NIST Technology Transfer Brief 1

Federal Office of Research and Technology Applications Survey Results

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Abstract

This publication serves as a formal reporting of the data presented at the 2017 Federal Laboratory Consortium's National Meeting. It presents summary data collected through a survey conducted by NIST in conjunction with the Interagency Working Group on Technology Transfer. Metrics include insight into Federal Offices of Research and Technology Applications such as age, budget size and source, patent filing and funding sources, laboratory structure, and office staffing levels.

Keywords

Federal technology transfer; interagency; office of research and technology applications; technology transfer; technology transfer office.

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2 INTRODUCTION

The Interagency Working Group for Technology Transfer (IAWGTT) was originally established in 1987 by Executive Order 12591, Section 7, to "convene an interagency task force comprised of the heads of representative agencies and the directors of representative Federal laboratories, or their designees, to identify and disseminate creative approaches to technology transfer from Federal laboratories" (Federal Register, 1987). Today, the group is comprised of technology transfer professionals and patent or other legal counsel at Federal laboratories. It is convened by NIST quarterly to discuss topics such as technology transfer legislation, required reporting, various interagency efforts, and best practices. Additionally, it is a forum in which to address questions about various technology transfer mechanisms through input from its members.

In the past, Federal technology transfer professionals informally collected anecdotes by asking for advice through the IAWGTT about various technology transfer processes and policies. One recurring question centered around the structures of technology transfer offices in different agencies. Because NIST convened the IAWGTT, it offered to internally collect data from the membership and answer the broad question, "How do Federal Offices of Research and Technology Applications (ORTAs)[1] operate"?

The purpose of the study was to create a mutual understanding of the workings of Federal ORTAs. This was first accomplished by generating a document that summarized the data collected from the survey. This document was made available to working group participants. In addition to the descriptive data presented here, an analysis will be conducted to discuss how specific organizational and operational activities of ORTAs impact technology transfer. This will result in a peer-reviewed publication.

Participating ORTAs were from the following 11 agencies:

- Department of Agriculture (USDA)
- Department of Commerce (DOC)
- Department of Defense (DoD)
- Department of Energy (DOE)
- Department of Health and Human Services (HHS)
- Department of Homeland Security (DHS)
- Department of the Interior (DOI)
- Department of Transportation (DOT)
- Department of Veterans Affairs (VA)
- Environmental Protection Agency (EPA)
- National Aeronautics and Space Administration (NASA)

[1] Although ORTAs may have other names, such as Technology Transfer Offices or Offices of Technology Transitions, this report will maintain consistency by referring to these offices as ORTAs.

3 METHODOLOGY

In early FY 2016, a survey[2] was created by the NIST Technology Partnerships Office (TPO) to collect quantitative and qualitative data regarding ORTAs within the Federal government during the current fiscal year. The survey was reviewed and accepted by IAWGTT members.

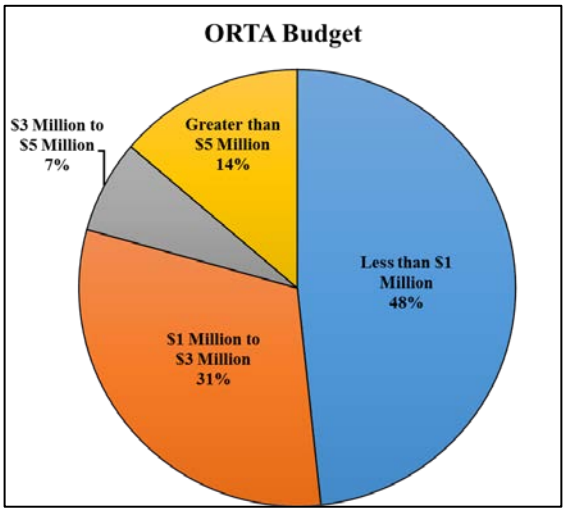
Once the survey was approved, it was sent to the lead agency representatives of the 11 agencies within the IAWGTT. There were two possible choices to complete the survey. The first was that the individual filled out the survey and returned it to NIST. If NIST had questions, or needed clarification on answers, a follow-up conference call was held to fully understand the respondent's answers. The second choice was to hold a conference call and answer the questions over the phone, rather than writing down the responses. Both avenues were accepted and used by lead agency representatives.

