Title: The decline in vitamin research funding: A missed opportunity?

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Abbreviations:
- 25-OHD: 25-hydroxycholecalciferol
- ARS: Agricultural Research Services
- BP: Blood pressure
- CVD: Cardiovascular disease
- IOM: Institute of Medicine
- LDL: Low-density lipoprotein
- NIFA: National Institute of Food and Agriculture
- NIH: National Institutes of Health
- NSF: National Science Foundation
- RCT: Randomized Controlled Trial
- USDA: United States Department of Agriculture

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Abstract

Background: The National Nutrition Research Roadmap has called for support of greater collaborative, interdisciplinary research for multiple areas of nutrition research. However, a substantial reduction in federal funding makes responding to these calls challenging. The objective of this study was to examine temporal trends in research funding and to discuss the potential consequences of these trends.

Methods: We searched the National Institutes of Health (NIH) RePORTER to identify NIH research grants and USAspending to identify National Science Foundation and U.S. Department of Agriculture research grants awarded from 1992 through 2015. We focused on those that pertained to vitamin research. For the years 2000 through 2015, we examined funding trends for different vitamins, including vitamins A, B (1-carbon B vitamins were considered separately from other B vitamins), C, D, E, and K.

Results: From 1992 through 2015, total federal research spending increased from roughly $14 to $45 billion (2016 USD). Although vitamin research spending increased from roughly $89 to $95 million, the proportion of grants awarded for vitamin research declined by more than two-thirds, from 0.65% in 1992 to 0.2% in 2015. Federal agencies awarded 6,035 vitamin research grants over the time period, with vitamin A associated with the most research projects per year on average (n=115) and vitamin K the fewest (n=8). Vitamin D research projects were associated with the greatest average yearly project value ($34.8 million).

Conclusion: Vitamin research has faced a disproportionate decline in research funding from 1992 through 2015. Insufficient federal research funding streams risk stalling progress in vitamin research and leaving important advancements unrealized.

Key Words: Vitamins, Funding, Supplements, Research Spending
Introduction

Federal funding continues to be the principal source of financial support for academic research centers globally, and is the backbone of biomedical research in the United States. However, federal funding agencies have faced substantial budget reductions in recent decades. Since the early 1990s, the share of the federal budget allocated to research funding has declined from more than 5% of the federal budget to approximately 3.8%. This sustained reduction in the proportion of the federal budget allocated to research funding threatens the sustainability of biomedical research, and ultimately will slow the pace of innovation and scientific progress.

While it is expected that federal research funding should track federally-mandated research priorities, it is unclear how the overall reductions in federal research funding have varied across research disciplines. During an era when the general public has unprecedented interest in nutrition guidance to improve quality of life and reduce the risk of specific chronic diseases, advancements in chronic disease prevention in the United States, including promotion of healthy eating patterns, have not kept pace with similar advancements in other affluent economies.

Federal funding for chronic disease prevention currently focuses on: (1) prevention across the lifecycle; (2) practical solutions to targeted interventions; and (3) personalized solutions. One of the strategic priorities of the National Institutes of Health is to accelerate the development of precise, individualized approaches to disease prevention. Similarly, the National Nutrition Research Roadmap 2016-2021, recently announced by the Interagency Committee on Human Nutrition Research, includes a call for support of greater collaborative, interdisciplinary research for multiple areas of nutrition research, such as understanding the effects of individual variability on biologic measures related to the epigenome, microbiome, metabolome, and proteome.
However, the feasibility of responding to these federally-issued calls for more interdisciplinary
nutrition research concurrent to a period of perceived declines in federal funding is unclear.

Funding for nutrition research spans multiple federal agencies but there is no universal tracking
system of project funding across federal agencies in the United States. To address this
challenging question, we chose to focus our study on trends in federal funding for vitamin
research, which can span from fundamental science to the application of –omics technology to
understanding the individual response of vitamin precursors and metabolites in prevention of
specific chronic disease processes. Our focus on vitamins complements the 2015 Dietary
Guidelines for Americans Scientific Report, which identified multiple vitamins as nutrients that
are under-consumed in the United States, relative to recommended intake levels set by the
Institute of Medicine. We had two study objectives: (i) to compare how federal funding for
vitamin research has changed over time relative to all federal research funding (2000-2015); and
(ii) to examine how research funding for specific vitamin types has changed over time. The
outcome of this analysis will provide insight into gaps between research funding and research
priorities in vitamins research, and identify shifts in funding over time.

