TECH PARKS ARIZONA

Executive Summary

The Economic Impact of the UA Tech Park

THE UNIVERSITY OF ARIZONA

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Executive Summary

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THE UNIVERSITY OF ARIZONA

TECH PARKS ARIZONA ▾ **TECH LAUNCH ARIZONA**

Tech Parks Arizona is part of Tech Launch Arizona, a University of Arizona initiative to create an ecosystem of invention, commercialization and impact.

A Message from the Associate Vice President of Tech Parks Arizona

For the past twenty years, Tech Parks Arizona has helped to advance University of Arizona technology innovation and commercialization through the UA Tech Park. In doing so, it has contributed in significant ways to the economic development of southern Arizona and the Tucson metropolitan area.

This year, the University is celebrating the 20th anniversary of the UA Tech Park. The Park has grown into one of the major employment centers in the region, hosting 45 companies and organizations that employ nearly 6,500 skilled workers.

In 2012, the University of Arizona created Tech Launch Arizona (TLA) to build upon the synergies among the faculty, administration, students and alumni; the tech parks; and the technology and business community to enhance the impact of UA research, intellectual property and technological innovation. As an integral part of TLA, the goal of Tech Parks Arizona is to create "interactive ground" that promotes synergistic relationships between the University, industry and the community. The UA Tech Park, the Tech Park at The Bridges and the Arizona Center for Innovation serve as that interactive ground.

Over the past three years, the UA Tech Park has emerged as a major center for the testing, evaluation, demonstration and application of University and industry-generated technology. Validating technology concepts before they reach the market is a critical need of both industry and university researchers. This effort is focused around six technology areas: solar and advanced energy; arid lands and water; biotechnology; defense and security; intelligent transportation systems and smart vehicles; and mining technology. In the area of solar energy, the UA Tech Park has truly made its mark: the Tech Park's Solar Zone is one of the largest solar testing and demonstration facilities in the world.

Tech Parks Arizona has been a leader within the research park community in analyzing and reporting on the economic impact of the UA Tech Park. This report, prepared by Dr. Vera Pavlakovick-Kochi of VP Research and Consulting, documents the substantial impact that the Tech Park has had on the southern Arizona economy. However, the Park's contribution to the region extends far beyond the number of tenants, wages paid, or tax revenue generated. Its primary impact is helping to advance new technologies that expand and diversify the local and state economies.

Bruce A. Wright
Associate Vice President
Tech Parks Arizona

January 2015

The Continuing Economic Impacts of the UA Tech Park on Pima County in 2013

Executive Summary

Introduction

Economic impacts of an organization, industry, or a cluster of economic activities such as a university research park are commonly measured in terms of jobs, wages, and total output that these economic entities generate in local and regional economies.

Direct jobs (and associated direct wages and direct output) of the UA Tech Park reflect the actual size and volume of production of goods and services of all tenants. This is also referred to as the direct contribution to the regional economy.

Indirect and induced impacts (jobs, wages, and output) are generated through relationships with other sectors in the local economy by way of purchasing goods and services for business operation and household needs. These impacts depend not only on the changes in direct jobs, wages, and outcome at the UA Tech Park, but primarily reflect changes in the complex inter-industry relationships in the entire economy of Pima County and the rest of Arizona.

Data and methodology

This analysis was based on data for direct jobs, wages, and output (sales) for the calendar year 2013. The numbers for economic impact reports traditionally lag a year or two behind due to the data collection process. Data was gathered through the annual tenant survey conducted in spring 2014 in combination with information extracted from the IMPLAN[1] model of Pima County. Indirect and induced jobs, associated wages and output in Pima County and Arizona were estimated using the input-output methodology incorporated in the IMPLAN models. The IMPLAN county and state models also provided estimates of direct, indirect, and induced tax revenues, whereas the distribution by jurisdiction (city, county, state) in Pima County was estimated based on 2010 study.

[1] IMPLAN modeling is widely used in academic and applied research of economic impacts associated with industry changes. Originally developed by the University of Minnesota research team, it is now operated and maintained by MIG, Inc. of Hudson, Wisconsin.

Impacting Pima County: Direct jobs, wages, and output

In 2013, the UA Tech Park had 47 tenants representing more than 15 different industries such as semiconductor manufacturing; surgical appliance and supplies manufacturing; scientific research and development services; search, detection, and navigation instrument manufacturing; guided missiles and data processing and business support services. In addition, a number of tenants provided maintenance services and support to Tech Park employees, such as food services.

The total number of persons employed in 2013 was 6,226, which included both regular and contract employees. The direct contribution to the Pima County economy was $567.5 million in labor income. The total direct output (including labor income) was close to $1.5 billion (Exhibit 1). Average labor income per employee was $91,145, which was about two times the average of $46,363 for Pima County.

Exhibit 1.

