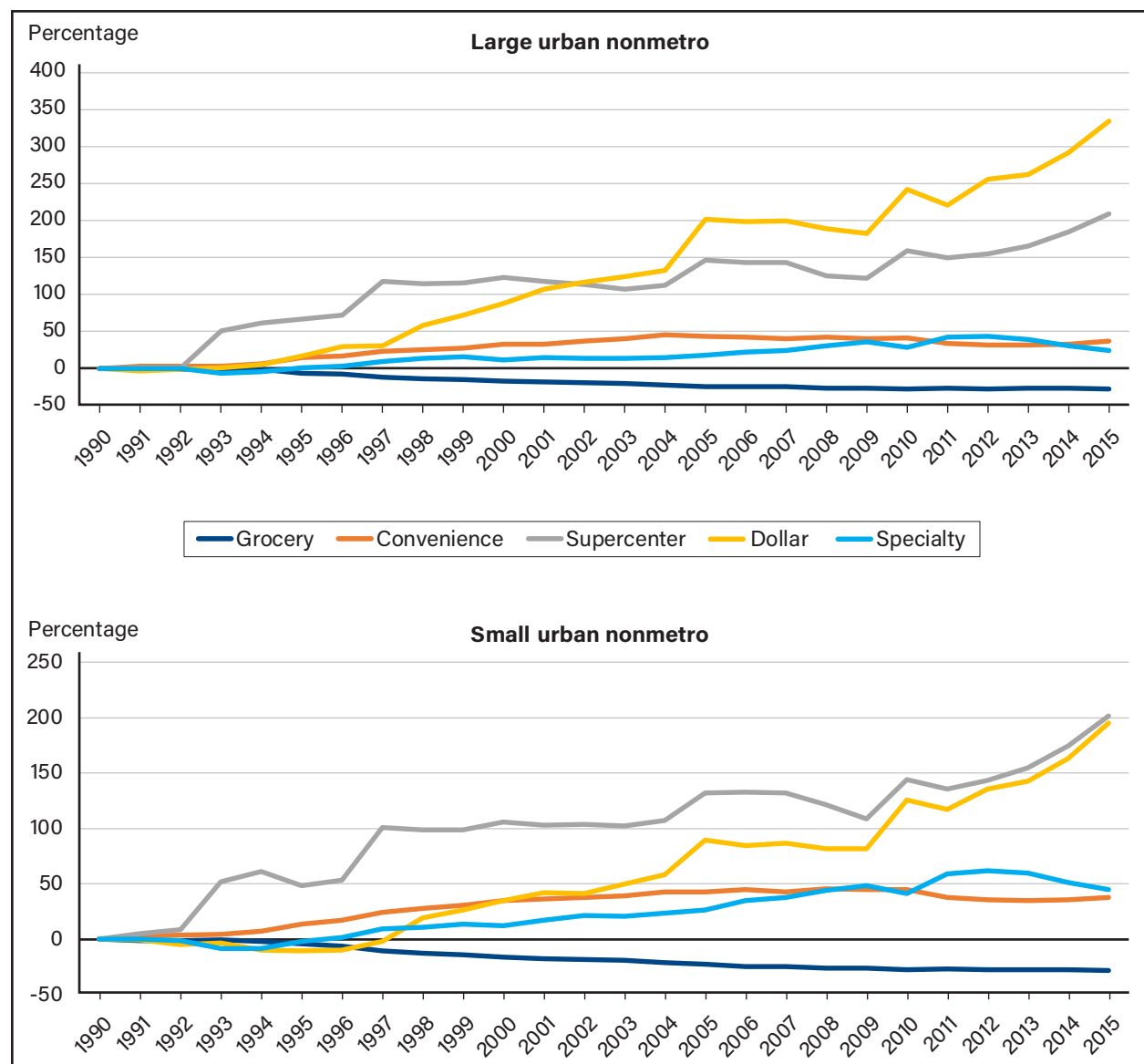
Share of stores by type in urban nonmetro counties, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Figure A4

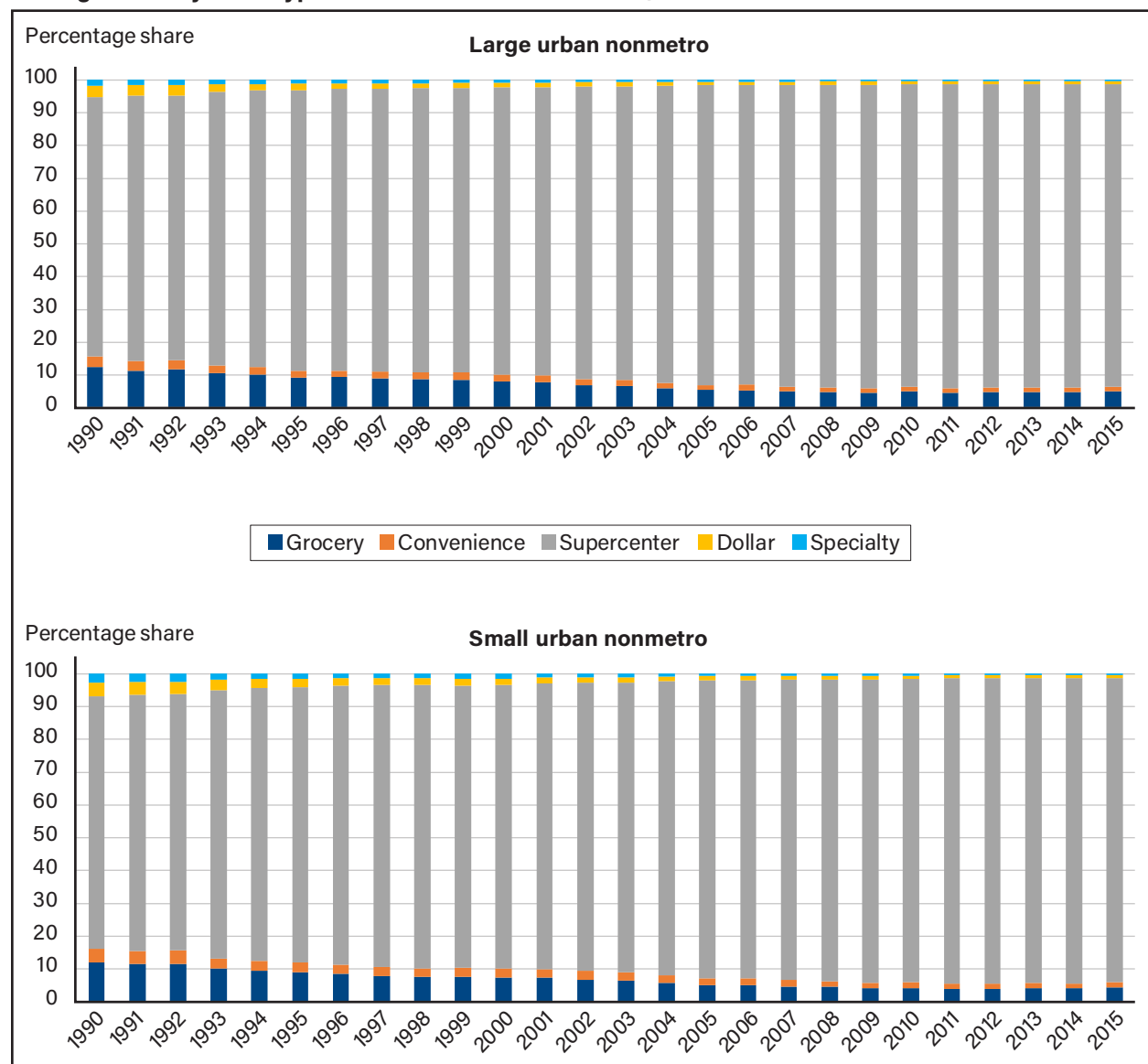
Percentage growth in share of stores by type in urban nonmetro counties, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Figure A5

