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# Recent Reports from USDA's Economic Research Service

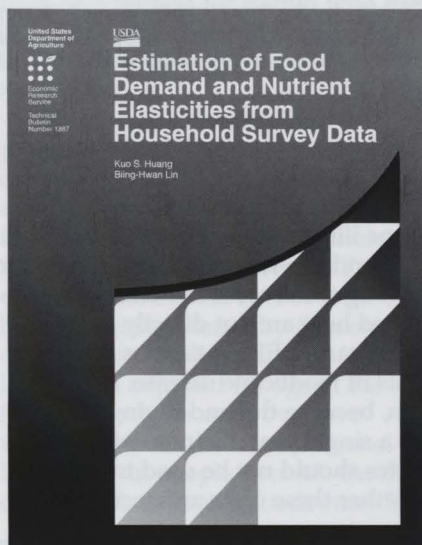
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## Food Consumption and Nutrition

### Estimation of Food Demand and Nutrient Elasticities from Household Survey Data

by Kuo S. Huang and Biing-Hwan Lin. Technical Bulletin 1887, August 2000, Stock # ERS-TB-1887. A methodology for estimating a demand system from household survey data is developed and applied to the 1987-88 Nationwide Food Consumption Survey data. The empirical results are sets of estimated demand elasticities for households segmented with different income levels. These demand elasticities are used to estimate the implied nutrient elasticities for low-income households. The estimation results are useful in evaluating some



food policy and program effects related to households of a specific income level.

### Changes in Nutritional Quality of Food Product Offerings and Purchases: A Case Study in the Mid-1990's

by Eliza M. Mojduszka, Julie A. Caswell, Dennis B. West, and J. Michael Harris. Technical Bulletin 1880, January 2000, Stock # ERS-TB-1880. This report provides a new economic approach and methodology for analyzing nutritional quality change in manufacturers' food product offerings and food products purchased using a case study of five food product categories in the mid-1990's. Two approaches were used to analyze nutritional quality change in product offerings. The

first approach uses a composite nutritional index to measure changes. A second approach, nutrient-by-nutrient analysis, was also used to measure quality change. Overall, the nutrition index analysis showed no significant change in the average nutritional quality of products offered for sale in the five categories.

### Maternal Nutrition Knowledge and Children's Diet Quality and Nutrient Intakes

by James R. Blaylock, Jayachandran N. Variyam, and Biing-Hwan Lin. Food Assistance and Nutrition Research Report 1, November 1999, Stock # ERS-FANRR-1. This report presents significant evidence that the more a mother knows about health and nutrition the better is the overall quality of her children's diet, for preschoolers more so than older children, and that a mother's years of schooling, smoking status, race, and ethnicity influence her children's diet. Results imply that health and nutrition education may be more effective if targeted toward mothers with young children but directly toward school-age children. Overall diet quality was assessed using the Healthy Eating Index, USDA's instrument for measuring overall diet quality incorporating 10 recommended nutritional guidelines.

## Food Costs and Prices

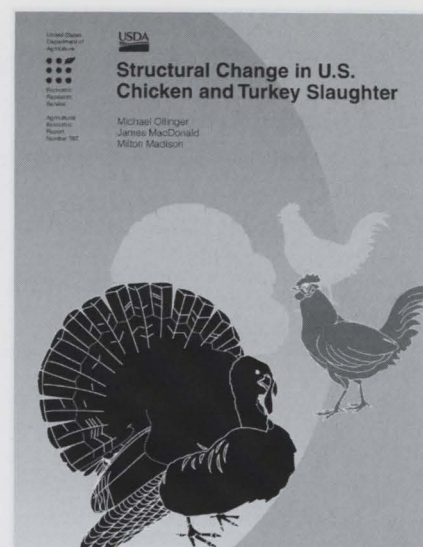
**How Do Taxes Affect Food Markets?** by Patrick Canning and Mari-nos Tsigas. Agriculture Information Bulletin 747-04, September 2000, Stock # ERS-AIB-747-04. Several food market indicators would change if a flat income tax system—that is, a system without exemptions, deductions, credits, and deferrals—replaced the current system. ERS analyses support the widely held view that even though a flat income tax system would increase national income, gains for consumers would be only modest. Nor would economic growth be universal. A Federal flat tax structure would lead to smaller farm industries with lower than average growth rates, larger food industries with higher than average growth rates, slightly lower food production costs and consumer food prices, reduced net farm exports, and reduced net food imports. If States were to enact similar reforms, consumer food prices would drop 2.2 percent overall and over 5 percent in the Delta, Appalachian, and Southern Plains regions.

