

**MARYLAND APPLIED INFORMATION
TECHNOLOGY INITIATIVE (MAITI):
Employment and Earnings Profiles
of MAITI Program Graduates**

prepared for:

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1.0 INTRODUCTION

The Maryland Applied Information Technology Initiative (MAITI) is now midway through the fifth year of a strategic investment in Maryland's Information Technology (IT) workforce. Founded in 1998, MAITI is one component of a portfolio of targeted investments in Maryland's future agreed upon by the Governor and Legislature, with expert guidance from the Department of Business and Economic Development (DBED) and the Maryland Higher Education Commission (MHEC).

Three annual reports, covering MAITI achievements in 1999, 2000 and 2001, provide a descriptive context for understanding the employment and earnings profile information contained in this report. Each of the annual reports identifies the participating campuses, offers before-and-after profiles of IT enrollment and graduation counts by institution and degree level, includes examples of Federal government and corporate investments in these programs, and documents new IT programs that were introduced during the reference year.

The estimated shortage of qualified IT employees that existed in 1998, when the strategic investment in MAITI began, was projected to worsen throughout the five-year commitment of State funds to increase the flow of qualified IT workers into the Maryland workforce. The 2000-2001 recession, 9/11 and unforeseen dynamics within the telecommunications sector have combined to reshape the demand for and supply of IT workers. There is no reliable evidence that the overall national or regional need for highly qualified IT personnel has softened.

2.0 PURPOSE

This report presents new employment and earnings profile information covering all MAITI program graduates in 1999, 2000 and 2001, as well as the baseline population of graduates from these programs in 1998. This new information complements the previous documentation of enrollment and degree counts found in the 1999, 2000 and 2001 annual reports.

3.0 CONTENT

The next section describes the data file received by The Jacob France Institute at the University of Baltimore (JFI) from MHEC, and how this was processed with other data files already maintained by the JFI to prepare employment and earnings profiles. This is followed by an analysis of the profiles that have been prepared. An appendix contains the employment and earnings profile information by institution, MAITI program, degree level and year of graduation.

4.0 ADMINISTRATIVE RECORDS USED

MHEC delivered a CD to the JFI in May 2002, containing information about 5,762 academic year 1997-98 through 2000-2001 MAITI program graduates. An Interagency Agreement for data sharing between MHEC and the JFI already existed. This was amended to cover this use of MHEC Degree Information System (DIS) records.

The JFI already maintained a historical file of Maryland employment and earnings records through an Interagency Agreement for data sharing between the JFI and the Department of Labor, Licensing and Regulation (DLLR). This file is known by its colloquial name 'Maryland UI Wage Records'. Maryland's unemployment compensation law requires covered employers to submit a quarterly report to DLLR that contains the following information:

- The reporting employer's Maryland UI tax account number.
- An industry code, which was a Standard Industrial Classification (SIC) code until 2001, and now is a North American Industry Classification System (NAICS) code.
- An average employment level for each of the three months in the reference quarter, based on an estimate of average employment during the week containing the 12th day of the month.
- An identifier for each covered employee who was paid any amount during the reference quarter. This is the same identifier used by Maryland higher education institutions submitting DIS reports to MHEC.
- The amount of earnings paid by the reporting employer to each of the designated employees during the reference quarter.

A 'UI Wage Record' contains just the last two of the five data elements defined above—the employee identifier and a dollar amount. It is important to understand at the outset what is not found in a UI Wage Record, or in the coverage defined by Maryland's unemployment compensation law. This enumeration is particularly important here because many readers are expected to have a natural interest in some types of information that are not available from this file. Therefore, some aspects of MAITI program 'outcomes' cannot be investigated using this data source alone.

No occupational information is provided. No distinction is made between part-time and full-time employment. No Federal government employment is covered (but this type of employment affiliation has been added using Office of Personnel Management and Department of Defense personnel records accessed through already existing data sharing agreements negotiated with each.) Self-employed individuals and independent contractors are not covered. Individuals who receive only a commission, not a regular salary, are not covered.

Only Maryland employment covered by Maryland's unemployment compensation law is covered in the Maryland UI wage records file. Out-of-state covered employment for Delaware, the District of Columbia, Ohio, Pennsylvania, Virginia and West Virginia is added through already existing data sharing agreements between DLLR and each of the counterpart agencies in these States.

The employment and earnings profiles interpreted in the next section include MAITI program graduates during the years 1998-1999 through 2000-2001, plus the pre-MAITI baseline academic year of 1997-1998.