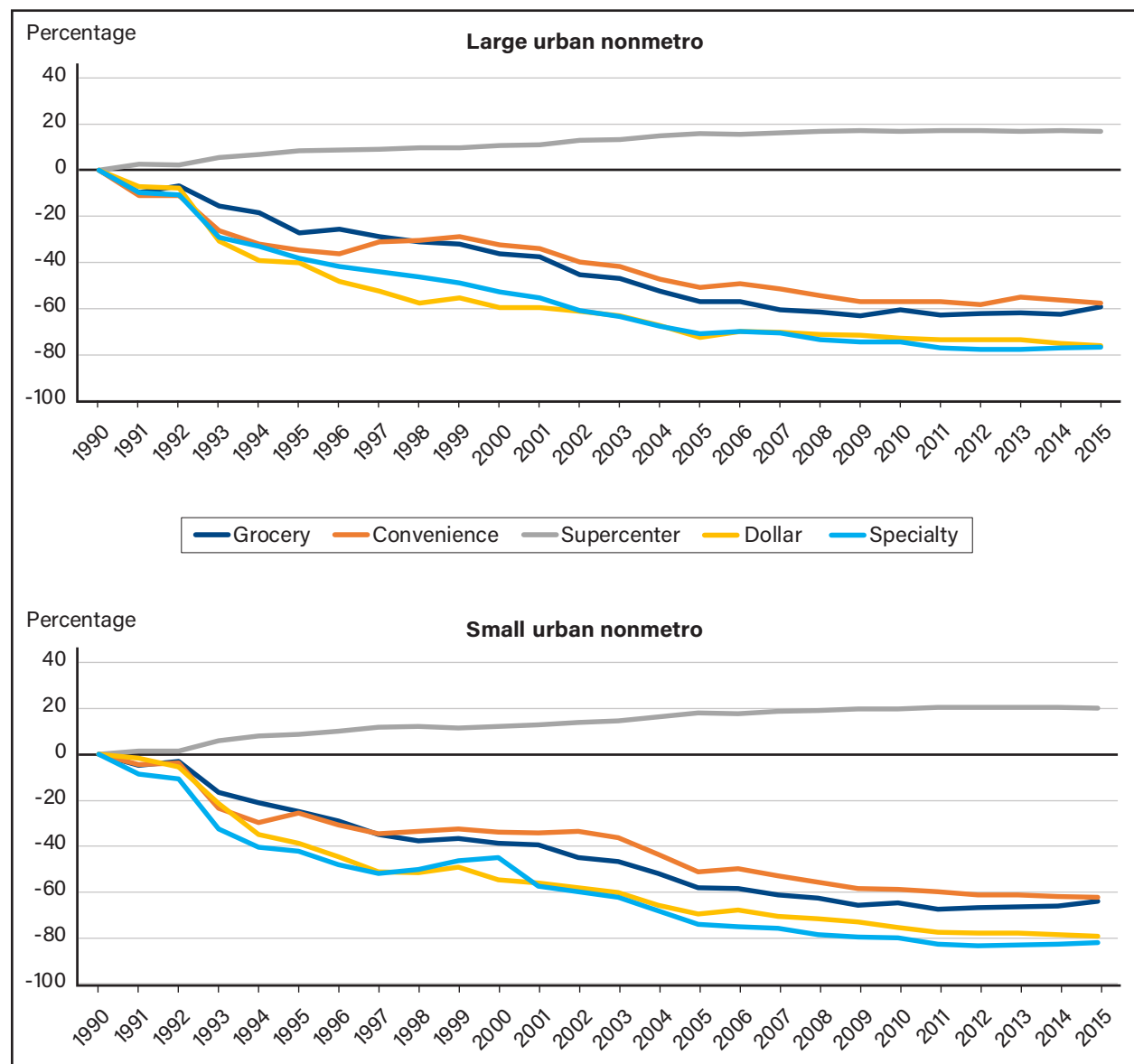
Average sales by store type in urban nonmetro counties, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Figure A6