After filling out the survey for their specific ORTA, the lead agency representatives worked with NIST to decide whether it would be appropriate for the agency's additional ORTAs (if any) to complete the survey. Some agencies had a single centralized ORTA handling all technology transfer needs for the entire agency; therefore, surveying was complete after the lead agency representative participated. Other agencies had additional ORTAs at the laboratory level. Depending on the number of ORTAs that performed technology transfer functions within an agency and the number that were willing to complete the survey, some agencies had all their laboratory-level ORTAs surveyed while in other cases only a select subset were surveyed. In total, 62 individual surveys were returned to NIST.

[2] https://www.nist.gov/sites/default/files/documents/2018/05/22/orta_tto_questionnaire_final.pdf

4 DATA

In this section, summary information on each metric is provided[3]. Because all survey responses were voluntary, and participants only included information they were willing and/or able to provide, there are instances of missing or incomplete data.

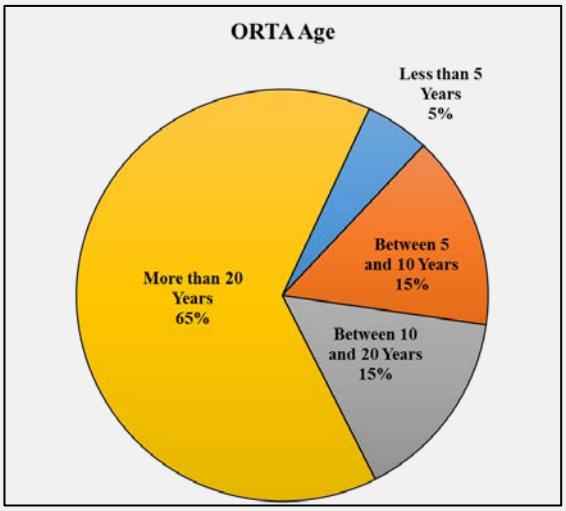


58 ORTAs reported their budget funding levels for traditional technology transfer operations[4].

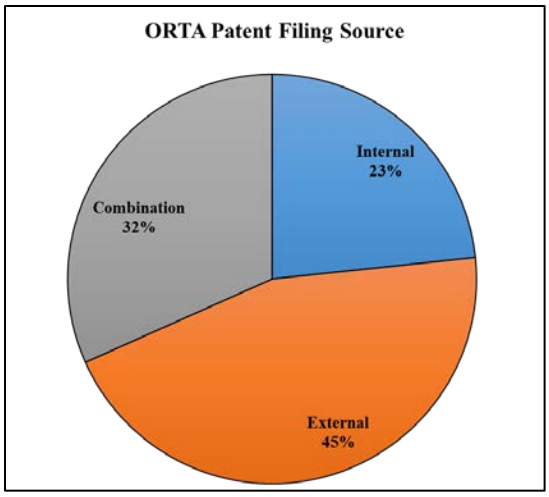
Almost half of the survey respondents had a budget of less than $1 million for traditional technology transfer activities in FY 2016. Over three-quarters of the ORTAs had a budget of less than $3 million. Four agencies received $3 to $5 million dollars each. Only 14% of survey respondents received more than $5 million to fund their traditional technology transfer operations.

ORTA age described the length of time an ORTA had existed, in some capacity, at that agency or other sub-level organization. The ORTA did not always have to be identified by its current name or be in its current location (either in the agency's organizational chart or physical location). Fifty-nine ORTAs reported their ages.

The majority of ORTAs (65%) surveyed have existed in some capacity for more than 20 years.