Methods

Data sources

We included research grants from the National Institutes of Health (NIH), the National Science
Foundation (NSF), and the United States Department of Agriculture (USDA). For the USDA,
we included only grants awarded by the Agricultural Research Services (ARS), the Cooperative
State Research, Education and Extension Service and the National Institute of Food and
Agriculture (NIFA) since we considered these divisions to be those most pertinent to vitamin funding.

We used NIH RePORTER to identify research grants awarded by the NIH and USASpending to identify grants awarded by the NSF and USDA. NIH RePORTER is an online database of NIH Funded research projects since 1992 and USASpending is an online database of federally-funded research grants since 2000. Both databases contain information on each grant including its project title and funding amount. We stratified the grants by year, and recorded the number of projects and funding amounts (USD 2016) by vitamin type, which we determined by searching the project titles.

A study limitation is that we did not categorize identified research grants in regards to study type. In other words, we did not differentiate between grants in terms of their purpose, e.g., basic science, clinical trials, or meta-analysis. A second limitation is that we counted multiyear grants only in the year of the grant’s origination and we did not divide the value of grant across the grant’s study period.

Search strategy

On May 15th, 2016, we searched all project titles prior to 2016 to identify all vitamin A/B/C/D/E/K grants, using the search terms provided in table 1. We differentiated B-vitamins by those forms that contained one-carbon from those that did not, as described in Table 1.

Results
Federal Research Funding 1992-2015

The proportion of federal research grant funding allotted to vitamins declined from 1992 to 2015 from roughly 0.6% to 0.2%. Total federal research spending (2016 USD), as reported by the NIH, NSF and USDA, increased from approximately $14 billion in 1992 to $45 billion in 2015; over the same time period, federal research spending (2016 USD) for vitamins increased from roughly $89 million to $95 million (Figure 1). Budget sequestration required the NIH to cut 5% from its 2013 budget. Thus the total research dollars awarded in 2015 more closely resembled those awarded prior to the 2009 American Recovery and Reinvestment Act that aimed to stimulate economic growth following the Great Recession.6

Research Funding by Vitamin Type

In our analysis of funding by vitamin type, we limited the dataset to the years 2000 through 2015 because reliable NSF and USDA funding data are unavailable prior to 2000. From 2000 through 2015, federal agencies awarded 1,732,197 research grants, of which 6,035 (0.35%) pertained to vitamins. We found notable variation in the number and value of grants awarded by vitamin type (Table 2). Vitamin A was associated with on average the most research projects per year (n=115); vitamin K was associated with the fewest (n=8). Vitamin D projects were associated with the greatest average yearly project value ($34.8 million); Vitamin K projects were associated with the lowest ($2.4 million).

The differences in funding trends by vitamin type are striking (Figure 2). Funding, as a percentage of the 2000 level increased for only two vitamins – vitamin D and vitamin B (those forms that do not contain one-carbon) – over the studied time period. Vitamin D funding peaked in 2013, at 326% of the federal funding awarded for vitamin D research in 2000 (Supplemental
Table 1). Although funding for vitamin D research has since declined, its 2015 funding was still 268% of its 2000 level. Vitamin B (those forms that do not contain one carbon) peaked in 2006, at 269% of 2000 budget, before falling to 176% of 2000 budget, in 2015 (Supplemental Table 1).

In contrast to that for vitamin D and Vitamin B (those forms that do not contain one carbon), federal funding for each other vitamin type was lower in 2015 compared to 2000, with the greatest declines in vitamin A and vitamin E (26% and 35% of 2000 funding levels, respectively). Funding for one-carbon B vitamin funding was 42% of its 2000 level, but in absolute dollars was still 2-fold greater compared to funding for forms of vitamin B that did not contain one-carbon.
Discussion

Our data from 1992 to 2015, demonstrates that there has been a disproportionate reduction in federal funding allocated for vitamin research in the United States. Vitamin research has historically made significant contributions to the understanding and improvement of nutrition at the population level through its impact on dietary guidance, vitamin fortification, and vitamin supplementation. \(^7\) Vitamin insufficiencies continue to be identified in national surveys both in the United States \(^3,8\) and globally. \(^9\) Federally-issued nutrition research agendas continue to identify vitamin research as part of their roadmaps in the United States \(^4\) and globally. \(^10\) Therefore it is critical to address the impact of the consistent decline in federal funding for vitamin research relative to the potential benefits of sustained activity in this scientific discipline. First we will describe the impact of past federal funding for vitamins. We will then discuss potential reasons for the overall decline in federal funding of vitamin research and finally address the consequences of continued reduction in funding.