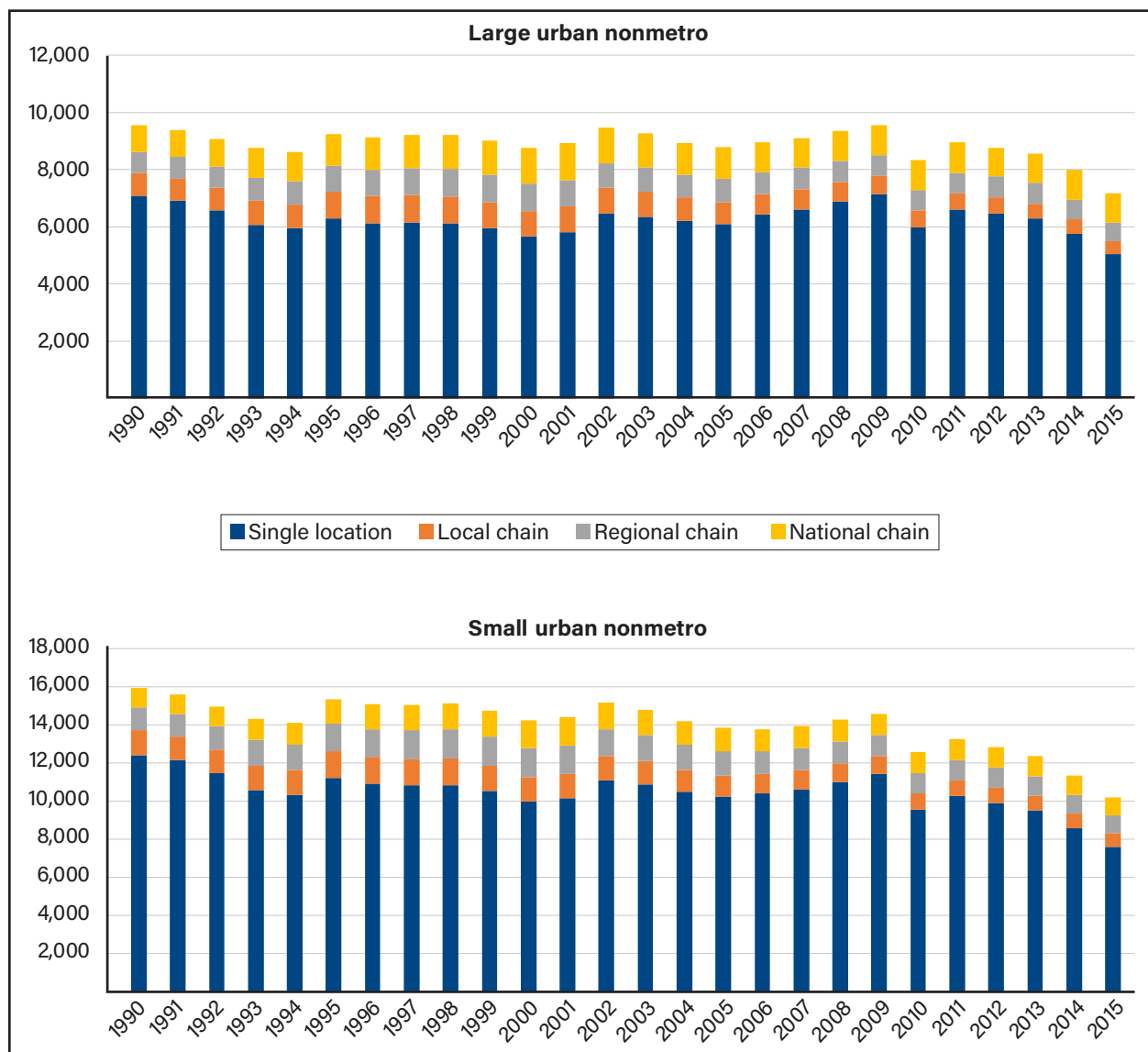
Percentage growth in average sales by store type in urban nonmetro counties, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Figure A7

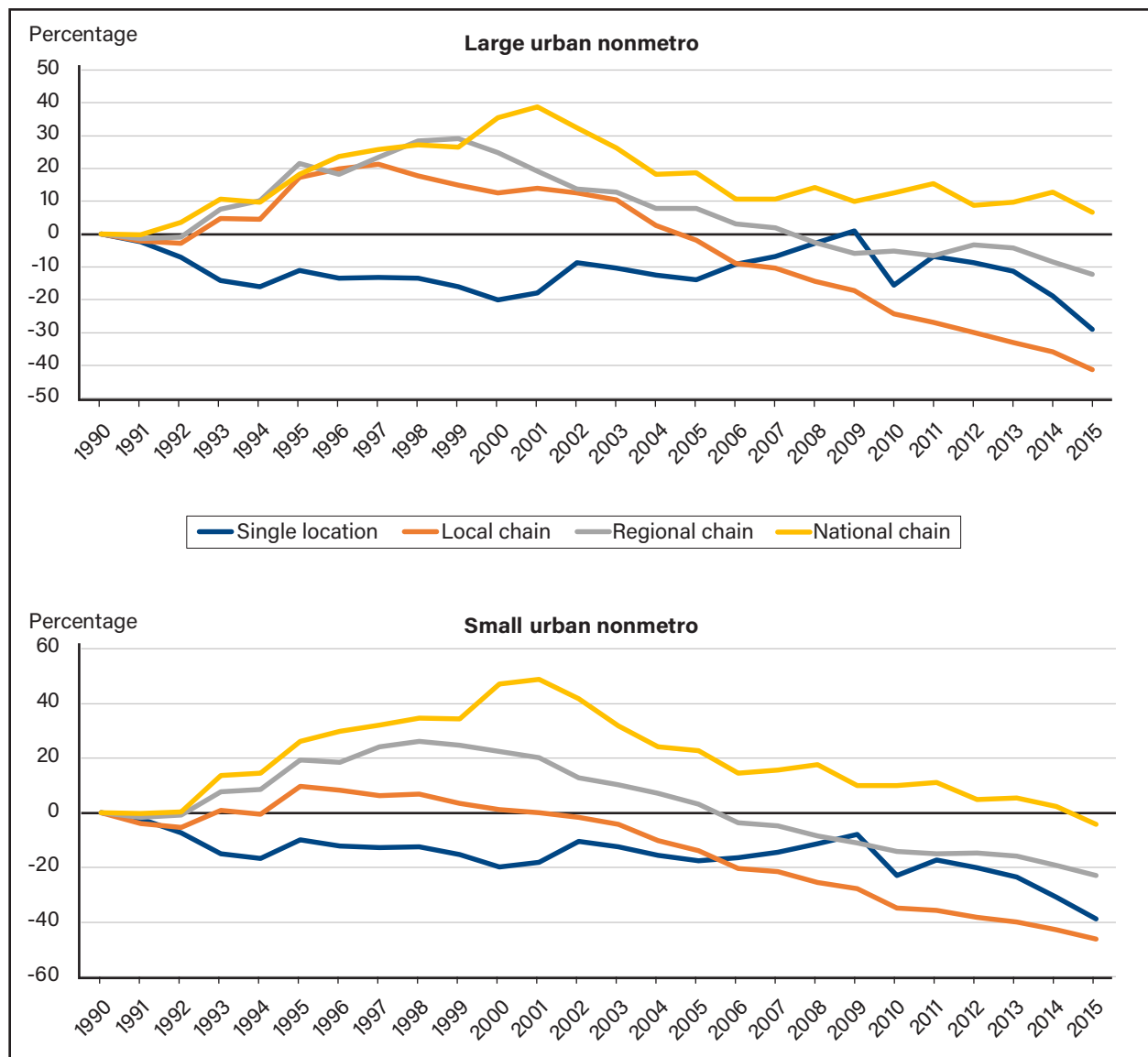
Total number of grocery stores by chain status in urban nonmetro counties, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Figure A8