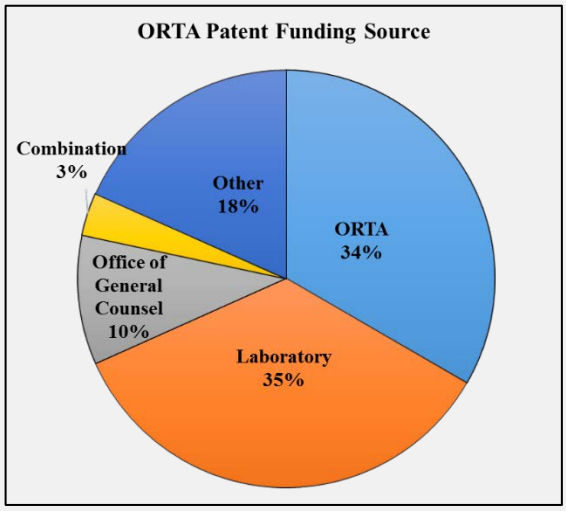
[3] Specific examples may be provided, such as explaining the definition of "other", but the agency name is confidential. Source information, including the name of the agency and the names of the participating individuals will not be released here or in other publications arising from the data analysis.
[4] Traditional technology transfer operations include the activities involved for patenting, license negotiations, and collaborative research agreements. This does not include other technology transfer-related functions such as the Small Business Innovation Research (SBIR) program.



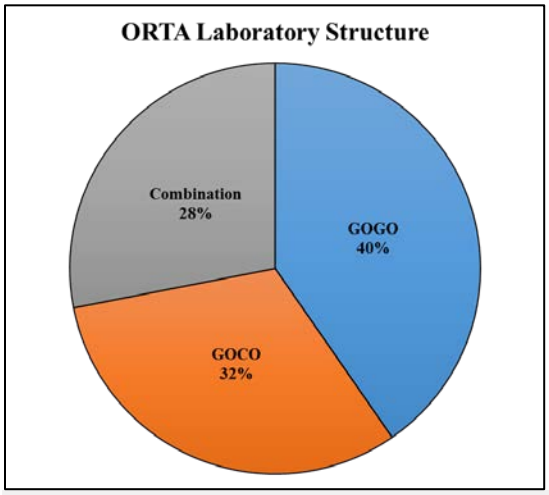
Sixty respondents described the source of their patent attorney services. Internal attorneys were employees located somewhere within the agency, whether in the ORTA or elsewhere. External attorneys were those whose services were acquired through acquisition tools such as a contract. Some ORTAs used a combination of internal and external attorneys.

The pie graph to the left shows that 23% used internal patent attorneys, 45% used external patent attorneys, and 32% used a combination of the two, depending on the services needed.

In addition to identifying the source of patent attorney services, information regarding the funding source for patent applications was collected. Sixty responses were segmented into five broad categories.



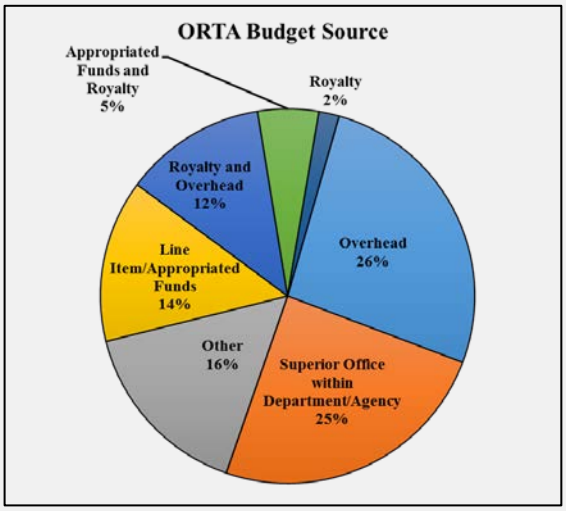
More than half of the ORTAs reported that either the ORTA (34%) or the corresponding laboratory (35%) paid for patent prosecution in FY 2016. Ten percent of ORTAs reported that their Office of General Counsel, or legal office equivalents, paid for patent prosecution. Three percent of ORTAs fund their patent operations through a combination of the ORTA, laboratory, and legal office. The remaining 18% consisted of answers such as overhead or royalty revenue.



