Automating data entry in tax preparation

Karena Vongampai

Case study from my time at Intuit TurboTax

As a tax filer, I am trying to...

Prepare my tax return

A major step in preparing a tax return is taking all the forms you receive from January to March and using them to determine your tax liability and e-file your tax return.

01 Minimize the likelihood that I inaccurately enter my financial information

02 Minimize the time it takes to enter my financial information

03 Minimize my anxiety and stress when preparing my tax return

My objective

As the lead product designer,

Introduced a new method to automate data entry and designed reusable layouts to expand automation to the top 10 tax forms

2 months

Timeframe

Product, Engineering, Content Design

Team

01
Creating a plan

Why was document import usage stagnant?

30% of all tax forms were automatically entered using import from financial institutions and W-2 employers. Our goal was to increase this to 70%.

To do this we needed to understand why, and align on the biggest problems. I pitched the idea of running an in product survey to understand the biggest reasons why people weren't using import.
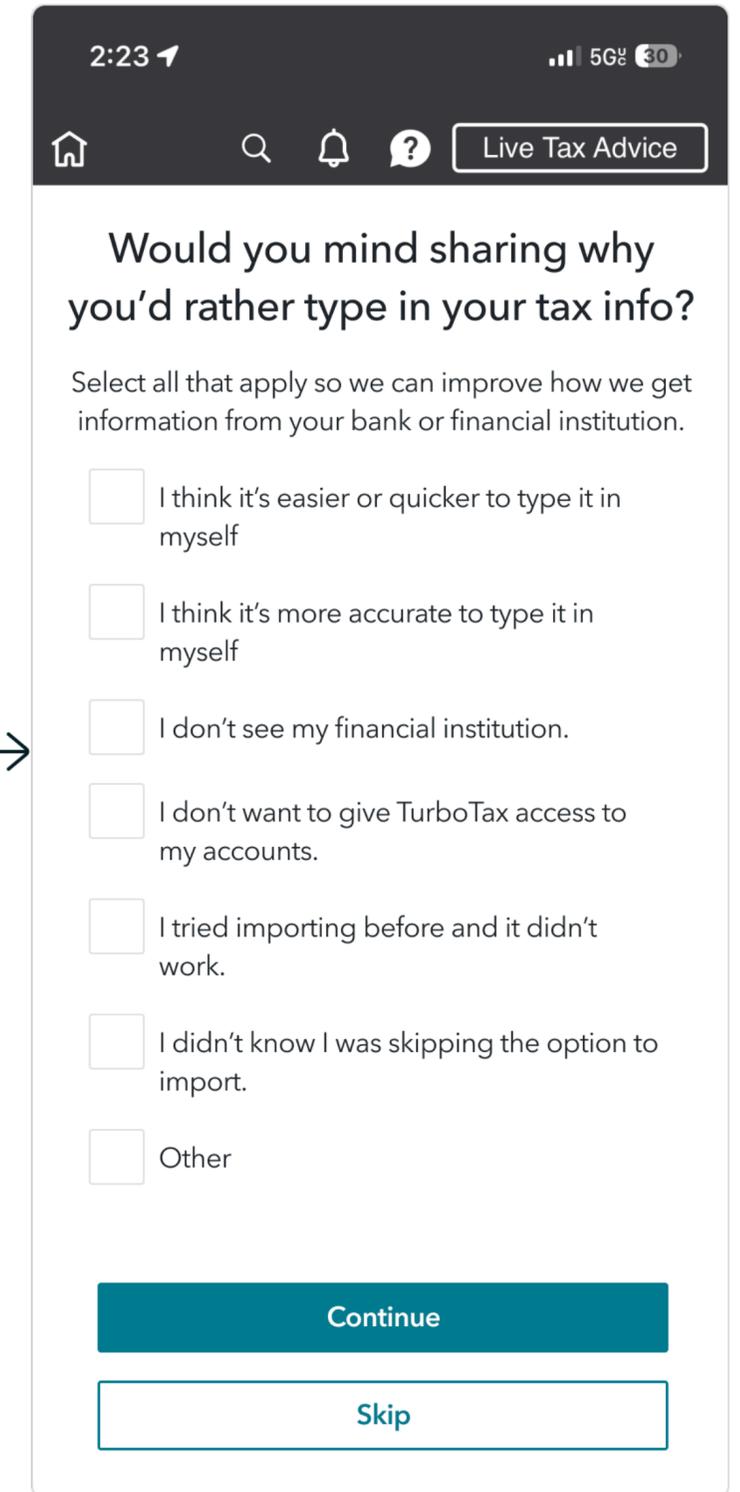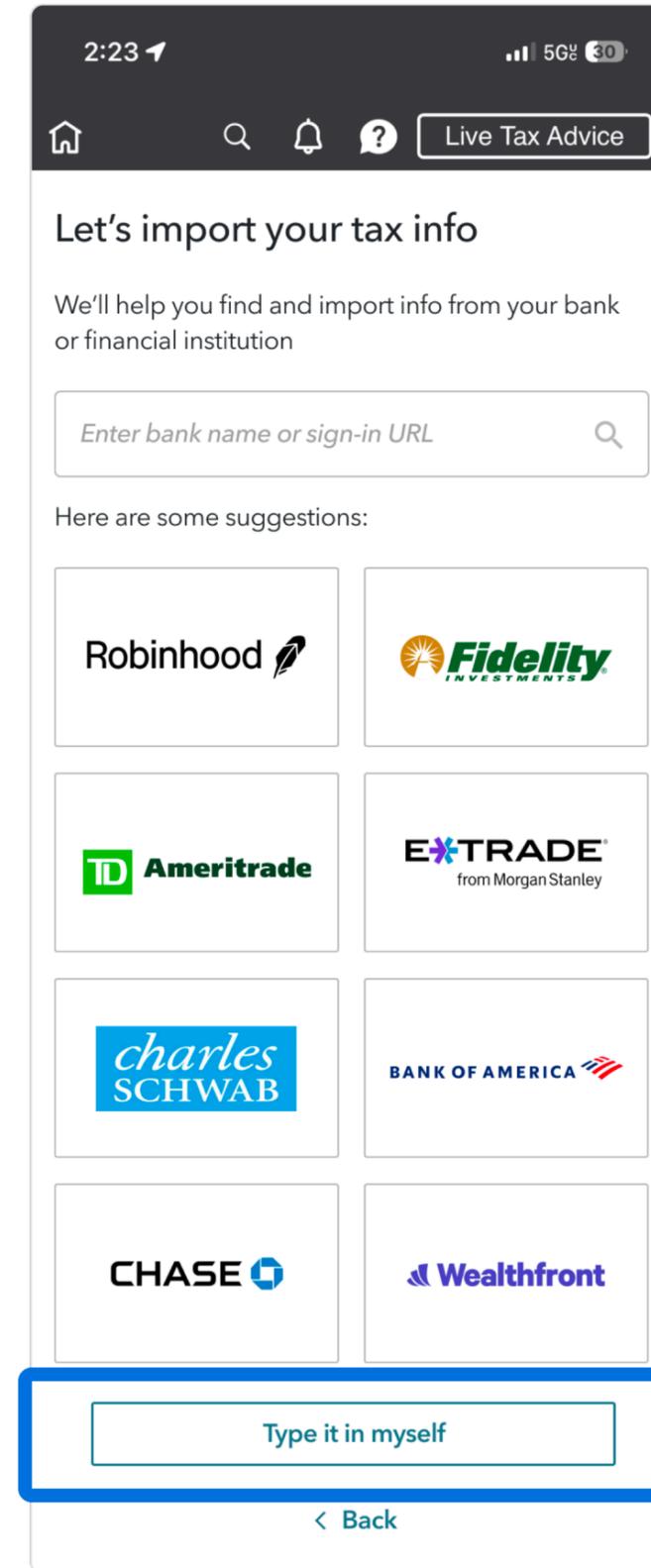
Importing tax docs for easier data entry wasn't a one size fits all solution

Top survey responses

01 "I tried importing before and it didn't work" ○——→ When users try import, but it fails, it breaks their trust

