

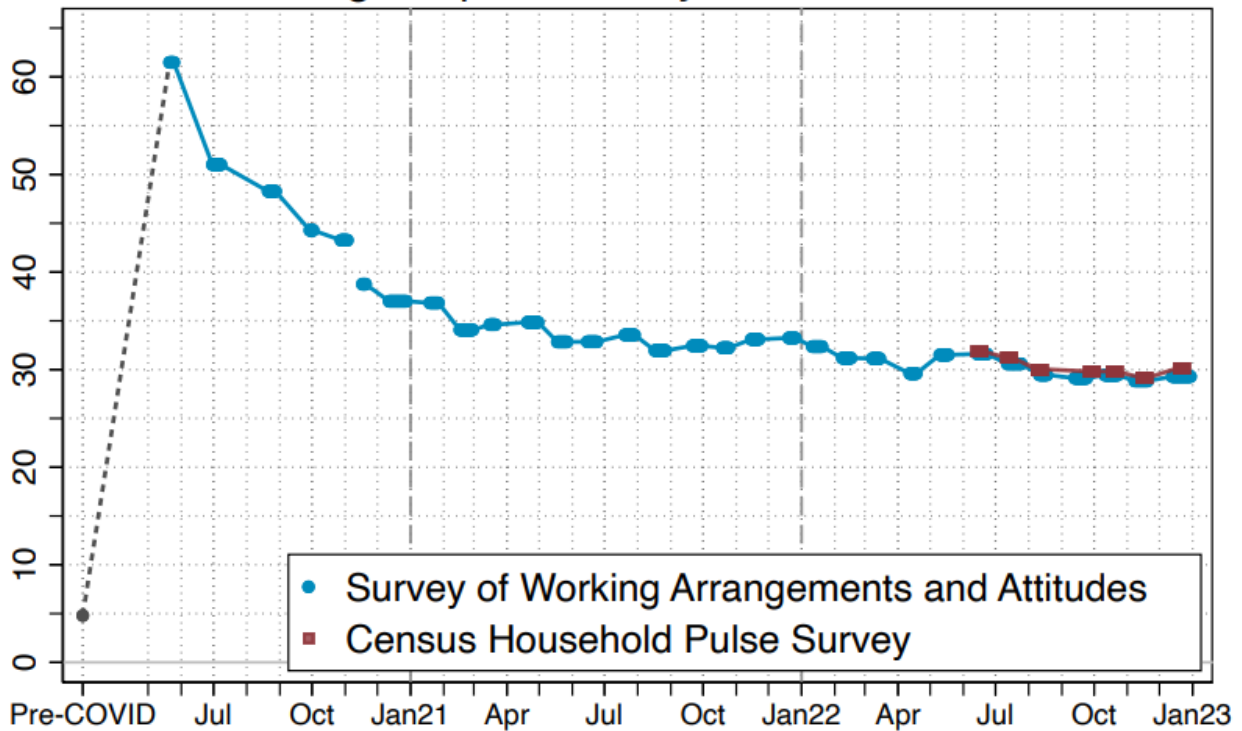
Considering the impact of Remote Work on Income Tax Refunds: Michigan Municipal Governments

The proportion of Americans engaged in remote work grew by unprecedented amounts over the course of the pandemic. One recent study presented at the annual meeting of the American Economics Association by Ardjan et al. (2022) covering 20 countries and 55 occupational categories from January 2019 to September 2022 documents a substantial increase in the share of job postings that advertise telework and finds that these postings do not decrease even as pandemic severity has eased in many areas. Another [recent survey](#) of national remote work trends show that though the percentage of paid full days worked from home dropped from a high of 60% at the height of the pandemic in June 2020 to around 30-35% in March of '21, this proportion has stabilized over the course of 2022 (Barrero, Bloom, and Davis, 2021). Another study using the same survey indicated that employers acknowledged increased productivity as a result of remote work and have shifted remote work plans upward as a result (Aksoy et al. 2022).

As of the end of November '22, the percentage of paid full days worked from home is hovering just under 30% and have stabilized there since. These numbers indicate that though in-person work has become the norm for many, it is nowhere near what it was pre-pandemic (around 5%). From a growth perspective, the increase in WFH during the pandemic was equal to 30 years of pre-pandemic growth (Barrero, Bloom, and Davis, 2021).

Figure 1: Percentage of Paid Full Days Worked From Home, 2020-2023

Percentage of paid full days worked from home



*Pre-COVID estimate taken from the 2017-2018 American Time Use Survey

*The break in the series in November 2020 reflects a change in the survey question.