Fifty-seven ORTAs identified whether the laboratory (or laboratories) it supports was a government-owned, government-operated (GOGO) facility, a government-owned, contractor-operated (GOCO) facility, or some combination of the two[5].

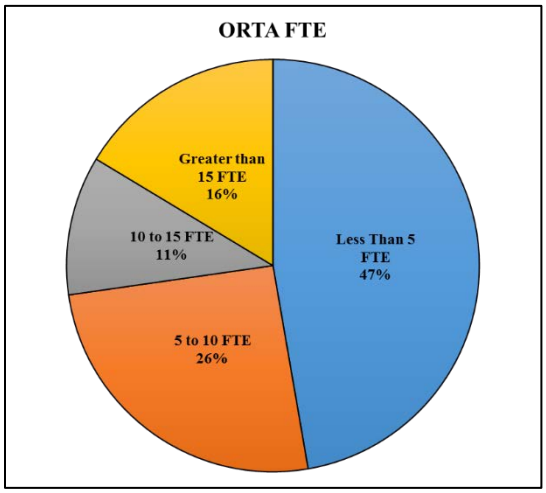
The majority of ORTAs (40%) responded that the laboratories they supported were solely GOGOs. Thirty-two percent supported solely GOCOs. The remaining 28% supported a combination of GOGOs and GOCOs.

ORTAs fund their traditional technology transfer operations through different budget sources. Fifty-seven ORTAs self-identified the funding source of their traditional technology transfer functions.



The results show that ORTAs receive their money in a variety of combinations. Only 14% of ORTAs reported that their FY 2016 funding came from a specific line item within agency budgets. Overhead funded 26% of ORTAs, and 25% of ORTAs received their budgets from a superior office within their agency. Five percent received funding through a combination of appropriated funds and royalty income. Twelve percent are funded through a combination of royalty income and overhead. Other funding sources included internal taxes to labs or units, and instances where funding sources were not specified.

[5] Federally Funding Research and Development Centers (FFRDCs) were classified under GOCO for this publication.



Fifty-five ORTAs provided employee full-time equivalents (FTEs) data for their traditional technology transfer functions at the time of survey completion. The pie chart to the left shows the number of traditional technology transfer FTEs officially located within the ORTA.

Almost half of the surveyed ORTAs (26) were operating with less than 5 FTEs, 14 had between 5 and 10 FTEs, 6 had between 10 and 15 FTEs, and 9 had a staff of more than 35 FTEs.