**Retail Food Price Forecasting at ERS: The Process, Methodology, and Performance from 1984 to 1997**, by Frederick L. Joutz, Robert P. Trost, Charles Hallahan, Annette Clauson, and Mark Denbaly. Technical Bulletin 1885, May 2000, Stock # ERS-TB-1885. Forecasting retail food prices has become increasingly important to USDA due to the changing structure of food and agricultural economies and the important signals the forecasts provide to farmers, processors, wholesalers, consumers, and policymakers. It is unclear how these structural changes will affect the cyclical variation of food price markups and translate into changes in retail food prices. ERS is the only Federal Government entity that systematically examines food prices and provides

food price forecasts (on an annual basis). This report explains ERS' procedures in forecasting food prices and assesses how changes in the current procedures would improve the quality of the forecasts.

**How Much Would Increasing the Minimum Wage Affect Food Prices?** by Chinkook Lee, Gerald Schluter, and Brian O'Roark. Agriculture Information Bulletin 747-03, May 2000, Stock # ERS-AIB-747-03. Will increasing the minimum wage increase food prices as well? This study shows that a simulated \$0.50 increase in the minimum wage, if entirely passed on to consumers, would have increased food prices by less than 1 percent for most of the foods at foodstores and by 1 percent at eating and drinking places. Because these estimates were simulated using an economic model that assumed that firms did not alter their production processes when faced with higher minimum wages, these estimates are likely "upward bounds" of the price effects of a minimum wage increase.

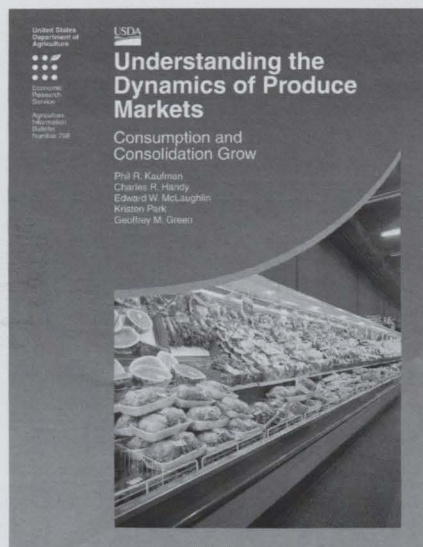
**Forecasting Consumer Price Indexes for Food: A Demand Model Approach**, by Kuo S. Huang. Technical Bulletin 1883, February 2000, Stock # ERS-TB-1883. Forecasting food prices is an important component of USDA's short-term outlook and long-term baseline forecasting activities. A food price forecasting model is developed by applying an inverse demand system, in which prices are functions of quantities of food use and income. Therefore, these quantity and income variables can be used as explanatory variables for food price changes. The empirical model provides an effective instrument for forecasting consumer price indexes of 16 food categories.



## Food Marketing

**Structural Change in U.S. Chicken and Turkey Slaughter**, by Michael Ollinger, James MacDonald, and Milton Madison. Agricultural Economic Report 787, September 2000, Stock # ERS-AER-787. Cost function analyses using data from the U.S. Bureau of the Census reveal substantial scale economies in chicken and turkey slaughter. These economies show no evidence of diminishing as plant size increases, are much greater than those realized in cattle and hog slaughter, and have resulted in a huge increase in plant size over the 1972-92 period. The findings also suggest that consolidation in the chicken and turkey slaughter industry is likely to continue, particularly if the growth in demand for poultry diminishes.