02 "I don't see my financial institution" ○——→ Users don't immediately see their financial institution recommended, or cannot find it using search

03 "I don't want to give TurboTax access to my accounts" ○——→ Users have privacy concerns around connecting their financial accounts with TurboTax

The vision for easier data entry

To meet user and business goals, we'd need various auto-entry methods.
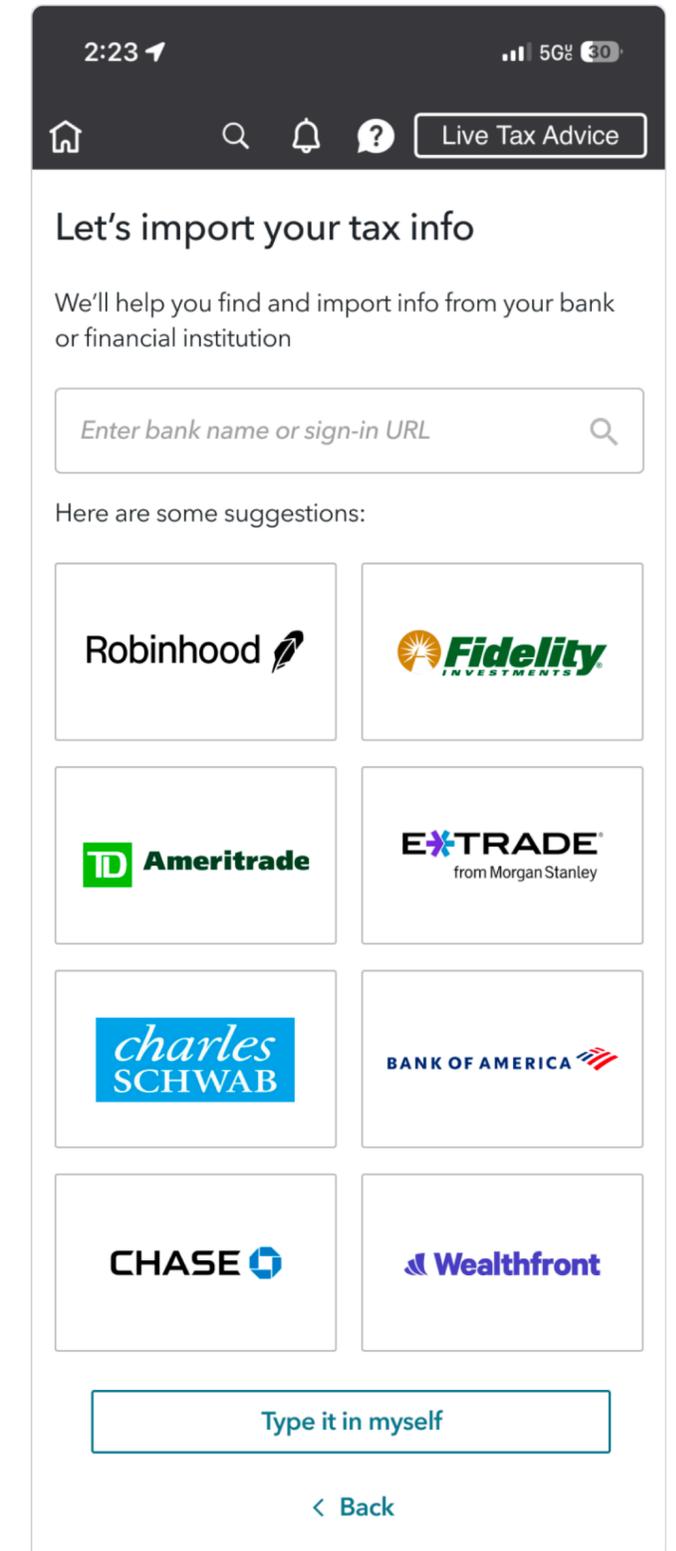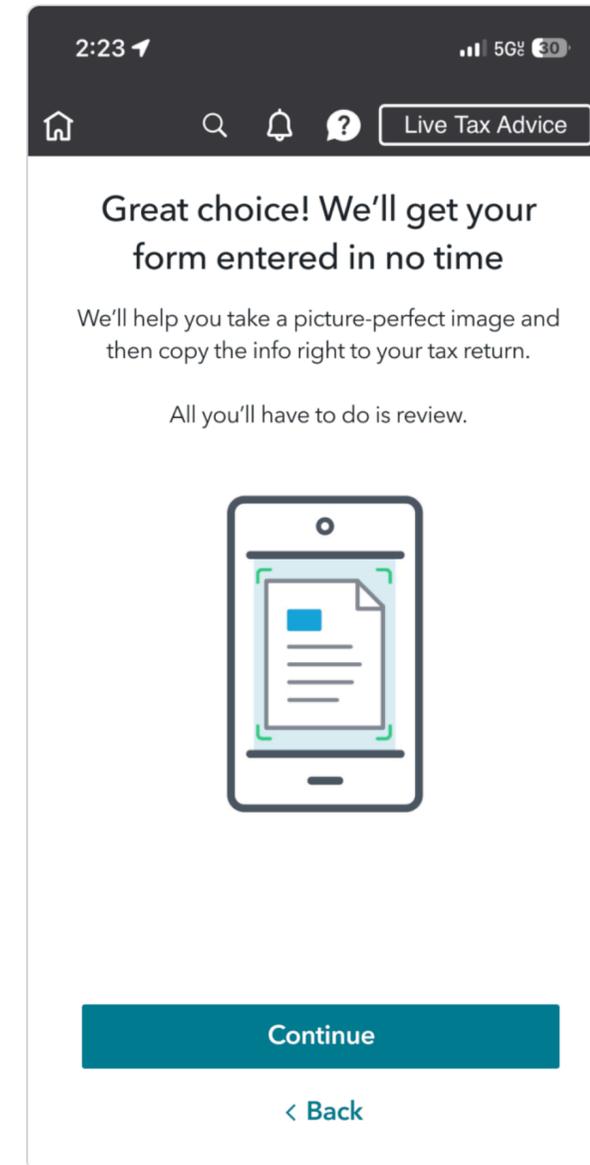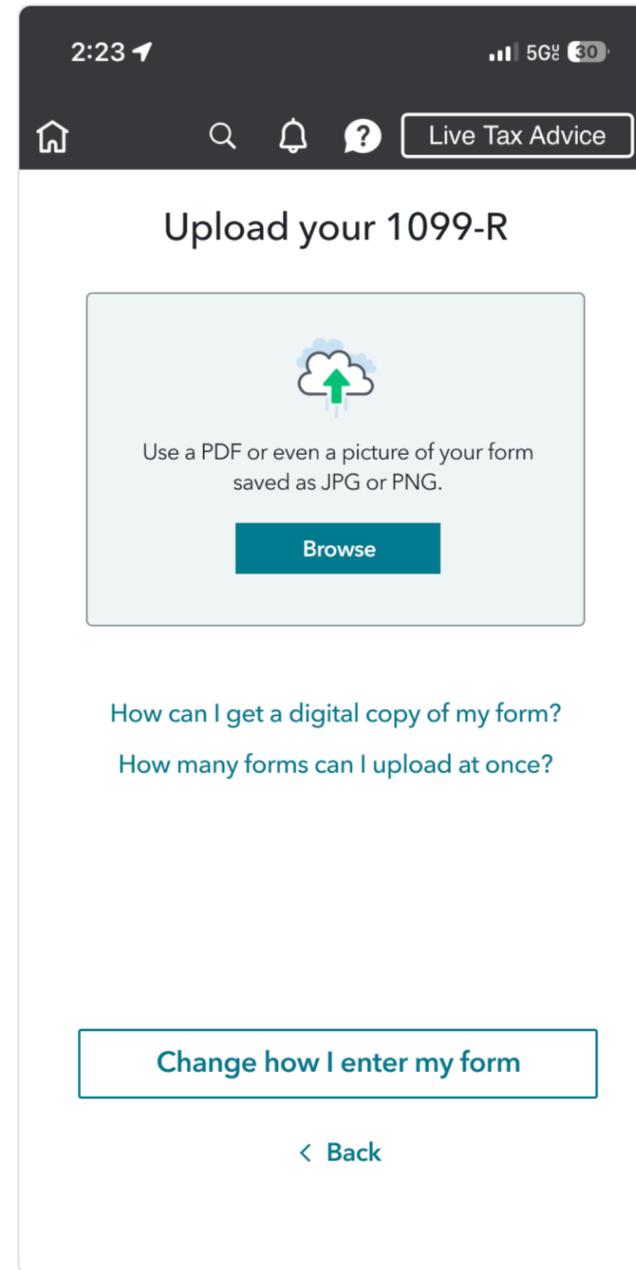
Getting here wasn't a straight forward path