(Barrero, Bloom, and Davis, January 2023 Update)

This change has several implications for local governments. Beyond what such a large shift in day-to-day activity might mean for residents, those cities with an income tax are vulnerable to shifts in income tax revenues as a result of greater remote work. Income tax revenues make up a significant portion of municipal budget funds. In Michigan there are 23 cities that utilize an income tax. Income tax revenues are generated by 1) residents who live in the city but work outside of it and 2) residents who both live and work in the city and 3) residents who reside outside the city but work within it. These taxes are generally split in half– 1) the rate paid on all income earned (regardless of location) as a resident of the city and 2) the rate paid on all income generated in the city by those commuting in. Remote work shifts this tax burden for those that live outside of the city and now perform a greater percentage (if not all) of their work remotely.

Accurately understanding the implications of this long-term change for city budgets will be very important going forward. In many cases, income tax revenues make up a significant portion of general fund revenues. In Detroit, municipal income taxes (2.4% for residents, 1.2% for nonresidents, and 2% for corporations) make up anywhere from 25-30% of general fund revenues (Hatcher & Boyle 2021). **In keeping with the Center for Local Government Finance and Policy's (the Center) goals to foster greater fiscal awareness and preparedness, we provide a brief guide to challenges in estimating the potential value**

lost to municipalities from remote work as well as practical considerations for doing so. The goal is to provide income tax administrators with a resource for beginning to think about these issues as needed to facilitate fiscal planning. We use income tax refund estimation for the City of Detroit as a case example.

Estimating Income Tax Revenues and Refunds: Challenges and Practical Considerations

The Center held a remote work income tax estimation workgroup in early 2022 and again in November 2022 to gauge the level of preparedness among the 24 local municipalities in Michigan with an income tax.

Table 1: Michigan Municipal Units with an Income Tax

Albion	Battle Creek	Benton Harbor
Big Rapids	Detroit	East Lansing
Flint	Grand Rapids	Grayling
Hamtramck	Highland Park	Hudson
Ionia	Jackson	Lansing
Lapeer	Muskegon	Muskegon Heights
Pontiac	Port Huron	Portland
Saginaw	Springfield	Walker

In general, among these cities, very little estimation has been undertaken for a number of reasons. Most issues are related to capacity and data availability. It is standard in cities with an income tax to base expectations loosely on prior years' revenue, often without undergoing any formal analysis. Those larger cities, like Grand Rapids and Detroit, have the capacity to undergo more complex estimation.

The City of Detroit provides an especially relevant case for how remote work can impact a city's finances. Detroit has the highest municipal income tax rate of any city that levies one in Michigan and these revenues are increasingly dependent on a large commuter population. Revenue from Detroit's municipal income taxes increased by 42% between 2014 and 2019, despite its population declining from 682,669 to 670,031 (Hatcher & Boyle 2021). This is likely due to Detroit's status as a job center, or net importer of workers. In 2017, there were 219,968 **workers** employed in the City. It is estimated that 74% of workers employed in the City of Detroit lived outside its borders (Workforce Intelligence Network, 2021). When thinking about remote work and City income tax refunds, this is a large proportion that might be lost should these workers now be remote and therefore exempt from the tax and/or eligible for a refund.

Remote work refunds are only relevant to the non-resident group of employment. For most municipalities, it is fairly straightforward to collect information from local employers regarding employment numbers for tax purposes. In cities with an income tax, employment information is shared with the City or automatically withheld. In the city of East Lansing, MI for instance, as an employee of Michigan State University (MSU), the non-resident tax rate is automatically withheld from employee salaries. This is true for many larger organizations.¹ Whether or not the refund is claimed, however, presents another challenge. These refunds can be claimed for years after they are withheld, creating a level of uncertainty. With a reliable refund estimate, some of this financial angst can be relieved.

Another challenge to income tax refund estimation pertains to the granularity of data available. While in Detroit's case there is data reflecting industry mix of employees at the City level, it is much harder to tease out employment by occupation mix. This matters when we get into income tax estimation because different jobs not only have different salary expectations, but also different remote work capability and likelihood, impacting the forecast. For instance, in Detroit based on past income tax data, non-resident withholding is estimated to be about half of total withholding, suggesting non-residents are in high paying jobs. Are these high-paying jobs also more likely to be remote? It's an important assumption. Job mixes may change. If the income picture shifts to one where more jobs are available in remote-work friendly contexts (or not), this could shift the estimation. By tracking the jobs that are available or the job openings that are remote (such as through BLS' [Job Openings and Labor Turnover Survey](#) or even perhaps using nowcasting methods), this could be tracked to improve estimation. In Detroit, the top five industries by private employment are: Health Care and Social Assistance, Manufacturing, Education Services, Accommodation and Food Services, and Professional and Technical Services. Some of these lend themselves better to remote work than others.

Resources for estimating

There are numerous potential sources for making the necessary assumptions to estimate remote work impact. These are described here, but many more are in the works.