UA Tech Park: Direct impact in Pima County 2013

Number of employees	6,226
Payroll	$567.5 million
Output (including payroll)	$1,492.2 million

Average pay per employee: $91,145

Source: Annual tenant survey; IMPLAN model of Pima County

Indirect and induced impacts

The ongoing operations at the UA Tech Park together with employee spending in the local economy generated an additional 8,095 jobs in Pima County. The total secondary impact was $839.8 million in output, of which $278.4 million was in labor income (Exhibit 2).

Exhibit 2.

UA Tech Park: Indirect & induced impacts in Pima County 2013

Number of jobs	8,095
Wages	$278.4 million
Output (including wages)	$839.8 million

Source: IMPLAN model of Pima County

Total impact on Pima County's economy

Total number of jobs in Pima County economy associated with the activities at the UA Tech Park was 14,359 in 2013. The wage impact was $847.6 million and the total output was $2,337.2 million (Exhibit 3). Included in these figures are impacts due to construction activity which generated 38 jobs in Pima County and $5.2 million in output, of which $1.7 million was in direct and secondary wages.

Exhibit 3.

UA Tech Park: Total economic impacts in Pima County 2013
(including construction-related)

Jobs	14,359
Wages	$847.6 million
Total output (including wages)	$2,337.2 million

Source: IMPLAN model of Pima County

Multipliers

The overall economic impact of the UA Tech Park on the economy of Pima County in 2013 is expressed in terms of multipliers (Exhibit 4).

Exhibit 4.

UA Tech Park: Composite multipliers 2013
(including construction-related activities)

Job multiplier	2.306
Wage multiplier	1.494
Output multiplier	1.566

Source: IMPLAN model of Pima County

The multipliers suggest that every job at the UA Tech Park generated 1.3 additional jobs in Pima County; every one dollar in wages generated an additional 49 cents in wages, while every dollar in Park's output generated an additional 57 cents elsewhere in Pima County.

Comparison with 2010 study

A number of studies point out that the economy of Pima County is recovering from the recent recession, albeit more slowly than national and state averages. Some industries have recovered faster, while others have continued to stagnate and even downsize. These trends are also reflected in the aggregate results for the UA Tech Park (Exhibit 5).

Exhibit 5.

Pima County: UA Tech Park 2013 and 2010 impacts

Direct impacts:

Direct jobs 2013: …… 265 more than in 2010

Direct wages 2013: ……$145.1 million more than in 2010

Direct output 2013: ……$510.7 million more than in 2010

Indirect and induced impacts (secondary impacts)

Secondary jobs 2013: …….. 1,393 more than in 2010

Secondary wages 2013: ……$48.5 million more than in 2010

Secondary output 2013:……$476.3 million less than in 2010

Source: IMPLAN model of Pima County

In comparison with the 2010 study, the largest increases are shown in direct wages and direct output. They reflect the average trend in Pima County's industries that are represented at the UA Tech Park. This suggests increasing trends in the overall productivity per employee. Possibly there is also an ongoing restructuring in the labor market in terms of occupations shifting toward more productive/better-paid jobs. In addition, these composite figures reflect a dominant share of defense-related industry.

The largest difference is the decline of the secondary output since 2010 that was estimated at $476.3 million. Economists talk about "hollowing out" processes in many regional economies associated with various modes of production-sharing in increasingly globalized economy. In other words, intermediate inputs from local industries are being increasingly substituted by importation of products from other regional markets that can produce cheaper, better, or more specialized products. In the case of Pima County these figures may also reflect the effect of increasing supply chain from the economically stronger and larger economy of the greater Phoenix region, as well as the effects of continuing integration with the Mexican economy.

Impacts on the Arizona economy

The economic impacts of the UA Tech Park are felt throughout the entire state of Arizona. The total number of jobs in Arizona that depended on the activity of the UA Tech Park was over 19,000 in 2013 (Exhibit 6). This figure includes direct jobs on the UA Tech Park premises and all indirect and induced jobs generated through purchases of industrial inputs and consumer spending in Pima County and the rest of Arizona. Statewide, UA Tech Park activities generated a total of $3.1 billion in output, of which more than $1 billion is in wages (Exhibit 6).

Exhibit 6.

UA Tech Park: Total impacts on Arizona's economy in 2013
(including construction-related activity)

Jobs	19,463
Wages	$1,073.2 million
Total output (including wages)	$3,121.6 million

Source: IMPLAN model of Arizona

Impact on state and local tax revenues

The UA Tech Park was responsible for an estimated $105.6 million in tax revenue impact generated in Arizona. About one half of this amount, $51.3 million, was generated in Pima County, whereas $54.3 million was generated through spending outside Pima County (Exhibit 7).

Exhibit 7.