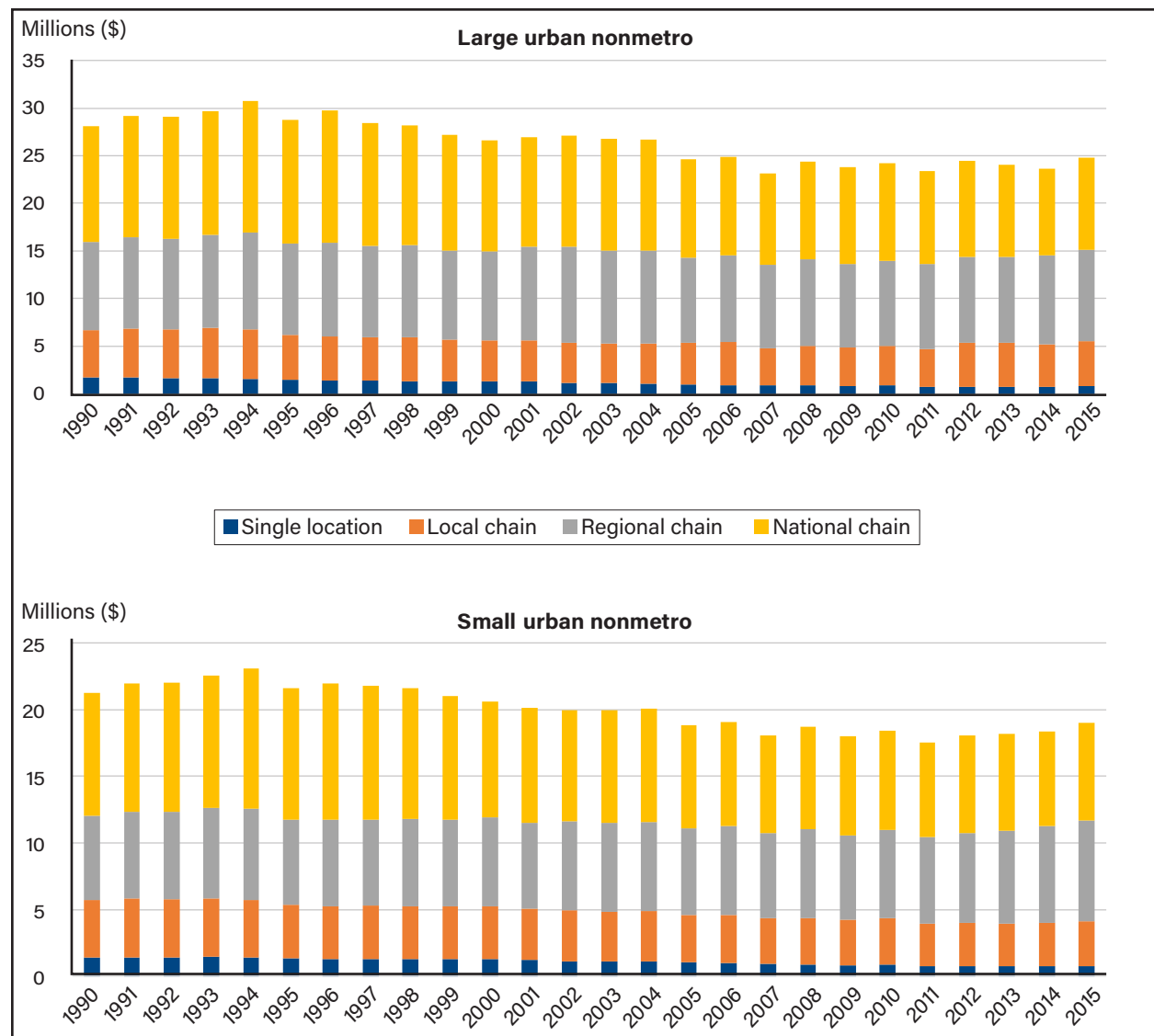
Percentage growth in total number of grocery stores by chain status in urban nonmetro counties, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Figure A9

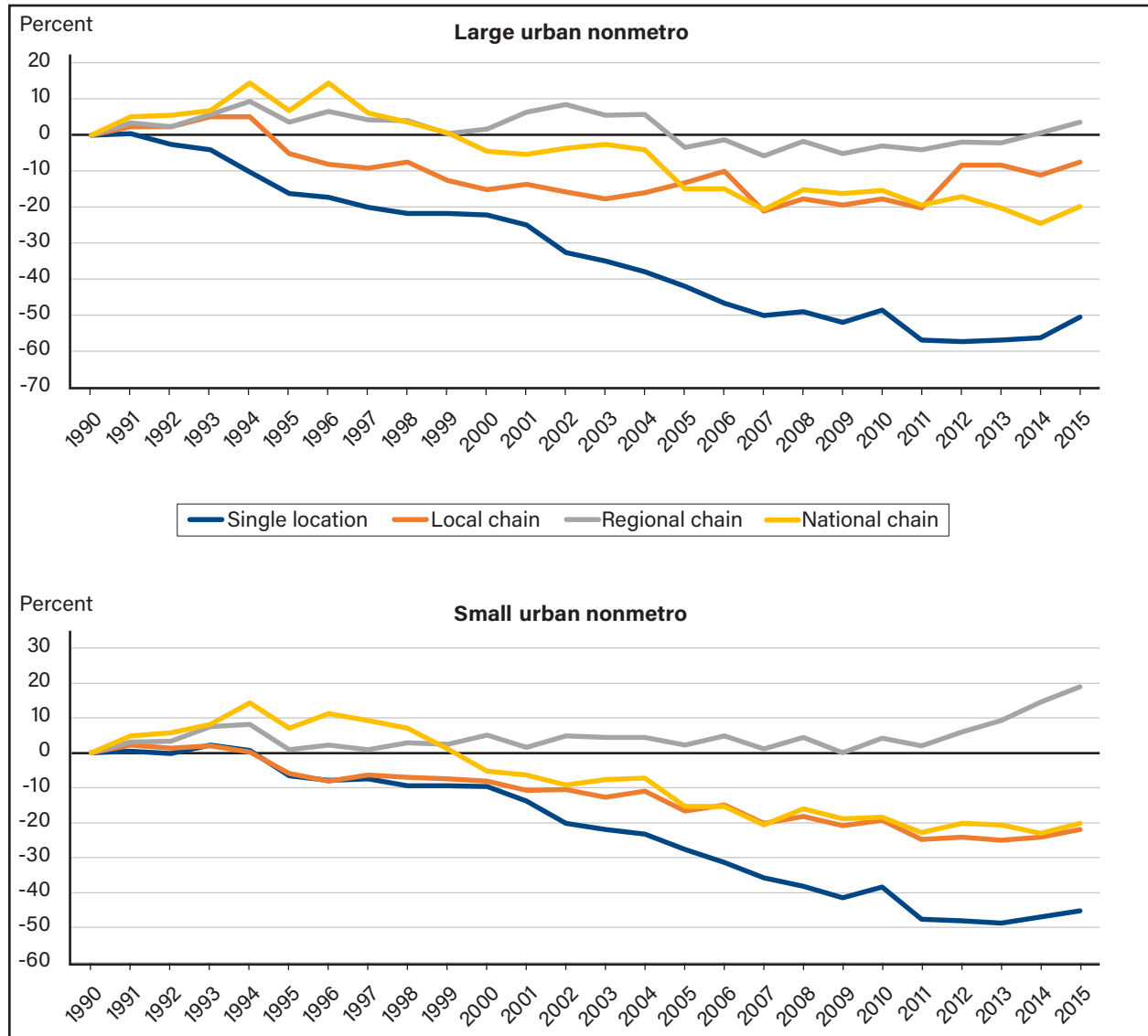
Average sales in 2015 dollars among grocery stores by chain status in urban nonmetro counties, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Figure A10