Vitamin Research Breakthroughs

Vitamin research has had an enormous and positive impact on global population health. \(^11\) Vitamin research has allowed us to all but eradicate basic nutrition diseases as a direct result of vitamin deficiency – scurvy (vitamin C) \(^12\), rickets (vitamin D) \(^13\), pellagra (nicotinic acid) \(^14\), xerophthalmia (vitamin A) \(^15\) and beriberi (thiamine) \(^3\) to name but a few, primarily through the addition of micronutrients to food or direct supplementation of malnourished populations. More recently, the discovery that consumption of the recommended amount of folate before and during early pregnancy can reduce the likelihood of neural tube disorder led to the implementation of a federally mandated folic acid fortification program in the US that reduced the incidence of neural
tube defects in newborns by almost 20%, and which has since been undertaken in nearly 80 other countries.

Beyond fortification, many vitamins are integral to the treatment of disease, and the study of the biological properties of vitamins has led to the development of a number of pharmaceuticals. For instance, the study of vitamin K and its role in blood clotting led to the vitamin K antagonists (Coumadin/Warfarin) that prevent clotting in patients with coagulation disorders. The study of the impact of folate on cell metabolism led to the first antibiotics (sulfa drugs) as well as the development of several chemotherapeutic agents that remain important components of the present-date cancer treatment armamentarium. Research continues to evaluate the role of folate in cancer, including whether up-regulation of folate receptors on cancer cells can be used to target and locate cancer cells in patients. There remains an unresolved controversy, which continues to impact national nutrition policies worldwide, as to whether adequate dietary folate consumption protects against common cancers, at what doses, and whether the excessive amounts consumed by many in the form of supplements can paradoxically enhance cancer risk.

There has been considerable recent progress in vitamin D research that coincides with a 300% increase in federal funding of vitamin D over the last decade. Current studies are examining the role of vitamin D on muscular function, left ventricular structure and function, and on reducing the conversion of pre-diabetic patients to diabetic patients. The optimal serum level of 25-OHD (25-hydroxycholecalciferol), which is an accepted biomarker of vitamin D, is being studied along with the association of vitamin D deficiency with higher rates of
hypertension, low-density lipoprotein (LDL), reduced innate immune system function, and executive cognitive function. Vitamin D is a useful case study given that there has been a surge of funding for this vitamin when funding for other vitamins is losing ground. While beyond the scope of our analysis, it would be particularly useful to determine if the availability of a validated biomarker for vitamin D created the need for more federal funding and/or if the increased availability of funds for vitamin D research has driven more discovery.

Potential reasons for the decline in research funding

Vitamins were discovered more than a century ago and in this era of rapid technological advancement and discovery, some may consider the influence of new vitamin research to be diminishing given the assumption that all the vitamins have been discovered. Another possible contributing factor to the steady decline in federal vitamin funding is the growing uncertainty regarding the health benefits of routine multivitamin supplementation in the general population. The effect of single nutrient supplements on health outcomes has not always been beneficial and there are inconsistent findings regarding the role of vitamin supplements on reduction of risk for chronic diseases, such as cardiovascular disease and cancer. Defined as part of the Dietary Supplement Health and Education Act, a dietary supplement is intended to supplement the diet. Of concern is that roughly 35% of US adults consume dietary supplements on a regular basis, and that the segment of the population most likely to take dietary supplements already have a healthy diet, hence are at risk of excessive intake of single vitamins. For example, several groups have independently raised concerns--based on clinical observations--that elevated levels of blood folate within commonly accepted ranges of normality place elders at higher risk of the clinical manifestations of B-12 deficiency and similarly, there are concerns that excessive
folate intake during pregnancy in the setting of marginal B-12 status may be transmitting a substantial risk of obesity and insulin resistance to offspring.\textsuperscript{46} Alternatively, there are those who express concern that individuals who do not consume a healthy diet will rely on dietary supplements to meet their nutritional needs.\textsuperscript{47} Despite the study of routine vitamin supplementation being only a small part of vitamin research as a whole, the uncertainty surrounding it may have had a disproportionate influence on funders and led to hesitation in funding broader vitamin research.