**Understanding the Dynamics of Produce Markets: Consumption and Consolidation Grow**, by Phil R. Kaufman, Charles R. Handy, Edward W. McLaughlin, Kristen Park, and Geoffrey M. Green. Agriculture Information Bulletin 758, August 2000, Stock # ERS-AIB-758. Mergers, acquisitions, and internal growth among grocery retailers, largely since 1996, have increased the share of grocery store sales accounted for by the largest 4, 8,

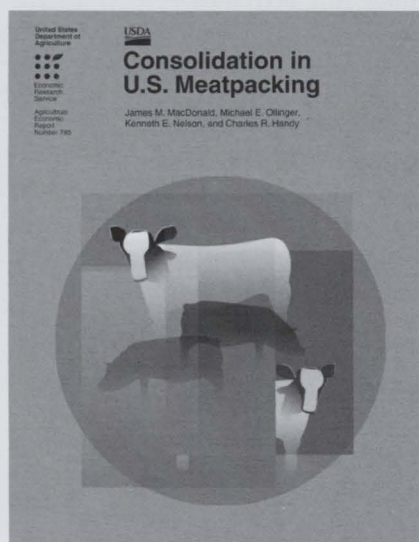


and 20 food retailers nationwide. Similar consolidation is occurring among food wholesalers. At the same time, new packaged and branded produce items are gaining acceptance with consumers and vying for shelf space in the super-market produce department. Growers, shippers, and their trade associations fear the possibility of fewer buyers for their products, particularly if new marketing and trade practices such as volume incentive rebates and slotting fees become widespread. This report uses data from the Censuses of Wholesale Trade and Retail Trade and industry sources to examine changes in produce markets and market channels from 1987 to 1997 in the United States.

**Consolidation in U.S. Meatpacking**, by James M. MacDonald, Michael E. Ollinger, Kenneth E. Nelson, and Charles R. Handy. Agricultural Economic Report 785, February 2000, Stock # ERS-AER-785. Meatpacking consolidated rapidly in the last two decades: slaughter plants became much larger, and concentration increased as smaller firms left the industry. Establishment-based data from the U.S. Census Bureau is used to describe consolidation and to identify the roles of scale economies and technological

change in driving consolidation. Through the 1970's, larger plants paid higher wages, generating a pecuniary scale diseconomy that largely offset the cost advantages that technological scale economies offered large plants. The larger plants' wage premium disappeared in the 1980's, and technological change created larger and more extensive technological scale economies. As a result, large plants realized growing cost advantages over smaller plants, and production shifted to larger plants.

**Structural Change and Competition in Seven U.S. Food Markets**, by A. J. Reed and J. S. Clark. Technical Bulletin 1881, February 2000. Stock # ERS-TB-1881. Recent trends in mergers and acquisitions in the U.S. food sector—food manufacturers, wholesalers, and retailers—raise concerns about market power. In the presence of market power, farmers may receive lower than competitive farm prices, and consumers may pay higher than competitive retail prices. This study presents empirical tests of market power at the national level for seven food categories: beef, pork, poultry, eggs, dairy, fresh fruit, and fresh vegetables. At the national level, our tests provide evidence of competitive conduct in both the sale of final food products and the purchase of farm ingredients.



**Price and Quality of Pork and Broiler Products: What's the Role of Vertical Coordination?** by Steve W. Martinez. Agriculture Information Bulletin 747-02, February 2000, Stock # ERS-AIB-747-02. Significant changes in vertical coordination of the U.S. broiler industry many years ago may provide useful insight into the rapid changes occurring in today's pork industry. Under production contracts and vertical integration, the broiler industry developed and grew into the leader in U.S. meat production—outpacing beef and pork. Production efficiencies, quality assurances, and convenience in product offerings have led to falling chicken prices and rising per capita consumption. Incentives for contracting in the pork industry are similar to those in the broiler industry in many ways. The similarities suggest that consumers may also expect plentiful supplies of high-quality pork products at economical prices.