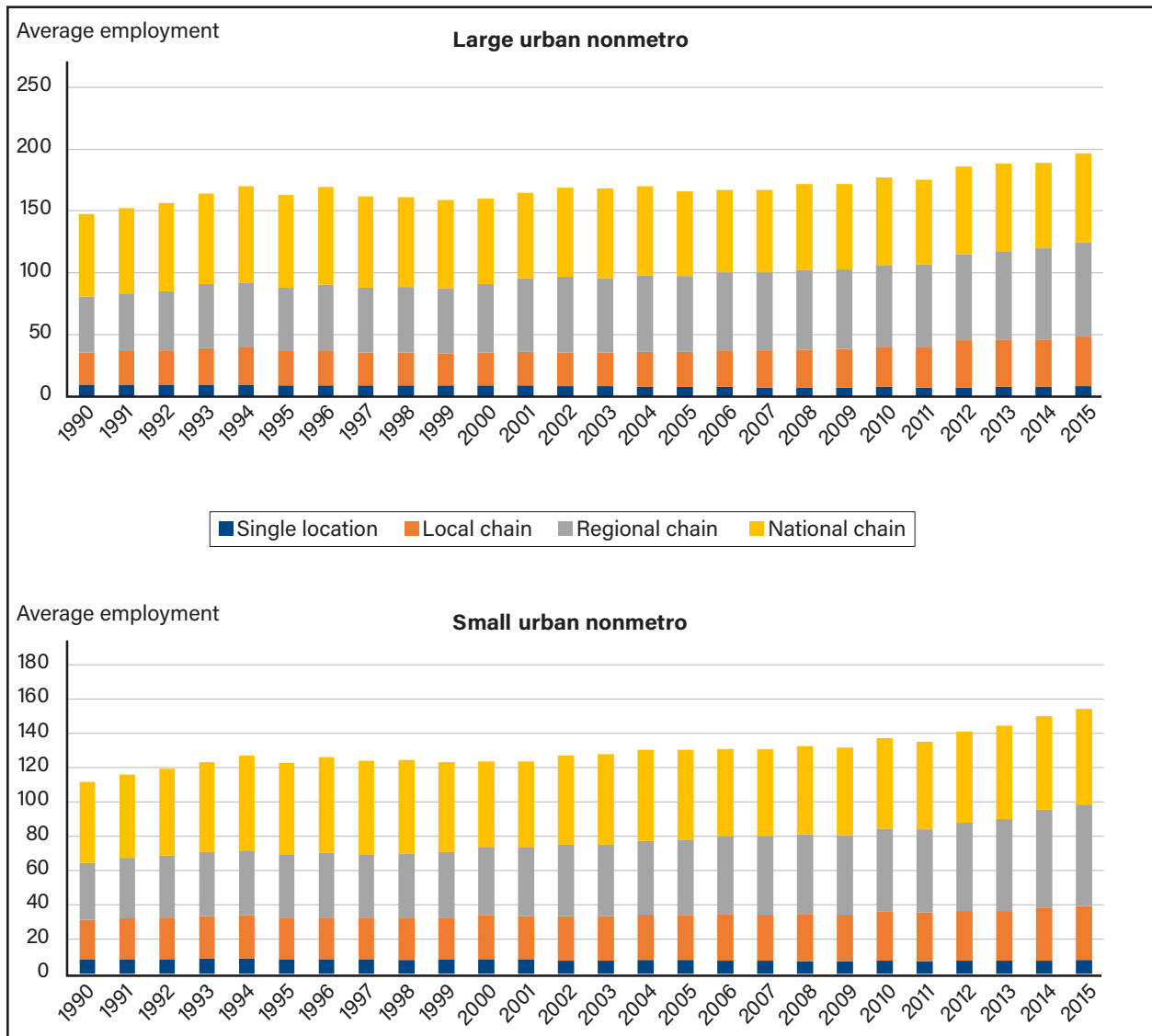
Percentage growth in average sales in 2015 dollars among grocery stores by chain status in urban nonmetro counties, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Figure A11

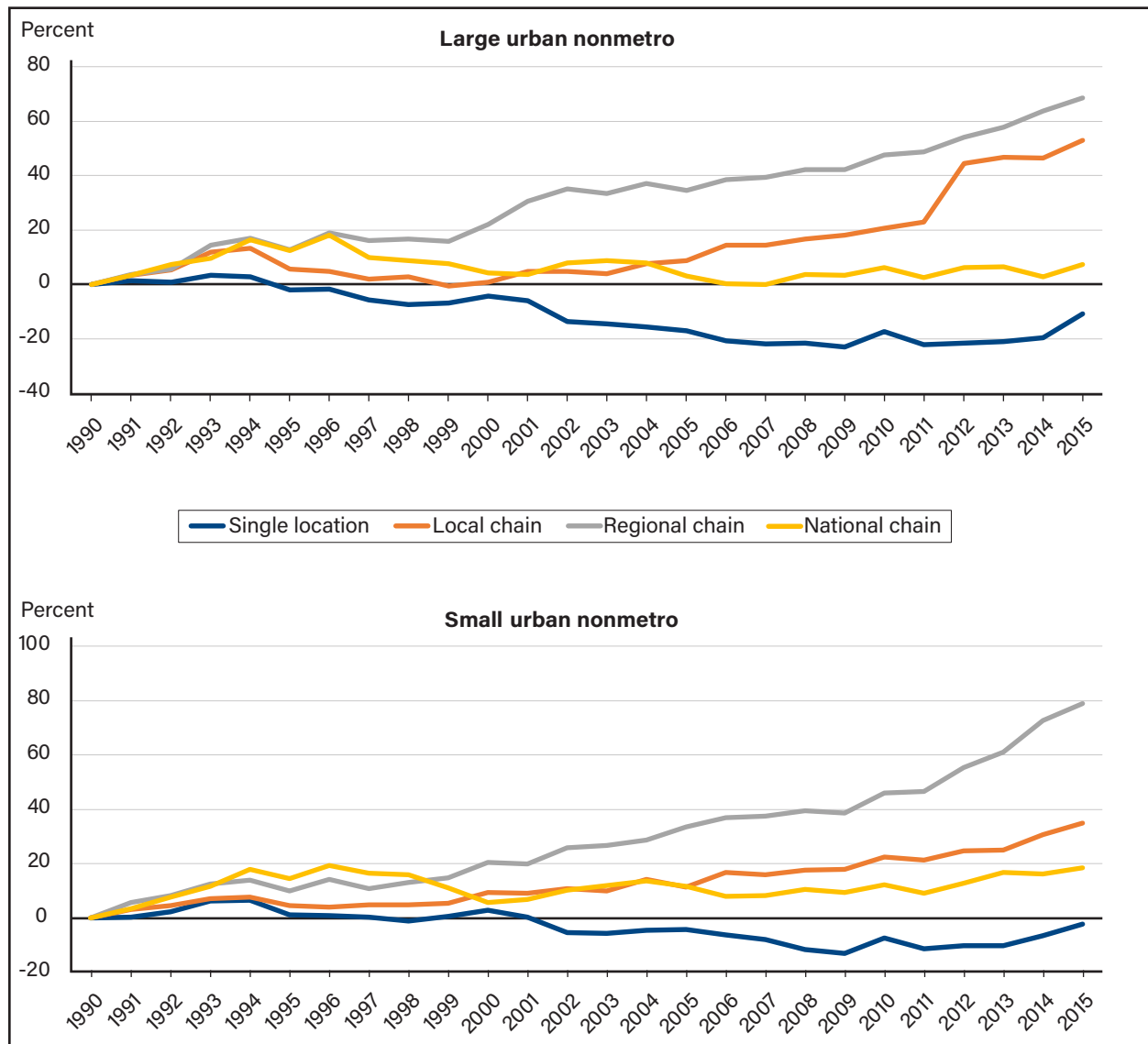
Average employment among grocery stores by chain status in urban nonmetro counties, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Figure A12