However, the potential diminishing returns of further research and uncertainty surrounding multivitamins, may actually necessitate more research. In contrast to the assumption of the diminishing returns of vitamin research, there are growing concerns that an appreciable part of North Americans do not meet the recommended intakes as suggested by the Institute of Medicine (IOM) and that subgroups of the United States adult population have increased needs for some vitamins, including but not limited to the obese, certain race/ethnicities, and older adults.\textsuperscript{5} There is also evidence that individuals of low socio-economic status have not benefited from an overall improvement of dietary patterns observed among more affluent segments of the United States adult population.\textsuperscript{48} However, the economic impact of inadequate vitamin status, be it due to increased needs and/or poor eating habits, has been poorly studied, with the exception of vitamin D.\textsuperscript{49}

Regarding questions surrounding vitamin supplementation, those conducting vitamin research in the community need to consider high supplement doses using principles of drug regulation & respect the rule of “first no harm”\textsuperscript{50} in their research. More importantly, vitamin research needs
to find solutions through food and/or through combinations of vitamins as part of a healthy diet 
consistent with the Dietary Guidelines for Americans\textsuperscript{5}, and not in lieu of it.

Consequences of the current trend in vitamin funding and potential solutions

Despite great contributions from vitamin research, funding to support the field has persistently 
declined over recent decades. The shortfall in funding will undoubtedly affect our ability to 
leverage new technologies and study designs emerging for other areas of biomedical research as 
it applies to vitamin research. The impact of insufficient and inconsistent funding for vitamin 
research will have on career development of young investigators pursuing research in this area 
will further delay research advances.

What is required is a fundamental change in our approaches to vitamin research, which in turn, 
requires a more innovative and progressive perspective from federal funding agencies. While 
traditionally study has focused on “parent vitamins”, the science has evolved to the examination 
of the role of metabolites and biomarkers in health and disease. For example, niacin\textsuperscript{51} and 
nicotinamide riboside have emerging roles in aging and survival, while the role of thiamine 
supplementation on heart failure reduction is also being studied\textsuperscript{52}. There is great potential for 
this research to be applied to tailor care to individual patients and prevention to high-risk groups, 
e.g., the elderly, cancer survivors, groups with metabolic disorders, or those suffering from 
particular diseases, consistent with current funding priorities for personalized medicine and 
prevention strategies.\textsuperscript{1} However, further advancements in conventional randomized clinical trial 
design may be needed because when testing effects of specified vitamin intake levels, virtually 
always superimposed on extant intakes, there is no true placebo\textsuperscript{53,54} and perhaps 
depletion/repletion studies may be more appropriate to develop for personalized nutrition
protocols. We may also need to consider other preclinical models for the study of vitamins in the prevention of chronic disease, including development of appropriate human in vitro model systems, including organoids, to minimize use of animals, with reproducibility demonstrated in human trials.

This evolution in how we approach vitamin research in many ways mirrors the evolution of the science in other areas. In particular, pharmaceutical research has moved away from the focus of treating populations to a focus on individuals, with new treatments tailored to patients’ individual characteristics. The advent of precision medicine also provides an opportunity for researchers to advance our understanding of the relationship between genetics, vitamins, and pharmaceuticals, and there is already a number of emerging and encouraging data demonstrating the modification of the metabolic effect of vitamins by the genotype. Individuals carrying the MTHFR 677 TT polymorphism, which is reported to be found in some populations up to 32% have a higher risk for cardiovascular disease (CVD) and hypertension. A number of recent randomized controlled trials demonstrated that riboflavin supplementation can significantly reduce systolic blood pressure (BP) by 5-13 mmHg in these genetically at risk adults. There is a need to better understand the relationship between vitamin requirements and eating patterns and human metabolic processes, particularly when choosing between low/high macronutrient (fat, protein, carbohydrate) diets. Even worse, if we do ignore progress in this field we might even draw the wrong conclusions. Following encouraging data associating lower risk of CVD with adequate vitamin E, a number of large-scale randomized controlled trials (RCT) were initiated to investigate this and it was with surprise to many that the majority of the RCTs reported a null effect of vitamin E on CVD, but they missed a detail because they did not take into account the
In diabetics, who carry the haptoglobin 2-2 genotype, which has inferior antioxidant properties, 400mg vitamin E significantly reduced in 18 months risk of CV events and this effect could also be demonstrated for diabetics in the HOPE trial when the genotype was taken into account. These examples illustrate the importance of providing funds to investigate the role of vitamins applying the current knowledge. An understanding of the contribution of proteins, genes, and metabolites to individual variation may facilitate expansion from public health dietary guidelines to more evidence based dietary guidance that is tailored to the individual and that accounts for eating patterns, disease status, disease risk, genetic profile, and patient behavior particularly for those in specific risk groups. In this way, there is promise in leveraging ‘big-data’ analytics – the integration of large and diverse datasets toward answering wide-ranging research questions – to advance nutritional sciences and develop/test predictive mathematical models of the effects of vitamin supplementation in different genetic, epigenetic and macronutrient backgrounds. As reviewed elsewhere, the use of modeling for standardization of data/data interpretation, filling in geographical gaps in knowledge and for integrating multiple variables is critical for moving nutrition research forward. Such research innovations have the potential to hypothesize clinically meaningful relationships between individual variation, disease, and nutrition and vitamin consumption that can be tested to positively impact patient health.