4.1 ORTA FTE BY PATENT FILING SOURCE

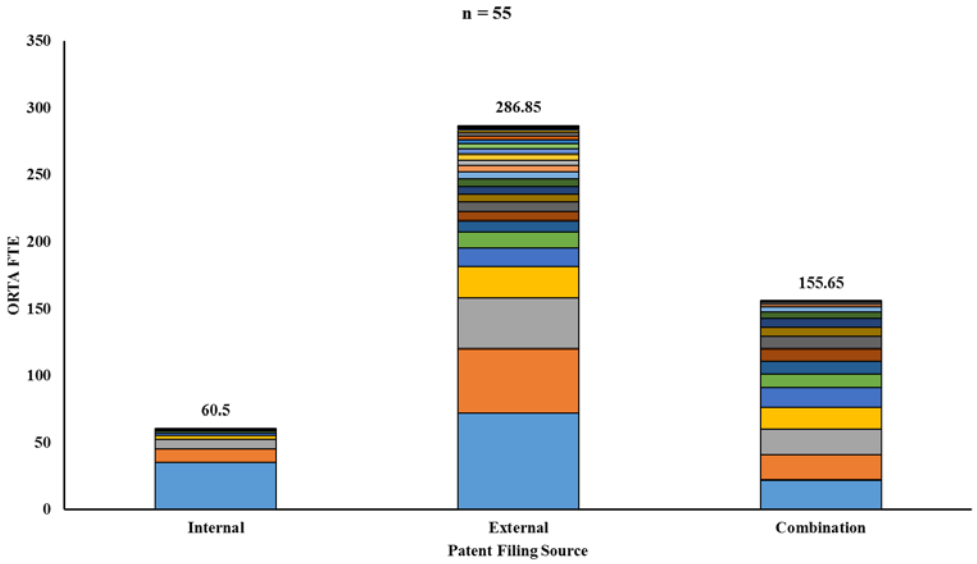
Once the data were collected and pie charts were created, the next step was to make observational comparisons among the metrics. The level of FTEs within each ORTA was compared to patent filing sources. *Table 1* shows the number of observations and statistics for ORTA FTEs for each patent filing source. Twenty-seven ORTAs used external attorneys for patent filing, and they had the largest average ORTA FTEs at 10.62 FTEs. ORTAs that used internal attorneys had the smallest average ORTA FTEs at 3.05 FTEs dedicated to traditional technology transfer functions. The 18 ORTAs that used a combination of internal and external attorneys had 8.65 FTEs, on average, within their ORTA.

Table 1 - ORTA FTE by Patent Filing Source

	Internal	External	Combination
Observations (ORTAs)	10	27	18
Average	6.05	10.62	8.65
Median	1.6	5	8
Maximum	35	72	22
Minimum	0	0.5	0

Figure 1 takes the data within *Table 1* and creates a stacked bar chart of the data. Within each bar, each color represents a different agency. ORTAs with the largest FTEs are on the bottom of each bar. The value on the top of each bar are the total FTEs for each patent filing source. Additional analysis needs to be completed to understand the relationship between the two variables.

Figure 1 - ORTA FTEs by Patent Filing Source



4.2 TOTAL PATENTS ISSUED BY PATENT FUNDING SOURCE

By combining data from the ORTA survey and the Annual Report on Federal Technology Transfer[6], a comparison between total patents issued and patent funding source was conducted for 22 ORTAs[7]. From *Table 2* below, funding by ORTAs resulted in an average of 25 patents issued per ORTA in one year. Funding by laboratories resulted in an average of 11 patents issued per ORTA in one year. The majority of ORTAs fund their patent prosecution through themselves or their laboratories.

Table 2 - Total Patents Issued by Patent Funding Source

	ORTA	Laboratory	Office of General Counsel	Combination	Other
Observations (ORTAs)	8	8	1	1	4
Average	25	11	0	4	13
Median	12	7	0	4	8
Maximum	119	40	0	4	34
Minimum	2	0	0	4	1