## Food Assistance

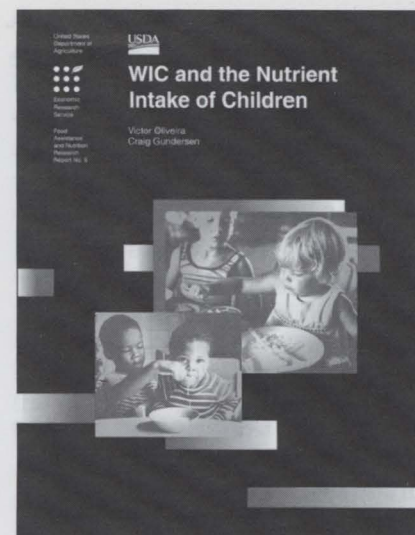
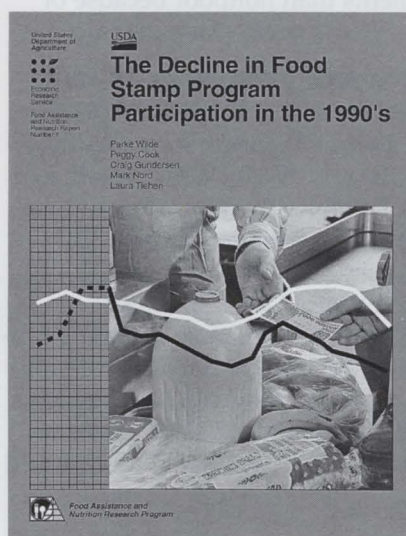
**The Effect on Dietary Quality of Participation in the Food Stamp and WIC Programs**, by Parke E. Wilde, Paul E. McNamara, and Christine K. Ranney. Food Assistance and Nutrition Research Report 9, September 2000, Stock # ERS-FANRR-9. Participants in the Food Stamp Program consume more meats, added sugars, and total fats than they would in the absence of the program, while their consumption of fruits, vegetables, grains, and dairy products stays about the same. Participants in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) consume significantly less added sugars, which may reflect the substitution of WIC-supplied juices and cereals in place of higher sugar soft drinks and cereals. These findings come from a study of low-income Americans using the Continuing Survey of Food Intake by Individuals.

**Household Food Security in the United States, 1999**, by Margaret Andrews, Mark Nord, Gary Bickel, and Steven Carlson. Food Assistance and Nutrition Research Report 8, Fall 2000, Stock # ERS-FANRR-8. Preliminary estimates indicate that 89.9 percent of American households were food secure in 1999, up 0.6 percentage point from 1995. Some 31 million Americans were food insecure—they did not have assured access at all times to enough food for an active, healthy life. In 3 percent of all households, one or more household members were hungry, at least some time during the year, because of inadequate resources. Between 1995 and 1999, the number of food-insecure households fell by 12 percent, and the number with hunger due to inadequate resources fell by 24 percent. Households with incomes between 50 and 130 percent of the poverty line were the only household types among the 30 subgroups studied to show a higher rate of food insecurity in 1999 than in 1995.

**A Comparison of Food Assistance Programs in Mexico and the United States**, by Craig Gundersen, Mara Yañez, Constanza Valdez, and Betsey Kuhn. Food Assistance and Nutrition Research Report 6, July 2000, Stock #ERS-FANRR-6. The social safety nets in Mexico and the United States rely heavily on food assistance programs to ensure food security and access to safe and nutritious foods. Mexico uses geographic and household targeting to distribute benefits to low-income households and/or individuals, while the United States uses only household targeting. U.S. food assistance programs tend to be counter-cyclical (as the economy expands, food assistance expenditures decline and vice versa). Mexican food assistance programs appear to be neither counter- nor procyclical. Food assistance programs have little effect on the extent of poverty in Mexico,

while the opposite is true in the United States, primarily because the level of benefits as a percentage of income is much lower in Mexico and a much higher percentage of eligible households receive food assistance benefits in the United States.

**The Decline in Food Stamp Program Participation in the 1990's**, by Parke Wilde, Peggy Cook, Craig Gundersen, Mark Nord, and Laura Tiehen. Food Assistance and Nutrition Research Report 7, June 2000, Stock # ERS-FANRR-7. The Food Stamp Program saw an unprecedented decline in participation, from 27.5 million participants in 1994 to 18.2 million participants in 1999. A strong economy and changes in social welfare programs drove this change. An econometric model with State-level data calculated that 35 percent of the caseload decline from 1994 to 1998 was associated with changing economic conditions and 12 percent with program reform and political variables. Using household-level data from the Current Population Survey, 28 percent of the total change in participation was associated with a decrease in the number of people with low income (below 130 percent of the poverty line) and 55 percent was due to a decline in the proportion of low-income people who participate.