The National Nutrition Research Roadmap 2016-2021 calls for support of collaborative, interdisciplinary research for understanding the short and long term effects of dietary and physical activity patterns on health across life stages. If vitamin research is to fulfill its promise a similar collaborative approach is required. Furthermore, to fully address research gaps and
opportunities better coordination between the federal funding agencies, academic researchers, and training programs, is needed.

Conclusions

The study of vitamins has been fundamental to advancements in nutrition, medicine, and global public health. Current research holds promise for further progress in our understanding and treatment for a variety of diseases and high risk subgroups. If we are to reap the benefits of this new frontier of vitamin research, it is vital for funding streams to keep pace with the evolving science and maintain relevance to the emerging needs of achieving optimal health and morbidity compression in ageing populations.

Acknowledgements:

SGB and JDC designed research. MAS and JEA conducted research. JDC, SGB, SLB. MF, JBM, KPW, P Wilde, P Weber wrote paper. All authors read and approved the final manuscript.
References


2. The American Association for the Advancement of Science. Available at: http://www.aaas.org/.


Exhibits:

Table 1: Search terms used to identify vitamin research grants

Table 2: Number and total award of grants by vitamin type

Figure 1: All Federal Research Funding vs. Vitamin Federal Funding ($2016) 1992-2015, as a % of 1992 levels
N.B. NIH, NSF and USDA Federal Funding (NSF and USDA funding data unavailable for the years prior to 2000); NIH funding accounts for 96% of all funding after 2000. (NIH: National Institutes of Health; NSF: National Science Foundation; USDA: United States Department of Agriculture)

Figure 2: Vitamin Funding as % of 2000 funding level
Table 1. Search terms used to identify vitamin research grants

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Search terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A</td>
<td>vitamin a; carotene (all forms); carotenoids; isotretinoin; palmitate; retinal; retinoic acid; retinoid; retinol; retinyl acetate; retinyl palmitate; cryptoxanthin; lycopene; lutein; zeazanthin</td>
</tr>
<tr>
<td>Vitamin B (forms that contain one-carbon)</td>
<td>adermin; antipernicious anemia; cobalamin; cyanocobalamin; folacin; folate; folic acid; folinic acid; hydroxocobalamin; lactoflavin; methylcobalamin; pteroyl-l-glutamate; pteroyl-l-glutamic acid; pyridoxal; pyridoxamine; pyridoxin; riboflavin; vitamin b2; vitamin b6; vitamin b9; vitamin b12</td>
</tr>
<tr>
<td>Vitamin B (forms that do not contain one carbon)</td>
<td>adenine; aneurin; antiberiberi factor; biotin; choline; coenzyme r; niacin; nicotinamide; nicotinic acid; pantothenate; pantothenic acid; thiamin; vitamin b1; vitamin b3; vitamin b4; vitamin b5; vitamin b6</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>vitamin c; ascorbate; ascorbic acid</td>
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<tr>
<td>Vitamin D</td>
<td>vitamin d; alfacalcidol; calcidiol; calcifediol; calcitriol; cholecalciferol; dehydrocholesterol; dihydroergocalciferol; ergocalciferol; hydroxycholecalciferol</td>
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<tr>
<td>Vitamin E</td>
<td>vitamin e; tocopherol; tocothenol; vitamin e acetate; vitamin e succinate</td>
</tr>
<tr>
<td>Vitamin K</td>
<td>vitamin k; menadione; menaquinone; phyloquinone; phytomenadione; phytonadione</td>
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Table 2. Number and total award of grants by vitamin type