- [Work from Home Research](#): WFH Research and the Survey of Working Arrangements and Attitudes (SWAA) were founded in May 2020 in response to the dramatic impact of COVID-19 on working arrangements. The SWAA is a monthly online survey run jointly by the University of Chicago, ITAM, MIT, and Stanford University. This websource utilizes the SWAA to estimate work from home (WFH) levels, employer plans, and employee preferences with regards to remote work. This includes estimates of current levels of WFH by industry. Since early 2021, the gap between workers' desired amount of WFH

¹ For the 3rd group of workers, those that live in the city but work outside it, reporting can pose more of an issue. Income tax filing for those that work for an employer outside of the City would require either voluntary reporting on behalf of the employee (required by law but not always in practice) or on behalf of the employer. This requires a level of coordination that is not often feasible.

(between 2 and 3 days) and employer plans (just over 2 days) has continued to shrink, with employer plans rising to meet the relatively stable employee expectations.

- [Upwork Future Workforce Report](#): The report utilizes a representative survey of 1,000 U.S. hiring managers to detect early signs of future trends in business. While their 2022 report does not provide a new look at remote work, the 2021 report indicates that the share of remote workers who will be fully remote will grow in the next 5 years. Pre-pandemic, businesses expected that in five years 38% of their remote workforce would be fully remote, while today they expect 58% to be fully remote in five years.
- [National Bureau of Economic Research \(NBER\) working paper 26948](#): How Many Jobs Can Be Done at Home?: This working paper finds that 37 percent of jobs in the U.S. can be done completely remote (though with significant variation across location and industry). The authors also find that these jobs typically pay more, accounting for 46 percent of all U.S. wages.
- Federal Reserve White Papers: In general, Federal Reserve reports are a good source of employment trend information. In [this report](#) from the Federal Reserve Bank of St. Louis, Gascon and Ebsim (2020) discuss types of workers likely to engage in remote work based on occupation and on income.
 - Federal Reserve Bank of Chicago: [Report on Detroit revenue Structure \(2021\)](#)
- [U.S. Census Bureau](#): The American Community Survey provides estimates of remote work for geographic areas with populations over 65,000. The 2021 ACS 1-year estimates show that between 2019 and 2021, the number of people primarily working from home tripled from 5.7% (roughly 9 million people) to 17.9% (27.6 million people).

The Detroit Case

The following estimates are based on assumptions from cited literature and judgment calls based on historic data and knowledge of Detroit employment mix and the research included above. The numbers cited below are in the ballpark of those Detroit has used for their estimation, though some specific metrics are excluded. Publicly available summaries on Detroit's Economic Outlook are available in [a report](#) conducted annually via the City of Detroit University Economic Analysis Partnership, a joint effort between the University of Michigan's Research Seminar in Quantitative Economics (RSQE), Wayne State's Department of Economics, and the Center. Additional information, now including remote work loss estimates, is presented at Detroit's annual [Revenue Estimating Conference](#).

In Detroit, the Fiscal Year begins on July 1st and ends on June 30th of the following year. The City recently switched to a refund accrual method. Under the refund accrual method, income is reported in the tax year it is earned, regardless of when payment is received. The same goes for potential refund liability, emphasizing the importance of reliable estimates. Residents are taxed

at 2.4% of earned income, and non-residents are taxed at 1.2%. For simplicity of estimation, employment concentrations are assumed to be equal for all employment groups.