My PM and I initially had different opinions on what vision would deliver the most customer benefit upfront. Reaching alignment took trial and error, debates, discussions, and getting outside opinions.

After debating, I rallied behind my PM's vision, but we were faced with technical constraints and an MVP with low engagement. Then, we pivoted back to my idea.
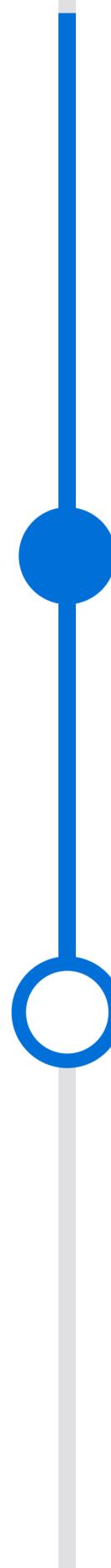
Collect all tax forms using automation at the start of tax prep

Collect tax forms within pre-existing workflows (like inside W-2, 1099-B, 1099-R)

Evaluate whether upload would increase the number of documents automatically entered

Form	Control		Treatment
1099-R	Existing experience, which offers import from financial institution		Offers upload, import from financial institution, and manual entry
1098-T	Existing experience, with no automated data entry options		Offers upload and manual entry

Evaluate whether upload would increase the number of documents automatically entered

Form	Control	Treatment
1099-R	Existing experience, which offers import from financial institution	Offers upload, import from financial institution, and manual entry
1098-T	Existing experience, with no automated data entry options	Offers upload and manual entry
W-2	Existing experience, with import from payroll provider	Offers upload, import from payroll provider, and manual entry

02
Design explorations

User flow diagrams

One of the very first things I did was to sketch out the different options for how we could offer upload.