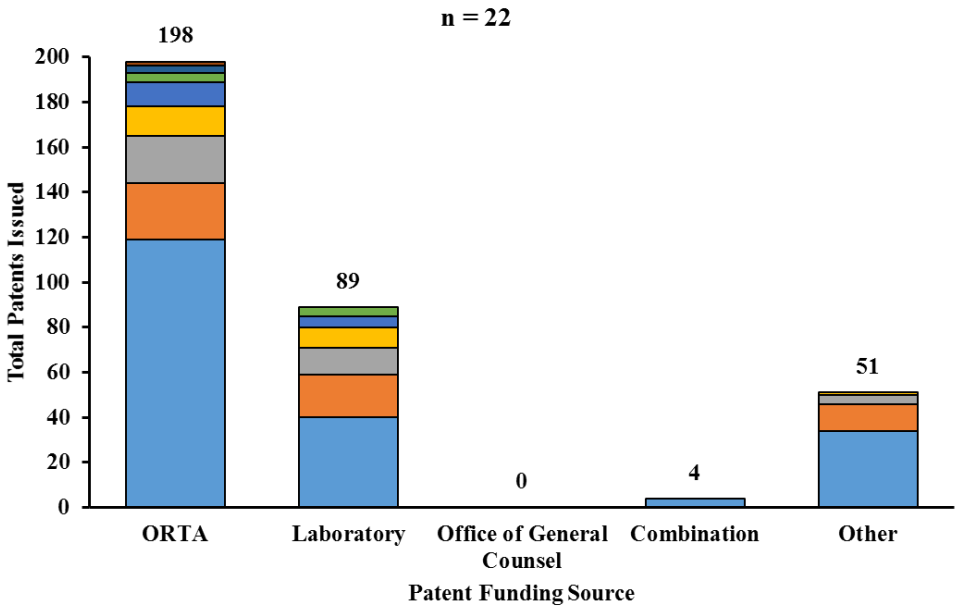
Figure 2, below, shows that patent prosecution funded by the ORTA resulted in the most patents issued in FY 2014. While a time series of data would provide a clearer picture of

[6] The number of total patents issued comes from the FY 2014 Annual Report on Federal Technology Transfer

[7] Twenty-two ORTAs were identified for this combination, based upon availability of data from both the ORTA survey and data collected for the Annual Report on Federal Technology Transfer.

the trends of patent issuance and patent funding, this provides a first glance of possible relationships between the two variables and promotes further discussion. For example, when laboratories paid for patents, they were issued fewer patents in FY 2014 compared to when the ORTA paid for patents. Additional analysis needs to be completed to research the relationship between the two variables.

Figure 2 - Total Patents Issued by Patent Funding Source



4.3 PATENT APPLICATIONS FILED BY PATENT FILING SOURCE[8]

Table 3 displays the ORTA-level data used within *Figure 3*, below. It shows that for this analysis, nine ORTAs used internal attorneys, eight used external attorneys, and six used a combination of external and internal attorneys. On average, 24 patent applications were filed by internal attorneys, 32 were filed externally, and 8 were filed with a combination in one year.

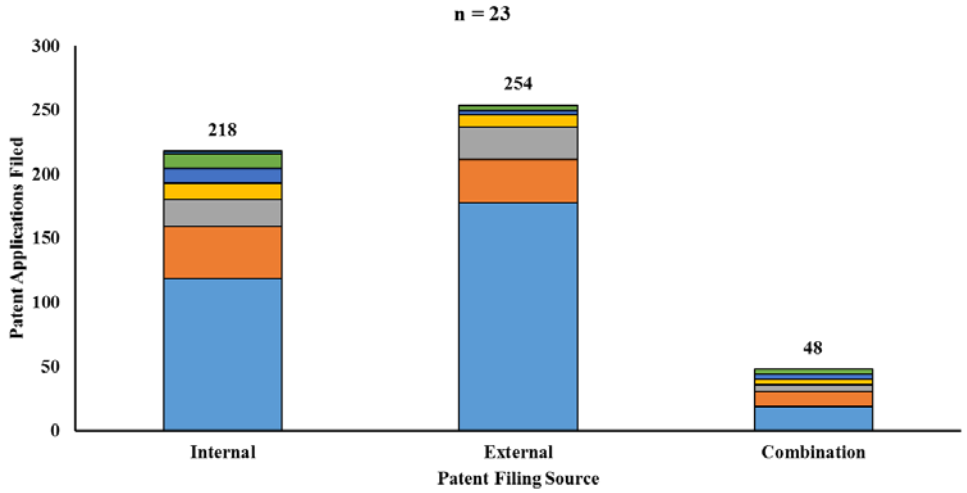
Table 3 - Patent Applications Filed by Patent Filing Source

	Internal	External	Combination
Observations (ORTAs)	9	8	6
Average	24	32	8
Median	12	7	5
Maximum	119	178	19
Minimum	0	0	4

[8] The number of patent applications filed comes from the FY 2014 Federal Technology Transfer Report.