The basic processing steps undertaken to prepare the employment and earnings profiles that appear in the appendix to this report were:

- Treat each award of a degree contained in the MHEC file of 5,762 MAITI program graduates as an independent record. A total of 67 of the graduates received more than one degree. For purposes of this report the highest degree was selected; each person appears only once.
- Treat each of the four academic years as a separate population, so the appendix contains separate profiles for the 1998, 1999, 2000 and 2001 graduating classes.
- Begin each employment and earnings profile with the reference quarter following the end of each academic year, so the 1998 profile begins with the July-September 1998 reference quarter, and each of the other three academic year profiles begins with the applicable July-September quarter for that year.
- End each of the profiles with Maryland UI wage record information covering the April-June 2002 quarter, which is the most recent data available for this use.

- The OPM, DOD and adjacent states information provides only a snapshot of employment status, no earnings information is included from these data sources. The time coverage for each is as follows: OPM and DOD (currently employed in July 2002); adjacent states (appear in UI wage record file in April-June 2002 reference quarter).
- The time coverage for each of the four academic years is different. The 1998 coverage is 45 months (July 1998 through March 2002), while the 2001 coverage is only 9 months (July 2001 through March 2002).
- For each of the academic year populations of MAITI program graduates, calculate the number of graduates who appear in the Maryland UI Wage Record file for each reference quarter as described in the previous bullet. The resulting figure for each reference quarter is called the 'hit rate'. This 'hit rate' enables each reader to answer the question: "How many of the MAITI program graduates in a particular graduating class from a designated institution, MAITI program and degree level were reported as employed during this reference quarter by one or more employers covered by Maryland's unemployment compensation law?" This 'hit rate' does not provide any information about the occupation(s), part-time or full-time status, or sequence of employer affiliations if more than one Maryland UI Wage Record is found for a particular graduate in the reference quarter. The 'hit rate' for the most recent reference quarter, April-June 2002, includes the OPM, DOD and adjacent states information.
- Calculate the median earnings of those who had any reported earnings in a reference quarter, by the academic year, institution, MAITI program and degree level described in the previous bullet. Only the graduates included in the 'hit rate' for each cell of the spreadsheet are included in the denominator of this calculation. Graduates who had no reported earnings in the Maryland UI Wage Records file for a particular reference quarter are not included in the denominator of this calculation. This means that the sub-population of graduates appearing in the denominators of the median earnings calculations for the series of quarters constituting a profile can differ, if individual graduates move in and out of covered employment in Maryland. The median specification was selected to avoid well-known effects of unusually low or high earnings values in the calculation of mean earnings figures. This is particularly important, because there are some small cell sizes, with only a few graduates representing a particular academic year, institution, MAITI program and degree level, which would emphasize the importance of 'outlier' earnings values. Also, no filtering or trimming of extreme values, either high or low, has been conducted.

- Calculate the median value of the sum of all reported earnings in the four quarters of each full calendar year of data available for the respective academic year populations of MAITI program graduates. Most readers will be unfamiliar with quarterly earnings values. No easily understood benchmark of what might be expected is available. Therefore, the profiles in the appendix include 1999, 2000 and 2001 median annual reported earnings for the 1998 academic year baseline population of graduates. The denominator of each calculation includes each graduate who had any reported earnings in any one or more reference quarters during the designated calendar year. Again, no trimming of extreme values has been introduced. Anyone with any reported earnings is retained. The three annual earnings figures that are available for the 1998 baseline population describe the early stages of a 'career trend'. Unfortunately, at this time, only two annual calculations, 2000 and 2001, are available for the first MAITI program graduates in 1999; one annual observation, 2001, is available for the 2000 graduates; and no full calendar year earnings calculation is available for the 2001 graduates.
- Prepare four spreadsheets, one for each of the four academic years covered. Each spreadsheet presents the 'hit rate' and median earnings information for each quarter and full calendar year by institution, degree level and MAITI program code for each reference academic year. These spreadsheets appear in the appendix. Another set of four spreadsheets presents the number of MHEC records received by academic year, institution, degree level and MAITI program code. Cell sizes of less than five former students have been suppressed to prevent identity disclosure that is prohibited.
- The Johns Hopkins University MAITI program graduates are not included in this report.

The next section provides a brief narrative overview of the employment and earnings profiles that have been prepared.

5.0 FINDINGS

Highlights drawn from the employment and earnings profiles presented in the appendix are:

- The 'hit rates' indicating the percentage of MAITI program graduates who appear in the Maryland UI Wage Record file (i.e., had reported Maryland earnings) vary quite a bit by degree level and MAITI program code. The 'hit rate' for a particular degree level and MAITI program code exhibits substantial stability over the observed post-graduation years and months, and generally among the institutions offering the same degree level for a particular MAITI program code.