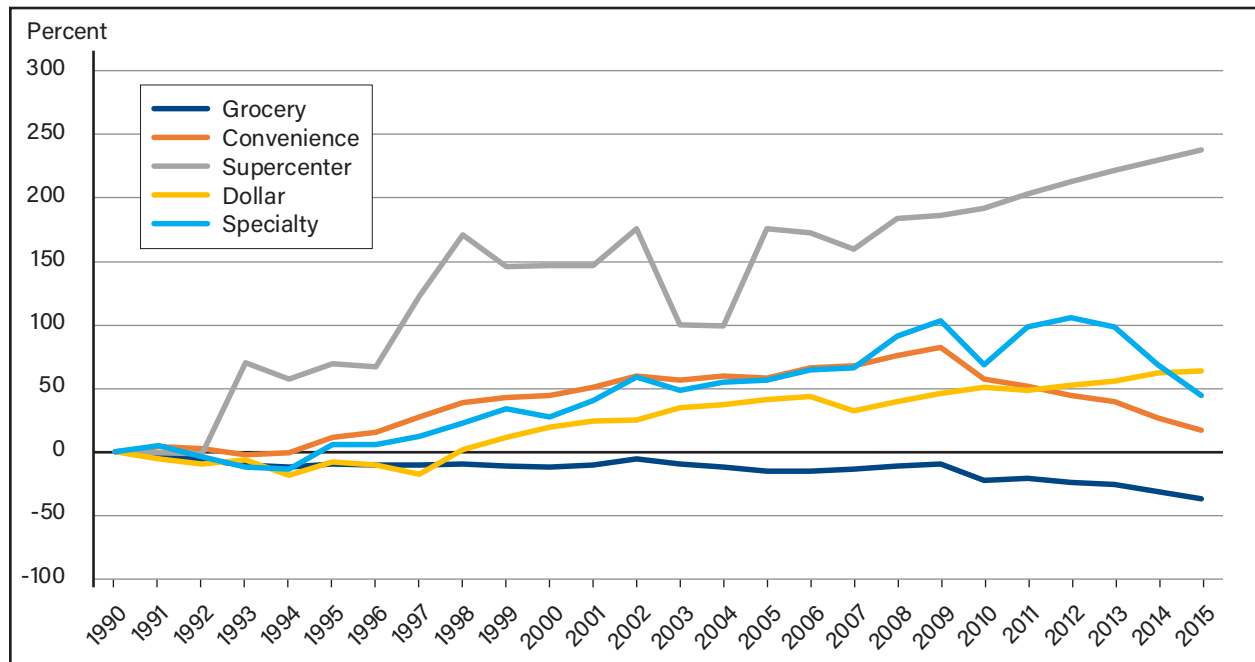
Percentage growth in average employment among grocery stores by chain status in urban nonmetro counties, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Figure A13

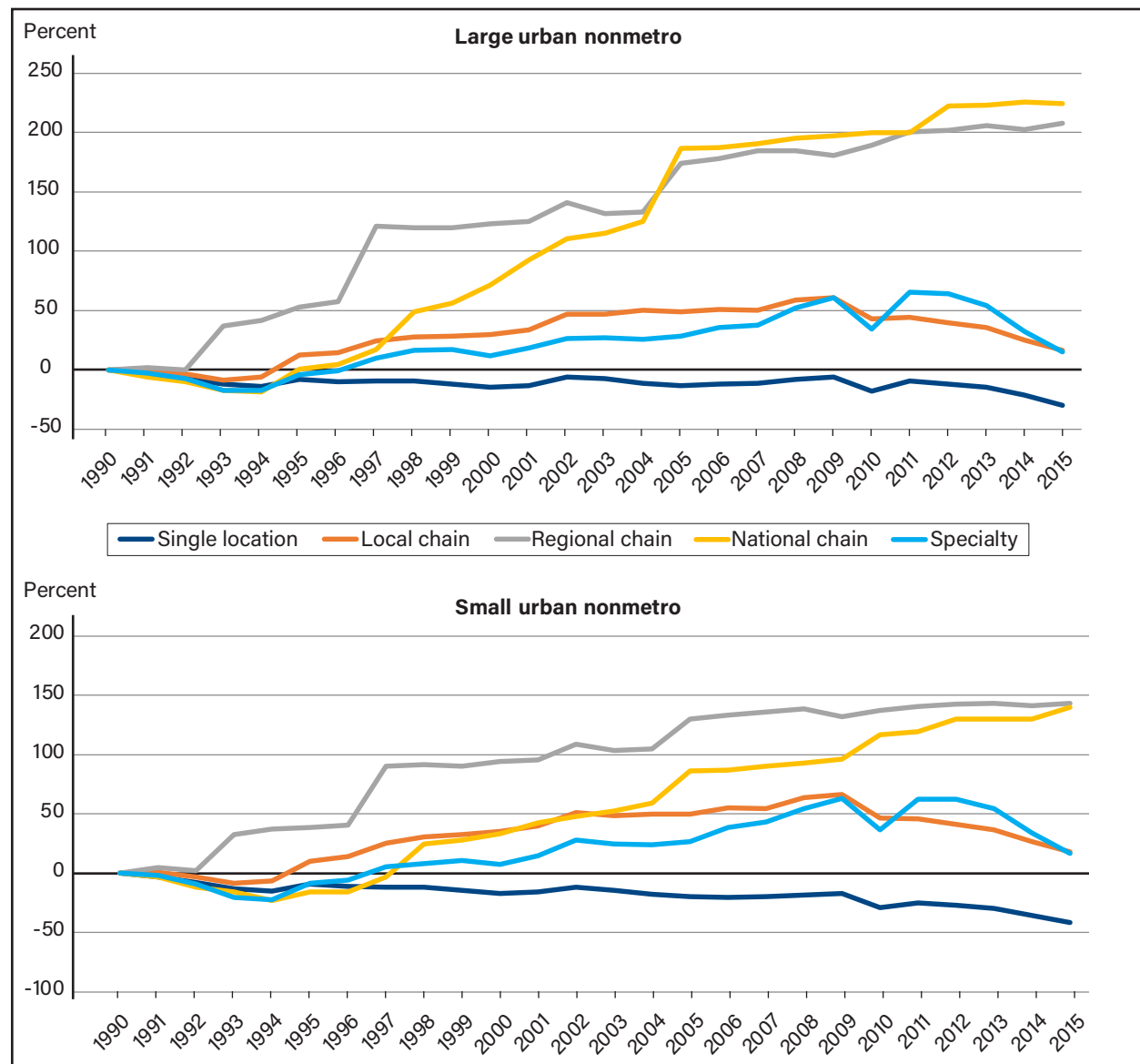
Percentage growth in stores per capita by store type in rural counties, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Figure A14