UA Tech Park: State and local tax revenues 2013 by source
(including construction-related activity)

	Pima County	**Arizona** (including Pima County)
Direct	$16.0 million	$22.1 million
Indirect	$9.1 million	$23.1 million
Induced	$26.2 million	$60.6 million
Total	$51.3 million	$105.8 million

Source: IMPLAN model of Pima County and Arizona

The IMPLAN model used in this analysis suggests that between 20 and 30 percent of tax revenues were generated directly from payroll, equipment purchases, and property tax. The remaining tax revenues were generated through indirect and induced spending.

Out of tax revenues generated in Pima County, an estimated $11.3 million accrued to the City of Tucson, $6.3 million to Pima County, and $33.7 million to the state (Exhibit 8).

Exhibit 8.

UA Tech Park: Tax revenue impact in Pima County 2013 by jurisdiction
(including construction-related activity)

City of Tucson	Pima County	State of Arizona	Total
$11.3 million	$6.3 million	$33.7 million	$51.3 million

Source: IMPLAN model of Pima County; Impact study 2010.

Place of residence of UA Tech Park employees

Less than 10 percent of UA Tech Park employees reside within 5-mi radius. About 30 percent are within a 5 to 10-mi radius. About 26 percent of employees reside within a 10 to 15-mi radius, and another 12 percent between 15 to 20-mi radius. About 20 percent or every fifth employee commutes from distances larger than 20 miles (Exhibit 9).

Exhibit 9.

UA Tech Park 2013: Employees by zip code (85xxx)
(average distance)

Less than 5 mi	8% (85747)
Between 5 and 10 mi	30% (85730,706,708,710,614,748,711)
Between 10 and 15 mi	26% (85715,712,713,716,701,641,749,719,746,705)
Between 15 and 20 mi	12% (85718,750,757,709,745,704)
Between 20 and 30 mi	12% (85741,737,743,742,739,755,735)
More than 30 mi	7% (85629,653,614,736,658,619,756,637,702,731,732)
Unknown	5%

Source: Annual tenant survey

Appendix:
Tables & Charts

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ECONOMIC IMPACTS 2013

Operations-Related Economic Impacts

Table 1. Operations-Related Direct Jobs, Wages, and Output, 2013 ($ millions)

Jobs	Wages	Output
6,226	$567.5	$1,492.2

Source: UA Tech Park Tenant Survey; Pima County IMPLAN® Model.

Table 2. Operations-Related Indirect and Induced Jobs, 2013

	Pima County	Arizona*
Indirect	3,904	5,380
Induced	4,191	7,809
Total	8,095	13,189

Source: UA Tech Park Tenant Survey; IMPLAN® models for Pima County and State of Arizona.
**Includes impacts in Pima County.*

Table 3. Operations-Related Indirect and Induced Wages, 2013 ($ millions)

	Wages Pima County	Wages Arizona*
Indirect	$131.9	$223.6
Induced	$146.5	$279.7
Total	$278.4	$503.3

Source: UA Tech Park Tenant Survey; IMPLAN® models for Pima County and State of Arizona.
**Includes impacts in Pima County.*

Table 4. Total Operations-Related Jobs, Wages, and Output in Pima County, 2013 ($ millions)

	Jobs	Wages	Output*
Direct	6,226	$567.5	$1,492.2
Indirect & Induced	8,095	$278.4	$ 839.8
Total	14,321	$845.9	$2,332.0
Multiplier	2.300	1.491	1.563

Source: UA Tech Park Tenant Survey; Pima County IMPLAN® Model.
** Output includes wages and tax revenue.*

Table 5. Total Operations-Related Jobs, Wages, and Output in Arizona, 2013 ($ millions)**

	Jobs	Wages	Output*
Direct	6,226	$567.5	$1,492.1
Indirect & Induced	13,189	$503.3	$1,622.8
Total	19,414	$1,070.7	$3,114.9
Multiplier	3.118	1.887	2.087

Source: UA Tech Park Tenant Survey; IMPLAN® models for Pima County and State of Arizona.
** Output includes wages and tax revenue. **Includes impacts in Pima County.*

One-Time Economic Impacts From Construction Activity

Table 6. Construction-Related Jobs, Wages, and Output in Pima County, 2013 (wages and output in $ millions)

	Jobs	Wages	Output*
Direct	24	$1.1	$3.7
Indirect and Induced	14	$0.6	$1.5
Total	38	$1.7	$5.2
Multiplier	1.583	1.545	1.405

Source: UA Tech Park Tenant Survey; Pima County IMPLAN Model.®
**Output includes wages and tax revenue.*

Table 7. Construction-Related Jobs, Wages, and Output in Arizona, 2013 (wages & output in $ millions)**

	Jobs	Wages	Output*
Direct	24	$1.4	$3.7
Indirect and Induced	25	$1.1	$3.0
Total	49	$2.5	$6.7
Multiplier	2.042	1.786	1.811

Source: UA Tech Park Tenant Survey; State of Arizona IMPLAN.®

**Output includes wages and tax revenue. **Includes impacts in Pima County.*

Total Economic Impacts: Operations And Construction

Table 8. Summary of Operations- and Construction-Related Economic Impacts in Pima County, 2013 (wages and output in $ millions)