- The April-June 2002 'hit' rate is substantially higher than the January-March 2002 'hit' rate because the April-June 'hit' rate includes the OPM, DOD and adjacent states counts of employed individuals. Often, a direct comparison of these two 'hit' rates in the Appendix tables show an increase of 20 percentage points, or more, when the additional data sources are included.
- There is a 'fragile' confirmation of an expected increase in median earnings from bachelor's through master's to doctorate degree levels, but the short time horizon and small cell sizes suggest that the observed differences should be interpreted with caution and not described out of context.
- The median annual earnings amounts observed for each of the populations, regardless of institution, degree level or MAITI program code, taking small cell sizes into consideration, indicate that Maryland employers, citizens and the graduates themselves are benefiting from the IT expertise embodied in these graduates. The graduates appear to be highly productive contributors to the Maryland economy, even without any trimming of very low earnings amounts that are found in the Maryland UI Wage Records file, and remembering that the earnings figures that appear in the appendix are median values (half the graduates found in the Maryland UI Wage Records file earned more than the amount shown in the reference quarter or year),.

APPENDIX

Cohort	Institutions	Degree Level	Academic Discipline Code	Frequency	Percent	Cumulative Frequency	Cumulative Percent
maiti98	BOWIE UNIVERSITY	MASTERS	70100	29	2.32	29	2.32
maiti98	FROSTBURG UNIVERSIT	BACHELOR'S	70100	22	1.76	51	4.08
maiti98	MORGAN STATE UNIVERSITY	BACHELOR'S	70100	15	1.2	66	5.28
maiti98	MORGAN STATE UNIVERSITY	BACHELOR'S	70200	21	1.68	87	6.95
maiti98	MORGAN STATE UNIVERSITY	BACHELOR'S	90900	59	4.72	146	11.67
maiti98	TOWSON UNIVERSITY	BACHELOR'S	70100	43	3.44	189	15.11
maiti98	TOWSON UNIVERSITY	BACHELOR'S	70200	2	0.16	191	15.27
maiti98	TOWSON UNIVERSITY	MASTERS	70100	32	2.56	223	17.83
maiti98	UM - BALTIMORE CITY	MASTERS	120300	183	14.63	406	32.45
maiti98	UM - BALTIMORE COUNTY	BACHELOR'S	70100	126	10.07	532	42.53
maiti98	UM - BALTIMORE COUNTY	BACHELOR'S	99906	4	0.32	536	42.85
maiti98	UM - BALTIMORE COUNTY	DOCTORATE	70100	4	0.32	540	43.17
maiti98	UM - BALTIMORE COUNTY	DOCTORATE	90900	8	0.64	548	43.8
maiti98	UM - BALTIMORE COUNTY	MASTERS	50608	6	0.48	554	44.28
maiti98	UM - BALTIMORE COUNTY	MASTERS	70100	17	1.36	571	45.64
maiti98	UM - BALTIMORE COUNTY	MASTERS	70200	21	1.68	592	47.32
maiti98	UM - BALTIMORE COUNTY	MASTERS	90900	9	0.72	601	48.04
maiti98	UM - COLLEGE PARK	BACHELOR'S	70100	171	13.67	772	61.71
maiti98	UM - COLLEGE PARK	BACHELOR'S	90900	163	13.03	935	74.74
maiti98	UM - COLLEGE PARK	DOCTORATE	70100	11	0.88	946	75.62
maiti98	UM - COLLEGE PARK	DOCTORATE	90900	36	2.88	982	78.5
maiti98	UM - COLLEGE PARK	MASTERS	70100	43	3.44	1025	81.93
maiti98	UM - COLLEGE PARK	MASTERS	90900	53	4.24	1078	86.17
maiti98	UM - COLLEGE PARK	MASTERS	99903	6	0.48	1084	86.65
maiti98	UM - COLLEGE PARK	MASTERS	99905	14	1.12	1098	87.77
maiti98	UM - UNIVERSITY COLLEGE	MASTERS	50607	119	9.51	1217	97.28
maiti98	UM - UNIVERSITY COLLEGE	MASTERS	50609	34	2.72	1251	100