Using data from the survey and the Federal report, *Figure 3* compares the number of patent applications filed and patent filing source. The figure shows that the most patent applications filed (254 applications) were filed by external attorneys. Patent applications filed by internal attorneys were not too far behind (218 applications). ORTAs that use a combination of internal and external attorneys filed the fewest number of patent applications, 48. Additional analysis would further look into this relationship between variables.

Figure 3 - Patent Applications Filed by Patent Filing Source



4.4 ORTA FTEs BY ORTA BUDGET

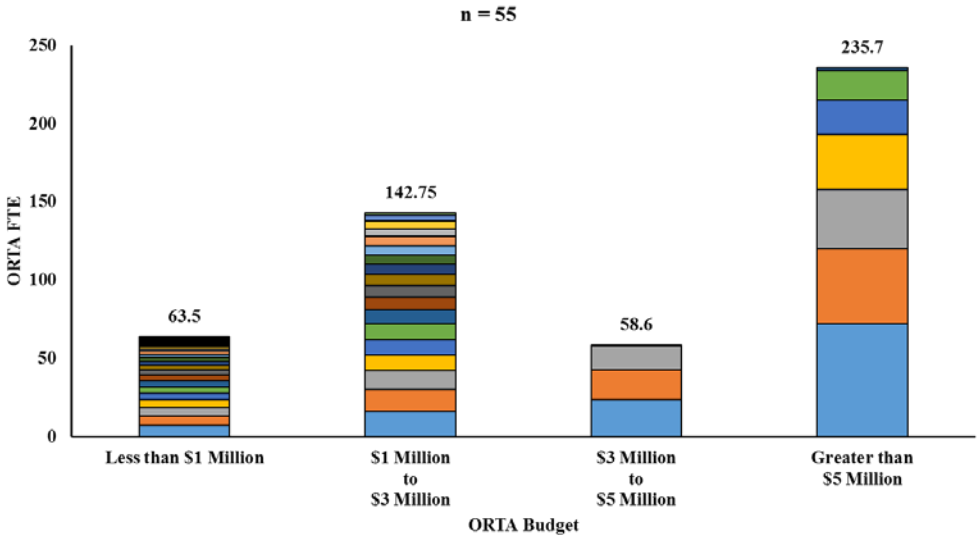
Table 4 displays statistics for ORTA FTEs according to their budget level categories. The 7 ORTAs with budgets greater than $5 million, had an average of 33.67 FTEs dedicated to traditional technology transfer activities. The budget level category of less than $1 million had the most observations, with 26 ORTAs in the category. On average, these ORTAs had 2.44 FTEs.

Table 4 - ORTA FTEs by Budget Level Category

	Less than $1 Million	$1 Million to $3 Million	$3 Million to $5 Million	Greater than $5 Million
Observations (ORTAs)	26	18	4	7
Average	2.44	7.93	14.65	33.67
Median	2	7.25	17.05	35
Maximum	7	16	23.5	72
Minimum	0.05	1	1	1.7

Figure 4 displays a comparison between ORTA FTEs and ORTA budget level. ORTAs with budgets greater than $5 million had the highest total number of FTEs.

Figure 4 - ORTA FTEs per ORTA Budget



5 CONCLUSION

The data within the survey provided an insight into Federal ORTAs through the internal document provided to participants and this publication. Future publications will consider statistic regressions to help assess the impact of select survey variables on ORTAs.

Federal ORTAs are heterogeneous, not only in terms of budget and staffing, but also in mission and policies that dictate their operations. While direct agency-to-agency comparisons are not possible due to heterogeneity, general conclusions about Federal ORTAs were possible. Without identifying specific agencies, this publication illustrated what Federal ORTAs looked like.