	Jobs	Wages	Output*
Operations	14,321	$845.9	$2,332.0
Construction	38	$1.7	$5.2
Total	14,359	$847.6	$2,337.2

Source: UA Tech Park Tenant Survey; Pima County IMPLAN® Model.
**Output includes wages and tax revenue.*

Table 9. Summary of Operations- and Construction-Related Economic Impacts in Arizona, 2013 (wages & output in $ millions)**

	Jobs	Wages	Output*
Operations	19,414	$1,070.7	$3,114.9
Construction	49	$2.5	$ 6.7
Total	19,463	$1,073.2	$3,121.6

Source: UA Tech Park Tenant Survey; State of Arizona IMPLAN® Model.
**Output includes wages and tax revenue. **Arizona impacts include impacts in Pima County.*

Tax Revenue Impacts

Operations-Related Tax Revenue Impacts

Table 10. Operations-Related Tax Revenues by Source, 2013 ($ millions)

	Pima County	Arizona*
Direct	$15.9	$22.0
Indirect	$9.1	$23.1
Induced	$26.2	$60.5
Total	$51.2	$105.6

*Source: IMPLAN® models for Pima County and State of Arizona. *Includes Pima County impacts.*

One-Time Tax Revenue Impacts Due To Construction Activity

Table 11. Construction-Related Tax Revenues by Source, 2013 ($ millions)

	Pima County	Arizona*
Direct	$0.072	$0.072
Indirect	$0.032	$0.060
Induced	$0.048	$0.119
Total	$0.152	$0.251

*Source: IMPLAN® models for Pima County and State of Arizona. *Includes Pima County impacts.*

Total Tax Revenue Impacts: Operations And Construction

Table 12. Summary of Operations- and Construction-Related Tax Revenues by Source, 2013 ($ millions)

	Pima County	Arizona*
Operations-related	$51.2	$105.6
Construction-related	$0.1	$0.2
Total	$51.3	$105.8

*Source: IMPLAN® models for Pima County and State of Arizona. *Includes Pima County impacts.*

Table 13. Operations- and Construction-Related Tax Revenues in Pima County by Jurisdiction, 2013 ($ millions)

	City of Tucson	Pima County	State of Arizona	Total
Total	$11.3	$6.3	$33.7	$51.3

Source: Pima County IMPLAN® Model; distribution by jurisdiction based on the 2010 study.

Summary Of Economic Impacts, And Other Findings: Pima County, 2013

Table 14. Summary of Operations- and Construction-Related Impacts in Pima County, 2013 (wages and output in $ millions)

	Operations	Construction	Total
Jobs	14,321	38	14,359
Dollars (millions):			
Wages	$845.9	$1.7	$847.6
Tax Revenue			
Other Value Added*	$51.2	$0.1	$51.3
Total Output	$2,332.0	$5.2	$2,337.2

Source: UA Tech Park Tenant Survey; Pima County IMPLAN® Model.
**Other value added includes value added other than wages and tax revenues. The IMPLAN model does not specify other value added; instead, figures are derived from the output estimate minus wages and tax revenues.*

Table 15. Multipliers Associated with Operations- and Construction-Related Economic Impacts in Pima County, 2013

	Operations	Construction	Total
Jobs	2.300	1.590	2.306
Wages	1.491	1.522	1.494
Total Output	1.563	1.414	1.566

Source: UA Tech Park Tenant Survey; Pima County IMPLAN® Model.

Comparison With Previous Studies

Table 16. Comparison of 2013 Results with Previous Studies (wages, taxes, and output in $ millions)***

	1997-98	1999	2000-01	2003-04	2007	2008	2009*	2010	2013
Number of tenants	17	21	31	31	32	40	40	45	47
Direct jobs	4,173	5,309	5,949	6,226	6,175	6,938	6,494	5,961	6,226
Total jobs (operations)	8,491	10,866	12,150	12,985	13,027	14,787	11,835	12,662	14,320
Total jobs (constr. & visitors)	144	1,673	345	320	220	16	33	77	38
Total job impact	8,635	12,539	12,495	13,305	13,247	14,803	11,868	12,739.0	14,358
Wage impact (operations)	358.9	437.8	595.7	607.6	678.9	900.4	610.1	652.2	845.9
Wage impact (constr. & visitors)	$3.5	$40.2	$8.3	$24.0	$9.2	$0.7	$1.3	3.0	1.7
Total wage impact	$ 362.4	$ 478.0	$604.0	$631.6	$688.1	$901.1	$611.4	$655.2	$847.6
Tax revenues (operations)	$28.7	$34.8	$$48.7	$43.1	$63.0	$77.8	$41.0	$42.2	$51.3
Tax revenues (constr. & visitors)	$ 0.1	$4.0	$ $ 0.3	$ 0.6	$0.9	$0.1	$0.2	$0.3	$0.1
Total tax revenue impact	$28.8	$38.8	$49.0	$43.7	$63.9	$77.9	$41.2	$42.5	$51.4
Output (operations)	$1,127.3	$1,361.8	$1,850.4	$1,896.9	$2,417.6	$3,019.5	$2,163.9	$2,297.7	$2,332.0
Output (constr. & visitors)	$7.2	83.5	$17.2	$27.4	$35.9	$1.4	$5.2	$8.1	$5.2
Total dollar impact	$1,134.5	1,445.3	$1,867.6	$1,924.3	$2,453.5	$3,020.9	$2,169.1	$2,305.8	$2,337.2