Cohort	Institutions	Degree Level	Academic Discipline Code	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1999	BOWIE UNIVERSITY	MASTERS	70100	18	1.29	18	1.29
1999	FROSTBURG UNIVERSIT	BACHELOR'S	70100	24	1.72	42	3.02
1999	MORGAN STATE UNIVERSITY	BACHELOR'S	70100	10	0.72	52	3.73
1999	MORGAN STATE UNIVERSITY	BACHELOR'S	70200	29	2.08	81	5.81
1999	MORGAN STATE UNIVERSITY	BACHELOR'S	90900	62	4.45	143	10.27
1999	TOWSON UNIVERSITY	BACHELOR'S	70100	39	2.8	182	13.07
1999	TOWSON UNIVERSITY	BACHELOR'S	70200	19	1.36	201	14.43
1999	TOWSON UNIVERSITY	MASTERS	70100	56	4.02	257	18.45
1999	UM - BALTIMORE CITY	MASTERS	120300	211	15.15	468	33.6
1999	UM - BALTIMORE COUNTY	BACHELOR'S	70100	128	9.19	596	42.79
1999	UM - BALTIMORE COUNTY	BACHELOR'S	99906	10	0.72	606	43.5
1999	UM - BALTIMORE COUNTY	DOCTORATE	70100	7	0.5	613	44.01
1999	UM - BALTIMORE COUNTY	DOCTORATE	90900	3	0.22	616	44.22
1999	UM - BALTIMORE COUNTY	MASTERS	50608	3	0.22	619	44.44
1999	UM - BALTIMORE COUNTY	MASTERS	70100	34	2.44	653	46.88
1999	UM - BALTIMORE COUNTY	MASTERS	70200	38	2.73	691	49.61
1999	UM - BALTIMORE COUNTY	MASTERS	90900	5	0.36	696	49.96
1999	UM - COLLEGE PARK	BACHELOR'S	70100	180	12.92	876	62.89
1999	UM - COLLEGE PARK	BACHELOR'S	90900	170	12.2	1046	75.09
1999	UM - COLLEGE PARK	DOCTORATE	70100	26	1.87	1072	76.96
1999	UM - COLLEGE PARK	DOCTORATE	90900	26	1.87	1098	78.82
1999	UM - COLLEGE PARK	MASTERS	70100	34	2.44	1132	81.26
1999	UM - COLLEGE PARK	MASTERS	90900	68	4.88	1200	86.15
1999	UM - COLLEGE PARK	MASTERS	99903	7	0.5	1207	86.65
1999	UM - COLLEGE PARK	MASTERS	99905	14	1.01	1221	87.65
1999	UM - UNIVERSITY COLLEGE	MASTERS	50607	129	9.26	1350	96.91
1999	UM - UNIVERSITY COLLEGE	MASTERS	50609	38	2.73	1388	99.64
1999	UM - UNIVERSITY COLLEGE	MASTERS	79900	5	0.36	1393	100

Cohort	Institutions	Degree Level	Academic Discipline Code	Frequency	Percent	Cumulative Frequency	Cumulative Percent
maiti00	BOWIE UNIVERSITY	MASTERS	70100	24	1.66	24	1.66
maiti00	FROSTBURG UNIVERSIT	BACHELOR'S	70100	24	1.66	48	3.32
maiti00	MORGAN STATE UNIVERSITY	BACHELOR'S	70100	7	0.48	55	3.8
maiti00	MORGAN STATE UNIVERSITY	BACHELOR'S	70200	43	2.97	98	6.78
maiti00	MORGAN STATE UNIVERSITY	BACHELOR'S	90900	32	2.21	130	8.99
maiti00	TOWSON UNIVERSITY	BACHELOR'S	70100	44	3.04	174	12.03
maiti00	TOWSON UNIVERSITY	BACHELOR'S	70200	52	3.6	226	15.63
maiti00	TOWSON UNIVERSITY	MASTERS	70100	40	2.77	266	18.4
maiti00	UM - BALTIMORE CITY	MASTERS	120300	203	14.04	469	32.43
maiti00	UM - BALTIMORE COUNTY	BACHELOR'S	70100	115	7.95	584	40.39
maiti00	UM - BALTIMORE COUNTY	BACHELOR'S	99906	9	0.62	593	41.01
maiti00	UM - BALTIMORE COUNTY	DOCTORATE	70100	2	0.14	595	41.15
maiti00	UM - BALTIMORE COUNTY	DOCTORATE	90900	8	0.55	603	41.7
maiti00	UM - BALTIMORE COUNTY	MASTERS	50608	33	2.28	636	43.98
maiti00	UM - BALTIMORE COUNTY	MASTERS	70100	23	1.59	659	45.57
maiti00	UM - BALTIMORE COUNTY	MASTERS	70200	36	2.49	695	48.06
maiti00	UM - BALTIMORE COUNTY	MASTERS	90900	8	0.55	703	48.62
maiti00	UM - COLLEGE PARK	BACHELOR'S	70100	200	13.83	903	62.45
maiti00	UM - COLLEGE PARK	BACHELOR'S	90900	153	10.58	1056	73.03
maiti00	UM - COLLEGE PARK	BACHELOR'S	99906	6	0.41	1062	73.44
maiti00	UM - COLLEGE PARK	DOCTORATE	70100	13	0.9	1075	74.34
maiti00	UM - COLLEGE PARK	DOCTORATE	90900	30	2.07	1105	76.42
maiti00	UM - COLLEGE PARK	MASTERS	70100	34	2.35	1139	78.77
maiti00	UM - COLLEGE PARK	MASTERS	90900	90	6.22	1229	84.99
maiti00	UM - COLLEGE PARK	MASTERS	99903	8	0.55	1237	85.55
maiti00	UM - COLLEGE PARK	MASTERS	99905	16	1.11	1253	86.65
maiti00	UM - UNIVERSITY COLLEGE	MASTERS	50607	133	9.2	1386	95.85
maiti00	UM - UNIVERSITY COLLEGE	MASTERS	50609	47	3.25	1433	99.1
maiti00	UM - UNIVERSITY COLLEGE	MASTERS	79900	13	0.9	1446	100