**WIC and the Nutrient Intake of Children**, by Victor Oliveira and Craig Gundersen. Food Assistance and Nutrition Research Report 5, March 2000, Stock # ERS-FANRR-5. After controlling for self-selection bias, participation in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) has a significant positive effect on children's intakes of iron, folate, and vitamin B-6. Iron is one of five nutrients targeted by the program, the others being protein, calcium, vitamin A, and vitamin C. Folate and vitamin B-6, along with zinc, were recommended by a 1991 USDA study as nutrients that the program should also target. The data set used, the 1994-96 Continuing Survey of Food Intake by Individuals, reflects the dramatic increase during the 1990's in the number of children in the program.

**Increasing Food Recovery From Farmers' Markets: A Preliminary Analysis**, by Charlene C. Price and J. Michael Harris. Food Assistance and Nutrition Research Report 4, January 2000, Stock # ERS-FANRR-4. Collecting unsold food discarded at farmers' markets has the potential to allow nonprofit food recovery and gleaning organizations to distribute significant quantities of wholesome, unsold fruits and vegetables to needy families. Donations

of this unsold produce by the participants at these markets can generate tangible benefits: increased private food assistance and better nutrition for lower income families. The Geographical Information System (GIS) analysis presented in this study indicates the potential to strengthen the links between farmers' markets and nonprofit food recovery and gleaning organizations in many areas of the United States.

**Family Child Care Homes and the CACFP: Participation After Reimbursement Tiering (An Interim Report of the Family Child Care Homes Legislative Changes Study)**, by William L. Hamilton, Eric Stickney, and Mary Kay Crepinsek. Food Assistance and Nutrition Research Report 3, November 1999, Stock # ERS-FANRR-3. The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 established a two-tier structure of meal reimbursement rates for family child care homes participating in USDA's Child and Adult Care Food Program (CACFP) and mandated a study of the effects of that change on program participation and State licensing of child care homes. Using administrative data, this interim report finds that participation in CACFP by child care homes

dropped 6 percent and the number of sponsoring organizations that administer the participating child care homes dropped 2 percent between 1997 and 1998.

## Food Safety

### Tracing the Costs and Benefits of Improvements in Food Safety: The Case of the Hazard Analysis and Critical Control Point Program for Meat and Poultry

by Elise H. Golan, Stephen J. Vogel, Paul D. Frenzen, and Katherine L. Ralson, Agricultural Economic Report 791, October 2000, Stock # ERS-AER-791. The level and distribution of the costs and benefits of the Hazard Analysis and Critical Control Point (HACCP) regulatory program for meat and poultry change dramatically once economywide effects are included in the analysis. Using a social accounting matrix model, the authors find that reduced premature deaths had a strong positive effect on household income, with economywide benefits almost double initial benefits. Contrary to expectations, reduced medical expenses resulted in a decrease in household income, while HACCP costs resulted in an increase. Net economywide benefits were slightly larger than initial net benefits, with poor households receiving a proportionally smaller share of the increased benefits than nonpoor because of their weak ties to the economy.

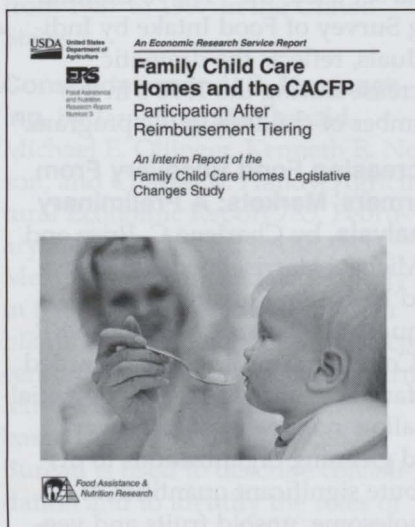
### Consumer Acceptance of Irradiated Meat and Poultry Products

by Paul D. Frenzen, Alex Majchrowicz, Jean C. Buzby, Beth Imhoff, and the FoodNet Working Group. Agriculture Information Bulletin 757, August 2000, Stock # ERS-AIB-757. The Federal Government began allowing food manufacturers to irradiate raw meat and meat products to control pathogenic microorganisms in February 2000. Consumer acceptance of irradiated foods could

affect public health because many foodborne illnesses occur when consumers handle or eat meat or poultry contaminated by microbial pathogens. However, food manufacturers have been slow to adopt irradiation, partly because of the perception that relatively few consumers are willing to buy irradiated foods. A recent survey by the Foodborne Diseases Active Surveillance Network (FoodNet) confirmed this perception: only half of the adult residents of the FoodNet sites were willing to buy irradiated ground beef or chicken, and only a fourth were willing to pay a premium for these products, which cost more to produce than comparable nonirradiated products. These findings suggest that the impact of food irradiation on public health will be limited unless consumer preferences change.