*Revised based on an updated IMPLAN model with new industry sector specification. ** Excluding AzCI tenants. ***2013 study does not include visitor impact.

Sources: Pavlakovich-Kochi, V. (2013); Lim, J. (2009, 2010, 2012), Pavlakovich-Kochi, V. and A.H. Charney (2005, 2002, 2000), Pavlakovich-Kochi, V, A.H. Charney and A. Weister-Burns (1999)

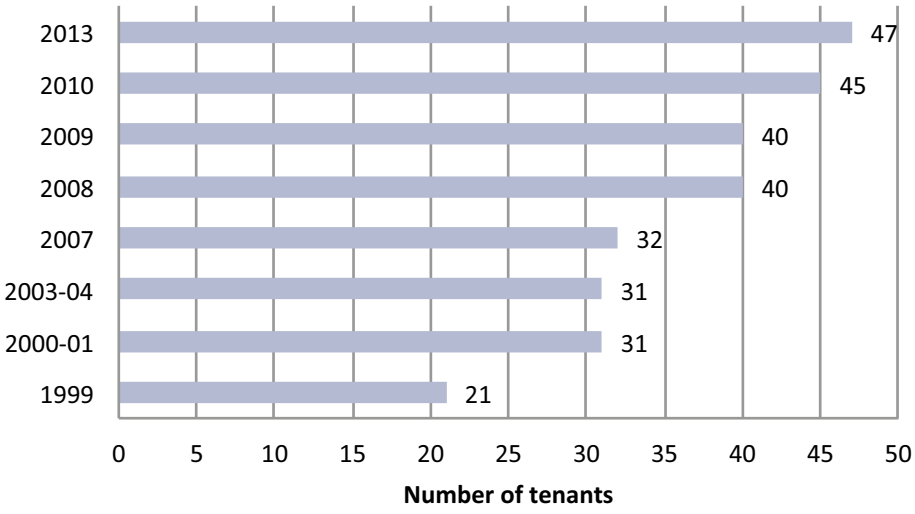
Table 17. Comparison of 2013 Results with Previous Studies (% change)*

	Change 2013/1997 %	Change 2013/1999 %	Change 2013/2000 %	Change 2013/2003 %	Change 2013/2007 %	Change 2013/2008 %	Change 2013/2009 %	Change 2013/2010 %
Number of tenants	52.9	23.8	-16.1	-16.1	-18.8	-35.0	-35.0	4.4
Direct jobs	49.2	17.3	4.7	0.0	0.8	-10.3	-4.1	4.4
Total jobs (operations)	68.7	31.8	17.9	10.3	9.9	-3.2	21.0	13.1
Total jobs (constr. & visitors)	-73.6	-97.7	-89.0	-88.1	-82.7	137.5	15.2	-50.6
Total job impact	66.3	14.5	14.9	7.9	8.4	-3.0	21.0	12.7
Wage impact (operations)	135.7	93.2	42.0	39.2	24.6	-6.1	38.6	29.7
Wage impact (constr. & visitors)	-51.4	-95.8	-79.5	-92.9	-81.5	142.9	30.8	-43.3
Total wage impact	133.9	77.3	40.3	34.2	23.2	-5.9	38.6	29.4
Tax revenues (operations)	78.7	47.4	5.3	19.0	-18.6	-34.1	25.1	21.6
Tax revenues (constr. & visitors)	0.0	-97.5	-66.7	-83.3	-88.9	0.0	-50.0	-65.5
Total tax revenue impact	78.5	32.5	4.9	17.6	-19.6	-34.0	24.8	21.0
Dollar impact (operations)	106.9	71.2	26.0	22.9	-3.5	-22.8	7.8	1.5
Dollar impact (constr. & visitors)	-27.8	-93.8	-69.8	-81.0	-85.5	271.4	0.0	-35.8
Total dollar impact	106.0	61.7	25.1	21.5	-4.7	-22.6	7.7	1.4

*2013 study does not include visitor impact.