Cohort	Institutions	Degree Level	Academic Discipline Code	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1a1ti01	BOWIE UNIVERSITY	MASTERS	70100	11	0.66	11	0.66
1a1ti01	FROSTBURG UNIVERSIT	BACHELOR'S	70100	36	2.15	47	2.81
1a1ti01	MORGAN STATE UNIVERSITY	BACHELOR'S	70100	16	0.96	63	3.77
1a1ti01	MORGAN STATE UNIVERSITY	BACHELOR'S	70200	61	3.65	124	7.42
1a1ti01	MORGAN STATE UNIVERSITY	BACHELOR'S	90900	66	3.95	190	11.36
1a1ti01	TOWSON UNIVERSITY	BACHELOR'S	70100	34	2.03	224	13.4
1a1ti01	TOWSON UNIVERSITY	BACHELOR'S	70200	67	4.01	291	17.4
1a1ti01	TOWSON UNIVERSITY	MASTERS	70100	78	4.67	369	22.07
1a1ti01	UM - BALTIMORE CITY	MASTERS	120300	218	13.04	587	35.11
1a1ti01	UM - BALTIMORE COUNTY	BACHELOR'S	70100	146	8.73	733	43.84
1a1ti01	UM - BALTIMORE COUNTY	BACHELOR'S	99906	9	0.54	742	44.38
1a1ti01	UM - BALTIMORE COUNTY	DOCTORATE	70100	1	0.06	743	44.44
1a1ti01	UM - BALTIMORE COUNTY	DOCTORATE	90900	6	0.36	749	44.8
1a1ti01	UM - BALTIMORE COUNTY	MASTERS	50608	2	0.12	751	44.92
1a1ti01	UM - BALTIMORE COUNTY	MASTERS	70100	44	2.63	795	47.55
1a1ti01	UM - BALTIMORE COUNTY	MASTERS	70200	33	1.97	828	49.52
1a1ti01	UM - BALTIMORE COUNTY	MASTERS	90900	5	0.3	833	49.82
1a1ti01	UM - COLLEGE PARK	BACHELOR'S	70100	269	16.09	1102	65.91
1a1ti01	UM - COLLEGE PARK	BACHELOR'S	90900	148	8.85	1250	74.76
1a1ti01	UM - COLLEGE PARK	BACHELOR'S	99906	12	0.72	1262	75.48
1a1ti01	UM - COLLEGE PARK	DOCTORATE	70100	20	1.2	1282	76.67
1a1ti01	UM - COLLEGE PARK	DOCTORATE	90900	32	1.91	1314	78.59
1a1ti01	UM - COLLEGE PARK	MASTERS	70100	27	1.61	1341	80.2
1a1ti01	UM - COLLEGE PARK	MASTERS	90900	61	3.65	1402	83.85
1a1ti01	UM - COLLEGE PARK	MASTERS	99903	8	0.48	1410	84.33
1a1ti01	UM - COLLEGE PARK	MASTERS	99905	21	1.26	1431	85.59
1a1ti01	UM - UNIVERSITY COLLEGE	MASTERS	50607	160	9.57	1591	95.16
1a1ti01	UM - UNIVERSITY COLLEGE	MASTERS	50609	61	3.65	1652	98.8
1a1ti01	UM - UNIVERSITY COLLEGE	MASTERS	79900	18	1.08	1670	99.88
1a1ti01	UNIVERSITY OF BALTIMORE	BACHELOR'S	70202	2	0.12	1672	100