### Assigning Values to Life: Comparing Methods for Valuing Health Risks

by Fred Kuchler and Elise Golan. Agricultural Economic Report 784, December 1999, Stock # ERS-AER-784. This report examines five approaches economists and health policy analysts have developed to evaluate policy affecting health and safety: cost-of-illness, willingness-to-pay, cost-effectiveness analysis, risk-risk analysis, and health-health analysis. The authors examine the theoretical basis and empirical application of each approach and investigate the influence that underlying assumptions in each approach have on policy guidance. Regulatory agencies now commonly use the willingness-to-pay approach to estimate health and safety benefits, but they assume away the importance of individual preferences. The authors build on four principal conclusions to suggest the appropriate use of each approach.



## International Marketing Trends

### Food Security Assessment Situation and Outlook

by Shahla Shapouri and Stacey Rosen. Global Food Assessment 12, December 2000, Stock # ERS-GFA-12. ERS projects that average per capita food consumption for 67 low-income countries will increase in the next decade. ERS also projects that the number of people failing to meet their nutritional requirements will decline from 774 million in 2000 to 694 million in 2010, providing an improved outlook for global food security. But the gains are not uniform across countries and in many,

food insecurity will probably intensify. Sub-Saharan Africa, as the most vulnerable region, accounts for only 24 percent of the population of these 67 countries, but it is projected to account for 63 percent of these "hungry" people in 2010. HIV/AIDS is expected to reduce the region's agricultural productivity, and constraints in financial resources will limit commercial imports, thus leading to declining per capita consumption.

### Food Security Assessment Situation and Outlook

by Shahla Shapouri and Stacey Rosen. Global Food Assessment 11, December 1999, Stock # ERS-GFA-11. In 1999,

the food gap to maintain per capita consumption at 1996-98 levels in 67 low-income developing countries is estimated at nearly 13 million tons, about 2 million tons more than estimates for 1998. Around 400,000 tons of the increase arose from adding a new country, North Korea, to the analysis this year. The gap to meet minimum nutritional requirements is estimated to be higher at 15 million tons. During the next decade, the food gaps for both consumption targets are projected to widen. Food consumption is projected to fall short of the nutritional requirement in 30 countries, while 44 countries are expected to face a decline in per capita consumption in 2009. ■



## Larger sample, more nutrients!

USDA's Agricultural Research Service has released data from the 1998 Continuing Survey of Food Intakes by Individuals (CSFII) in combination with the 1994-96 CSFII and Diet and Health Knowledge Survey (DHKS). The data are available on CD-ROM for \$90 (accession number PB2000-50027) from the National Technical Information Service at 1-800-553-6847 (outside the U.S., 703-605-6000). The CD-ROM includes complete data, all the documentation needed for using the data, and SAS programs to read the data and create system files.

The CSFII 1998 adds 5,559 children birth through 9 years of age to 4,253 children of the same age in the CSFII 1994-96. The CSFII 1994-96, 1998 combined data set includes information on food and nutrient intakes for more than 20,000 individuals of all ages who provided 2 days of dietary data. A subset of nearly 6,000 CSFII participants 20 years of age and over provided information on knowledge and attitudes toward dietary guidance and health.

Technical databases used in processing the survey are also on the CD-ROM, including codes for over 7,000 foods and data on energy and 51 dietary components. Selenium, caffeine, and theobromine have been added to the Survey Nutrient Database. For more information about the CD-ROM, visit our web site:

<http://www.barc.usda.gov/bhnrc/foodsurvey/home.htm>

Food Surveys Research Group; USDA/ARS/BA/BHNRC;  
BARC-West, Bldg. 005, Room 102; 10300 Baltimore Ave.;  
Beltsville, MD 20705-2350; <fsrg@rbhnrc.usda.gov>

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