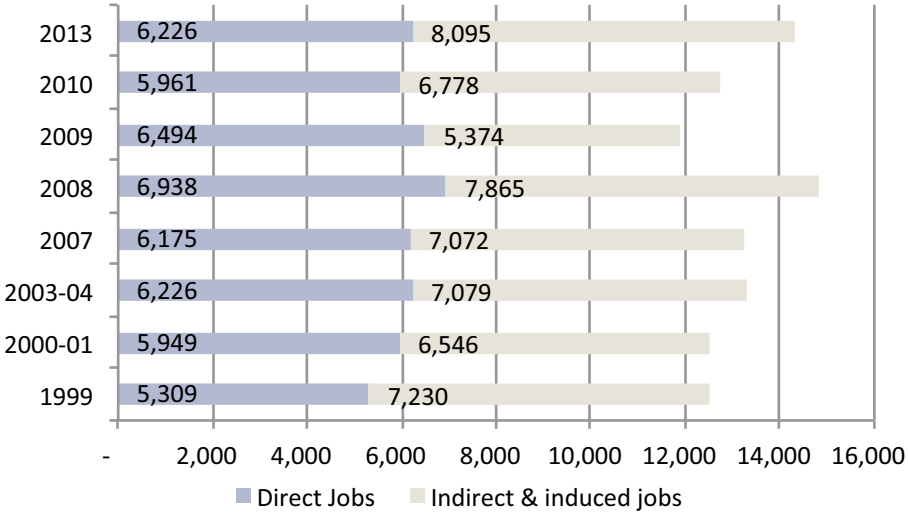
Sources: Pavlakovich-Kochi, V. (2013); Lim, J. (2009, 2010, 2012), Pavlakovich-Kochi, V. and A.H. Charney (2005, 2002, 2000), Pavlakovich-Kochi, V, A.H. Charney and A. Weister-Burns (1999)

Chart 1. Number of Tenants 1997-2013



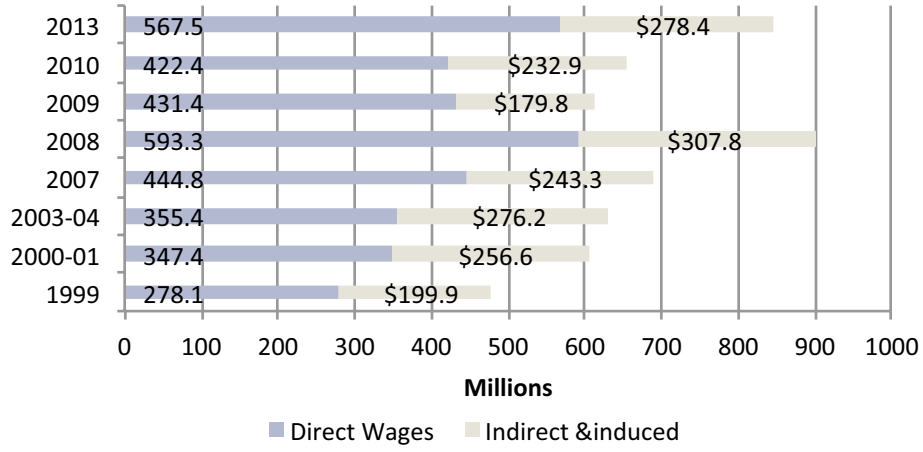
Source: Impact Studies 1997-1998, 1999, 2000-2001, 2003-2004, 2007, 2008, 2009, and 2010.

Chart 2. Total Job Impact in Pima County 1997-2013



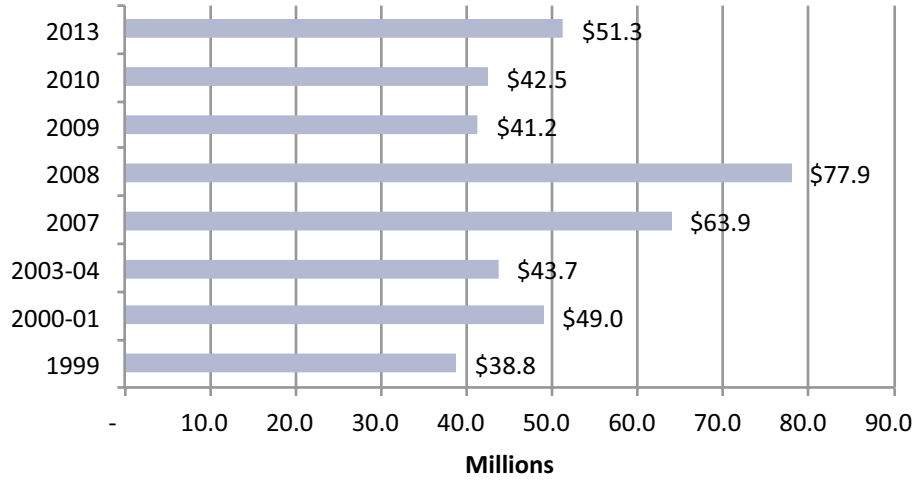
Source: Impact Studies 1997-1998, 1999, 2000-2001, 2003-2004, 2007, 2008, 2009 and 2010.