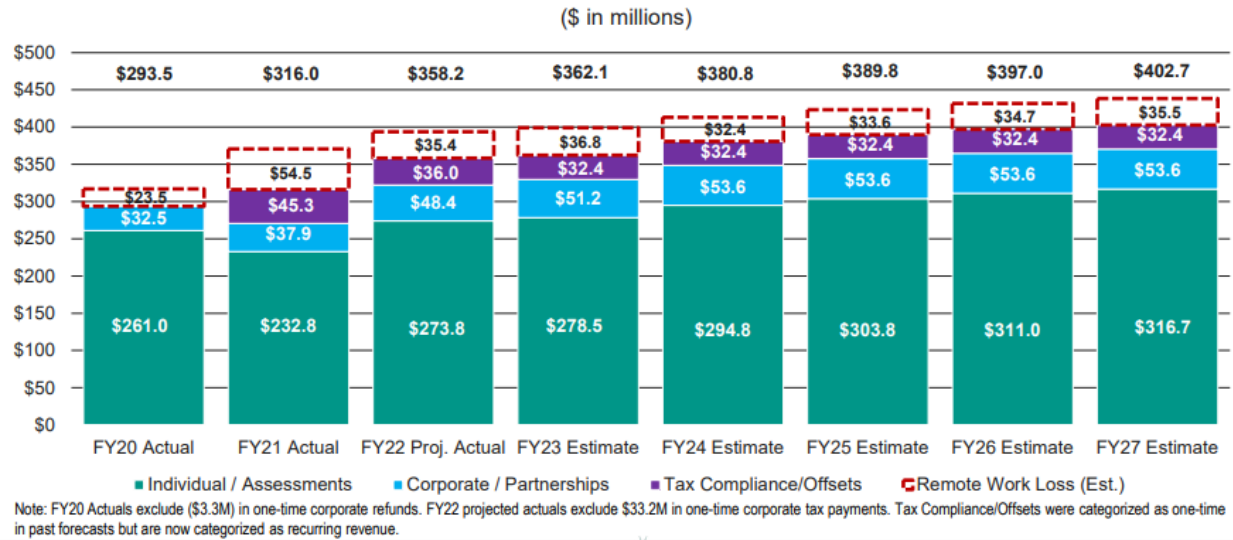
About half of Detroit's income tax withholding comes from non-resident commuters, the portion of the individual income tax that remote work applies to. This is largely due to higher wages among commuter positions. Using research estimating the proportion of occupations that allow remote work for regions like Detroit (Dingel and Neiman, 2021), the City assumed that around 40% of Metro Detroit employment was remote work eligible by occupations (Dingel and Neiman, 2021). The City further assumed based on historical data and trends that WFH eligible positions tend to have a higher pay range (Gascon and Ebsim, 2020; Dingel and Neiman, 2021). This means that WFH-eligible occupations could translate to up to 60% of withholding total.

If we assume an average of 3 days WFH a week from this group (the commuter half of the 60% eligible), this would translate to a remote work loss estimate of approximately 18% of individual income tax withholding. Of course, if we attributed a greater percentage of WFH jobs to the commuter class (for instance, 80% of the commuter group could be WFH eligible relative to only 40% of the non-commuter group), this number could be significantly larger (24%). Remote work mixes will vary by locality.

Similarly, should the average number of days worked remotely shift, estimates could change. In 2022 estimates, Detroit took a conservative approach, assuming that remote work would decrease but stabilize around 2 days a week. Based on recent research mentioned above, somewhere between 2 and 3 days a week WFH seems most reasonable. This creates a potential remote work loss estimate between 12 and 18 percent.

A remote work loss of this level is significant, especially if remote work levels are expected to increase rather than reduce in future. The entirety of these estimates are not automatically lost, however. The amount refunded depends on that second challenge: estimating refund behavior. These assumptions influence remote work loss estimates, as seen in Figure 2 below. In Fiscal Year 2021, remote work loss estimates were around 20% (in addition to regular refund activity). Fiscal Year 2022 projections put this number closer to 11.5%, leading analysts in September 2022 to reduce estimated remote work loss to around 10% going forward. This estimate could mean potentially more than doubling Detroit's average income tax refund rate (usually under 10% in years past).

Figure 2: Recurring Income Tax with Remote Work Loss in Detroit, September 2022 Revenue Estimating Conference



(OCFO– Office of Budget, 2022)

To recap, a reliable estimate of remote work loss will require several steps:

1. Making an estimate of resident/non-resident mix and proportion of income tax revenues attributable to the commuter class
2. Making an estimate of the proportion of non-resident income that is remote work eligible
3. An assumption about the number of days (on average) that these workers WFH

Whether refund levels will remain lower than potential total remote work loss depends on whether eligible workers file and claim the refund. The City believes there is still a good deal of underreporting of remote work. A large source of uncertainty lies in whether an employer automatically withholds the tax with assumption of no remote work vs adjusting this prior to withholding. Detroit's [tax withholding schedule](#) requires that nonresidents fill out an additional form to allocate the number of days worked within and without the City. If the City allocation is less than 100 percent, a letter certifying the allocation is required from the employer (unless otherwise already verified). Low refund levels indicate that many residents may not be doing this for the prior tax year. Nonetheless, taxpayers have up to 3 years to file an amended return to claim the refund, adding to the level of uncertainty present in estimating Detroit's potential liability to remote work loss refunds.

Taking all of this information together, it seems likely that remote work refund levels in the City of Detroit will increase in the next year or so as employers adjust withholding to include remote work or as employees claim their refunds. Under the aforementioned assumptions, we estimate that potential remote work loss will level out in subsequent years somewhere in the 12-18% range rather than bottoming out at 10%. The Work from Home Research Survey of Working Arrangements and Attitudes continues to show stable levels of remote work around 20%, and other research suggests this is unlikely to change much as workers continue to prefer and push for remote work arrangements. These results and others like it further underscore the necessity of cities to think about remote work and how it may impact revenues. Each individual cities' tax

structure, remote work eligibility and mix, future trends locally, and refund behavior are all variables that are important to consider going forward.

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