Percentage growth in stores per capita by store type in urban nonmetro counties, 1990-2015



Source: USDA, Economic Research Service, using data from National Establishment Time Series from 1990 to 2015.

Appendix B: Comparing National Establishment Time Series to Other Datasets

We compared the NETS data with the County Business Patterns (CBP), Quarterly Census of Employment and Wages (QCEW), and TDLinx. NETS and TDLinx are proprietary datasets that are acquired by USDA's Economic Research Service, while CBP and QCEW are publicly available government datasets. CBP and TDLinx provide a “snapshot” of all establishments for a specific month and are not recommended to be used as time series datasets (Bureau of the Census, 2018; Nielsen, 2010), whereas QCEW is a longitudinal dataset that provides annual estimates. Nevertheless, CBP and TDLinx can provide further insight into food retailers in 2015, particularly the number of establishments by NAICS code and how they are distributed across counties. While the Economic Research Service acquires store-level data from TDLinx, the store-level information in QCEW and CBP are confidential; county-level estimates by industry (6-digit NAICS code) are publicly available. Thus, we conduct our comparison at the county level for 2015.

Comparing these datasets illustrates one of the main difficulties in examining the food retail environment across the United States: none of the datasets provide the same information. Because NETS and TDLinx are proprietary datasets, we are unable to examine details on how the information is collected and verified. CBP uses data from the Economic Census, which does not survey most very small stores to reduce the burden on these businesses (Bureau of the Census 2018a, Bureau of the Census 2018b). QCEW categorizes establishments according to the predominant economic activity conducted in these establishments (BLS, 2019). Finally, differences across these datasets may be reflecting fluctuations throughout the year. CBP provides a March snapshot while the Economic Research Service obtains June data from TDLinx; QCEW and NETS create annual estimates, but it is unclear how they are created. For our study, we chose to use NETS because it provided store-level information, including name, establishment location, sales, and employment, in a time series format.

For our comparison, we focused on urban nonmetro and rural counties. For our comparisons with QCEW and CBP, we cannot distinguish dollar stores from other general merchandise stores located in NAICS 452990 because we do not have access to store-level data, including store names. Thus, we only compare the estimates for supercenters and grocery, convenience, and specialty stores for these datasets. TDLinx does not include a classification for specialty food stores, which restricts our comparison to supercenters and grocery, convenience, and dollar stores. It is also important to note that TDLinx does not include small grocery stores, i.e. grocery stores with less than \$1 million in sales. Thus, we expect TDLinx to report fewer stores than NETS, as other studies have found as well (e.g., Cho et al., 2019).

We estimated the number of stores by type in urban nonmetro and rural counties, as we did for Figure 3 using NETS (fig. B1). We find the overall distribution across store types to be similar between NETS and QCEW, with counties having the greatest number of grocery stores, followed by convenience stores, specialty stores, and supercenters. In both datasets, small urban nonmetro counties tend to have a greater number of stores across store types than large urban nonmetro counties, and rural nonmetro counties have the fewest number of stores. However, the number of stores in NETS is more than twice as large as those reported by QCEW for all store types except supercenters.

CBP reports a similar number of grocery and convenience stores as QCEW, which are outnumbered by NETS but maintain a similar distribution. However, CBP reports the highest number of supercenters, more than double the number reported by QCEW and NETS. In addition, CBP reports less than half the number of specialty stores as QCEW and NETS. As a result, supercenters outnumber specialty stores in the CBP

data. Barnatchez et al. (2017) compares NETS to CBP and finds that the largest differences are among small establishments, particularly for establishments with fewer than ten employees.

TDLinx reports a much higher number of convenience stores than all three datasets, more than double the number reported by NETS. This is largely due to differences in classification. NAICS 445120 specifies that the convenience stores reported under this code are not affiliated with a gas station. However, TDLinx reports convenience stores where most of the sales are not from gasoline; there could still be a gasoline station associated with the convenience store. For the three remaining store types, TDLinx reports the same ordering as NETS, from the most to the fewest: grocery stores, dollar stores, and supercenters. However, TDLinx reports more than twice the number of dollar stores as NETS. In addition, the numbers of grocery stores and supercenters are more like those reported by QCEW.

We also compare the number of stores reported across urban nonmetro and rural nonmetro counties. We create five store count categories: 0, 1 to 5, 6 to 10, 11 to 50, and 51 to 100. We compare the number of counties within each store count category and compare them across datasets in Table B1. Again, we find that NETS generally reports a higher number of stores. The number and share of counties in the larger store count categories are higher in NETS than the other three store types for grocery, convenience, and specialty stores. TDLinx reports a higher share of counties having a dollar store and being in the larger store count categories. Among supercenters, the distributions are relatively similar. However, NETS reports the fewest number and share of counties having zero supercenters, but the largest having 1 to 5 stores. However, NETS does not report any counties having more than 5 supercenters, whereas QCEW and TDLinx report having 1 and 2 supercenters, respectively. It is also important to note that the distribution across store count categories is relatively similar between QCEW and CBP.