Chart 3. Total Wage Impact in Pima County 1997-2013



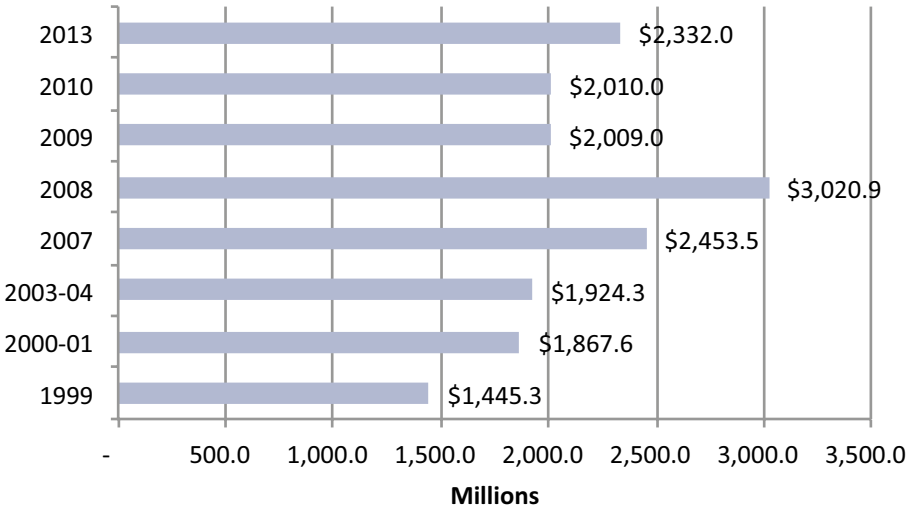
Source: Impact Studies 1997-1998, 1999, 2000-2001, 2003-2004, 2007, 2008, 2009 and 2010.

Chart 4. Tax Revenue Impact in Pima county 1997-2013



Source: Impact Studies 1997-1998, 1999, 2000-2001, 2003-2004, 2007, 2008, 2009, and 2010.

Chart 5. Total Output Impact in Pima County 1997-2013



Source: Impact Studies 1997-1998, 1999, 2000-2001, 2003-2004, 2007, 2008, 2009, and 2010.

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Place Of Residence Of UA Tech Park Employees

Table 18. Distribution of Tenants' Employees by Zip Code in Pima County, 2013

Zip Code	Distant to Tech Park (miles)	Number of Residents	Share (%)	Zip Code	Distant to Tech Park (miles)	Number of Residents	Share (%)
85710	8.2	376	8.1%	**85742**	23.6	118	2.6%
85747	3.0	353	7.6%	**85705**	14.8	82	1.8%
85706	6.8	262	5.6%	**85704**	18.3	109	2.3%
85730	6.3	297	6.4%	**85716**	11.7	91	2.0%
85746	13.6	216	4.7%	**85757**	15.9	70	1.5%
85641	12.1	127	6.4%	**85629**	31.0	209	4.5%
85748	9.1	167	3.6%	**85719**	12.5	60	1.3%
85711	9.2	142	3.1%	**85714**	9.0	40	0.9%
85745	16.3	172	3.7%	**85755**	25.6	55	1.2%
85750	15.7	140	3.0%	**85735**	28.8	35	0.8%
85749	12.4	137	3.0%	**85653**	40.6	37	0.8%
85713	11.1	132	2.8%	**85701**	12.0	21	0.4%
85743	23.0	143	3.1%	**85739**	25.2	16	0.3%
85712	11.0	106	2.3%	**85614**	40.7	40	0.9%
85741	20.5	127	2.7%	**85708**	7.0	8	0.2%
85715	10.0	93	2.0%	**85736**	44.1	16	0.3%
85737	22.3	119	2.6%	**85658**	47.2	44	0.9%
85718	15.4	90	1.9%				

Source: UA Tech Park Tenant Survey.