<table>
<thead>
<tr>
<th>Vitamin Type</th>
<th>Annual number of projects (2000-2015) Mean ± standard deviation</th>
<th>Total project value ($100,000s) by award (2000-2015) Mean ± standard deviation</th>
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<tr>
<td>Vitamin A</td>
<td>115 ± 51</td>
<td>$326 ± 130</td>
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<tr>
<td>Vitamin B (1-Carbon)</td>
<td>74 ± 26</td>
<td>$218 ± 51</td>
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<tr>
<td>Vitamin B (Others)</td>
<td>27 ± 6</td>
<td>$64 ± 19</td>
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<tr>
<td>Vitamin C</td>
<td>14 ± 5</td>
<td>$37 ± 9</td>
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<tr>
<td>Vitamin D</td>
<td>101 ± 33</td>
<td>$348 ± 160</td>
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<tr>
<td>Vitamin E</td>
<td>25 ± 12</td>
<td>$96 ± 34</td>
</tr>
<tr>
<td>Vitamin K</td>
<td>8 ± 2</td>
<td>$24 ± 6</td>
</tr>
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</table>
Figure 1. All Federal Research Funding vs. Vitamin Federal Funding ($2016) 1992-2015, as a % of 1992 levels

N.B. NIH, NSF and USDA Federal Funding (NSF and USDA funding data unavailable for the years prior to 2000); NIH funding accounts for 96% of all funding after 2000. (NIH: National Institutes of Health; NSF: National Science Foundation; USDA: United States Department of Agriculture)
Figure 2. Vitamin Funding as % of 2000 funding level
Supplemental Table 1. Funding for vitamin research and Funding for vitamin research as a percentage of 2000 value (USD 2016)

<table>
<thead>
<tr>
<th>Year</th>
<th>All Vitamin</th>
<th>Vitamin A</th>
<th>Vitamin B (1-Carbon)</th>
<th>Vitamin B (Others)</th>
<th>Vitamin C</th>
<th>Vitamin D</th>
<th>Vitamin E</th>
<th>Vitamin K</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Funding ($1,000 units)</td>
<td>% of 2000 value</td>
<td>Funding ($1,000 units)</td>
<td>% of 2000 value</td>
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<td>% of 2000 value</td>
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<tr>
<td>2000</td>
<td>$144,945</td>
<td>100%</td>
<td>$62,120</td>
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<td>$30,755</td>
<td>100%</td>
<td>$3,728</td>
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<td>$131,103</td>
<td>90%</td>
<td>$49,397</td>
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<td>82%</td>
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<td>2002</td>
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<td>$48,862</td>
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<td>$42,275</td>
<td>68%</td>
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<td>88%</td>
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<td>$35,148</td>
<td>57%</td>
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<tr>
<td>2009</td>
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<td>$26,706</td>
<td>43%</td>
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<td>63%</td>
<td>$8,729</td>
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<td>2011</td>
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<td>79%</td>
<td>$22,708</td>
<td>37%</td>
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<td>64%</td>
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<tr>
<td>2012</td>
<td>$104,735</td>
<td>72%</td>
<td>$18,869</td>
<td>30%</td>
<td>$15,443</td>
<td>50%</td>
<td>$4,755</td>
<td>128%</td>
</tr>
<tr>
<td>2013</td>
<td>$108,418</td>
<td>75%</td>
<td>$20,714</td>
<td>33%</td>
<td>$16,301</td>
<td>53%</td>
<td>$5,279</td>
<td>142%</td>
</tr>
<tr>
<td>2014</td>
<td>$101,474</td>
<td>70%</td>
<td>$17,539</td>
<td>28%</td>
<td>$16,942</td>
<td>55%</td>
<td>$5,951</td>
<td>160%</td>
</tr>
<tr>
<td>2015</td>
<td>$95,091</td>
<td>66%</td>
<td>$15,899</td>
<td>26%</td>
<td>$12,906</td>
<td>42%</td>
<td>$6,550</td>
<td>176%</td>
</tr>
</tbody>
</table>