Figure B1

Number of stores by type in urban and rural nonmetro counties in 2015: CBP, QCEW, and TDLinx

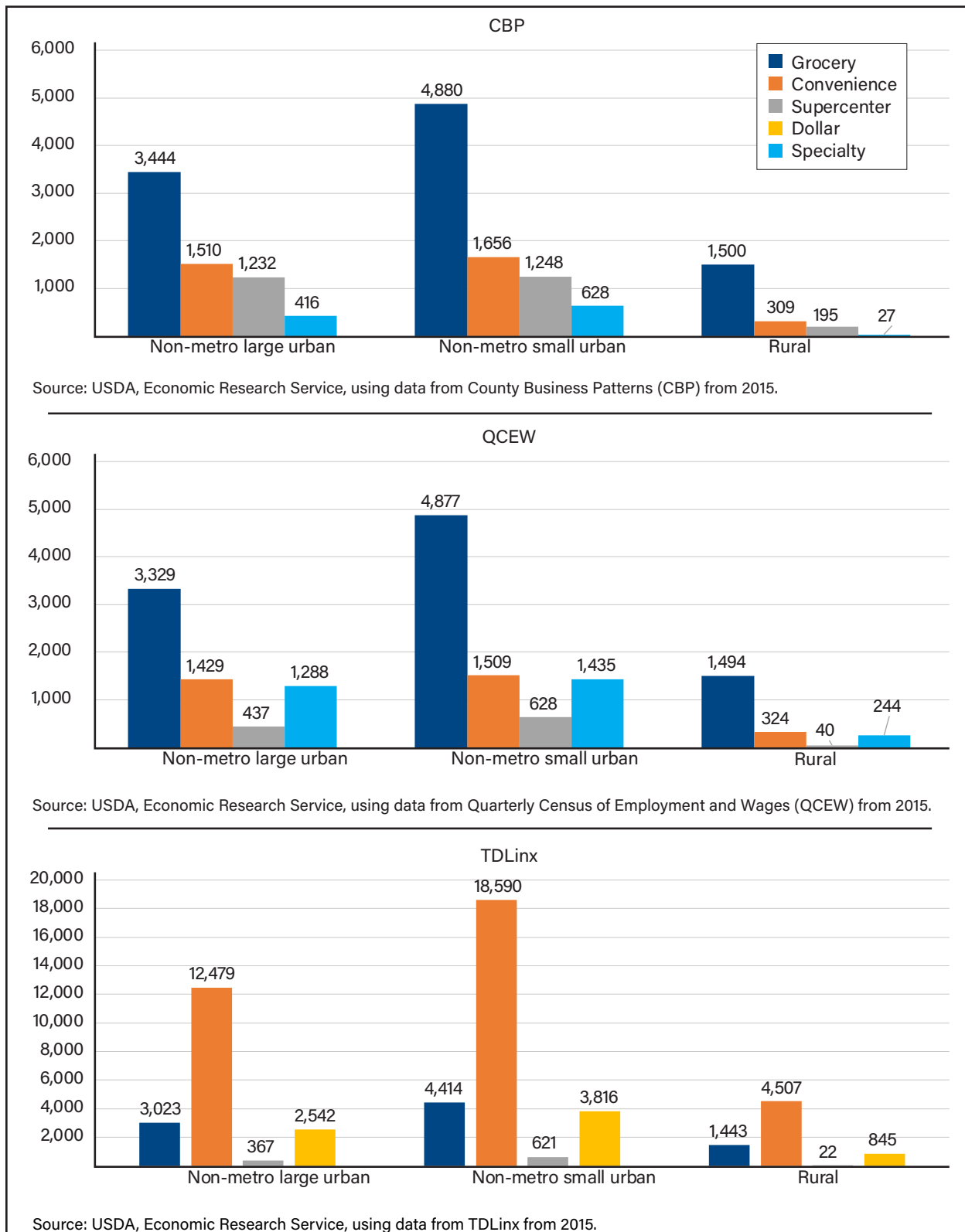


Table B1

Number of urban and rural nonmetro counties within each store count category

# of stores	CBP		QCEW		TDLinx		NETS	
Grocery Stores (NAICS 445110)								
0	58	3.0%	45	2.3%	57	2.9%	44	2.3%
1 to 5	1,279	65.7%	1,304	67.0%	1,392	70.4%	726	37.3%
6 to 10	418	21.5%	414	21.3%	388	19.6%	482	24.8%
11 to 50	192	9.9%	184	9.5%	139	7.0%	680	34.9%
51 to 100	0	0.0%	0	0.0%	0	0.0%	15	0.8%
Convenience Stores (NAICS 445120)								
0	862	44.3%	907	46.6%	16	0.8%	177	9.1%
1 to 5	916	47.0%	889	45.7%	361	18.3%	947	48.6%
6 to 10	126	6.5%	115	5.9%	411	20.8%	483	24.8%
11 to 50	43	2.2%	36	1.8%	1,093	55.3%	339	17.4%
51 to 100	0	0.0%	0	0.0%	93	4.7%	1	0.1%
Specialty Food Stores (NAICS 4452)								
0	956	49.1%	902	46.3%	-		483	24.8%
1 to 5	882	45.3%	921	47.3%			1101	56.5%
6 to 10	88	4.5%	98	5.0%			253	13.0%
11 to 50	21	1.1%	26	1.3%			109	5.6%
51 to 100	0	0.0%	0	0.0%			1	0.1%
Warehouse Clubs and Supercenters (NAICS 452910)								
0	1,048	53.8%	1,059	54.4%	1,070	54.1%	1,002	51.5%
1 to 5	898	46.1%	886	45.5%	906	45.9%	945	48.5%
6 to 10	1	0.1%	2	0.1%	0	0.0%	0	0.0%
11 to 50	0	0.0%	0	0.0%	0	0.0%	0	0.0%
51 to 100	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Dollar Stores (NAICS 452990*)								
0	-		-		280	14.2%	755	38.8%
1 to 5					1,252	63.4%	1,136	58.3%
6 to 10					324	16.4%	54	2.8%
11 to 50					120	6.1%	2	0.1%
51 to 100					0	0.0%	0	0.0%

Note: Nonmetro counties are those with an RUCC code between 4 and 9. * NAICS 452990 is restricted to those with "dollar" in the store name. Because we are unable to identify store names in CBP and QCEW, we did not include these datasets for dollar stores.

-=No data. NAICS=North American Industry Classification System.

Source: USDA, Economic Research Service, using data from County Business Patterns (CBP), Quarterly Census of Employment and Wages (QCEW), TDLinx, and National Establishment Time Series (NETS) from 2015.