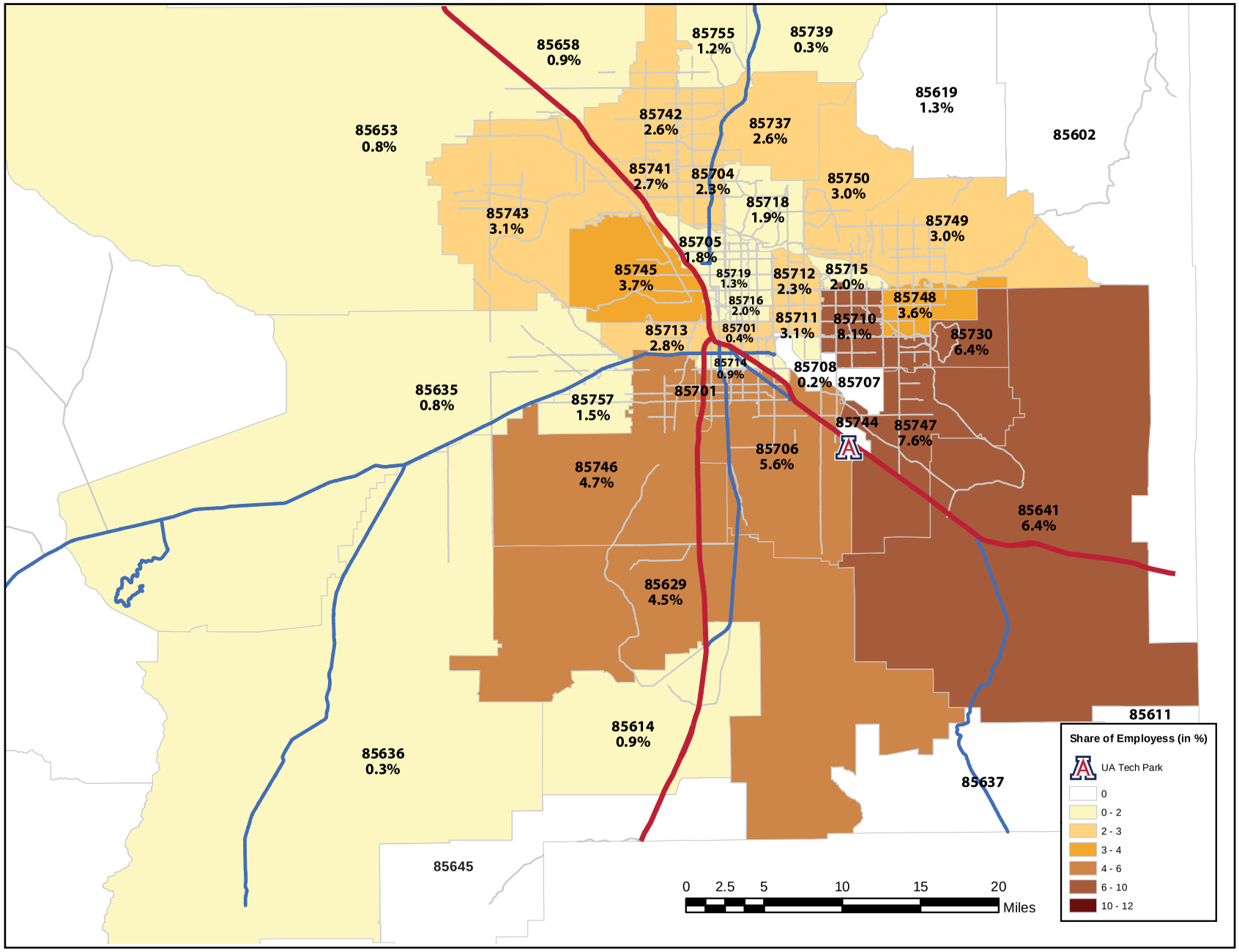

FIGURE 1. SPATIAL DISTRIBUTION OF TECH PARK EMPLOYEES BY ZIP CODE

FIGURE A.1. UA TECH PARK REGIONAL MAP

FIGURE A.2. UA TECH PARK SITE MAP

About the Author

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Dr. Vera Pavlakovich-Kochi spent more than 25 years at The University of Arizona in various positions, including director of Borderlands Economic Development in the Office of Economic Development, senior regional scientist in the Eller College Economic and Business Research Center (EBRC), adjunct professor in the School of Geography and Regional Development, and affiliate of the Center for Latin American Studies. She conducted – individually or in collaboration with other researchers – a number of economic impact studies of various agents in Arizona's economy, including impacts of Davis-Monthan Air Base and defense industry; Mexican maquiladora industry; fresh produce industry in Nogales; Mexican visitors to Arizona; output and consumption of immigrant workers from Mexico; the University of Arizona; astronomy and space sciences research, and the UA Tech Park. She contributed to several Arizona Town Halls with analyses of Arizona's economic relationship with Mexico, and specifically with the neighboring Sonora. For more than ten years she was involved in a binational collaboration on the Strategic Economic Development Vision for the Arizona-Sonora Region, and served as principal investigator in developing a unique set of regional economic indicators for Arizona and Sonora. Border research took her on a Fulbright scholar grant to Europe which strengthened her international collaboration. Selected reports and articles can be found on EBRC website **www.ebr.eller.arizona.edu**; others in *Arizona's Economy, Studies in Regional Studies, Applied Research in Economic Development, Estudios Sociales Revista de Investigación Cientifica*, and book chapters in *Challenged Borderlands, The Colonias Reader*, and *The Ashgate Reaserch Companion to Border Studies*. After officially retiring from the University, she has continued working in EBRC in a part-time auxiliary position focusing on border economy and regional development in the Arizona-Sonora region. She is the founder and president of her consulting company *VP Research & Consulting, LLC., Tucson, AZ.*

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