Here's an image from a session I did with my product manager:
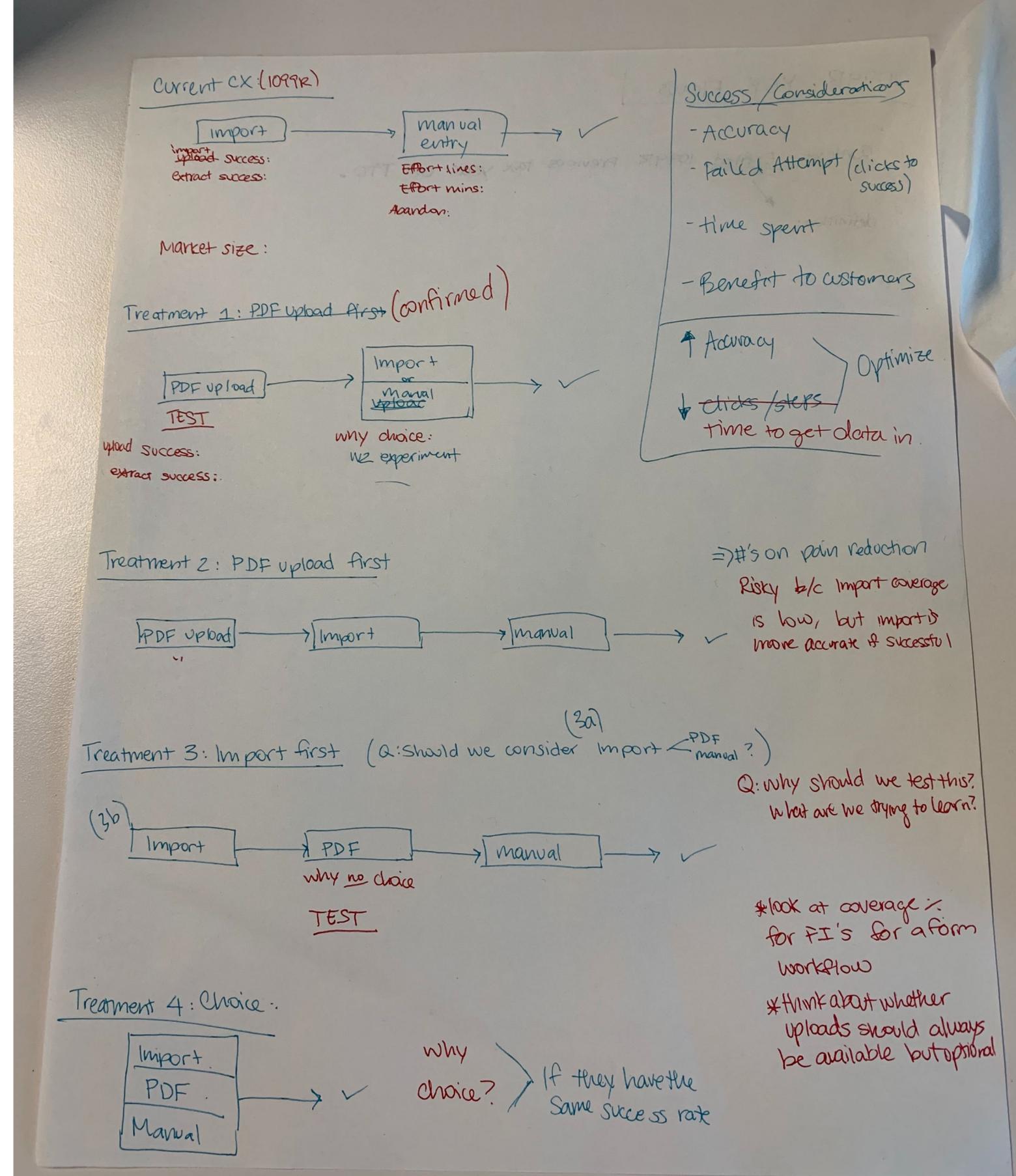
How should we offer upload in 1099-R?

User attempts imports from financial institution

Did import work?

Yes! Review data TurboTax extracted

No. User can choose betwen upload and manual entry

No. Guide user to try uploading before manual entry

User chooses upload, import, or manual entry

After the user tries our most accurate auto-entry method?

Import is the most accurate option (if it works), but has been unsuccessful in helping users in 1099-R.

Should users be ab choose their metho choice?

TurboTax is built on providi guidance to maximize effic This wasn't it.

How should we offer upload in 1099-R?

User chooses upload, import, or manual entry

Did their choice work?

Yes! Review data TurboTax extracted

No. User can choose from remaining options

No. We guide them toward a recommendation

Should users be able to choose their method of choice?

TurboTax is built on providing guidance to maximize efficiency. This wasn't it.

User attempts to upload their tax form

Do we recommend upload experience import?

Import coverage and usag Upload might result in mor less errors, and less time s

How should we offer upload in 1099-R?

User attempts to upload their tax form

Did upload work?

Yes! Review data TurboTax extracted

No. User can try again or choose from import or manual entry

No. We guide them to try import prior to manual entry

Do we recommend the upload experience over import?

Import coverage and usage was low. Upload might result in more success, less errors, and less time spent.

How should we offer upload in 1098-T?

User can choose between upload and manual entry

→

Did method of choice work?

Yes! Review data TurboTax extracted

No. User is prompted to try the method they didn't choose

User attempts to uploa their tax form

Should users be able to choose their method of choice?

We didn't pursue this for the same reasons we didn't in 1099-R

Do we recommen upload experienc manual entry?

Definitely! It should be f and more accurate.

How should we offer upload in 1098-T?

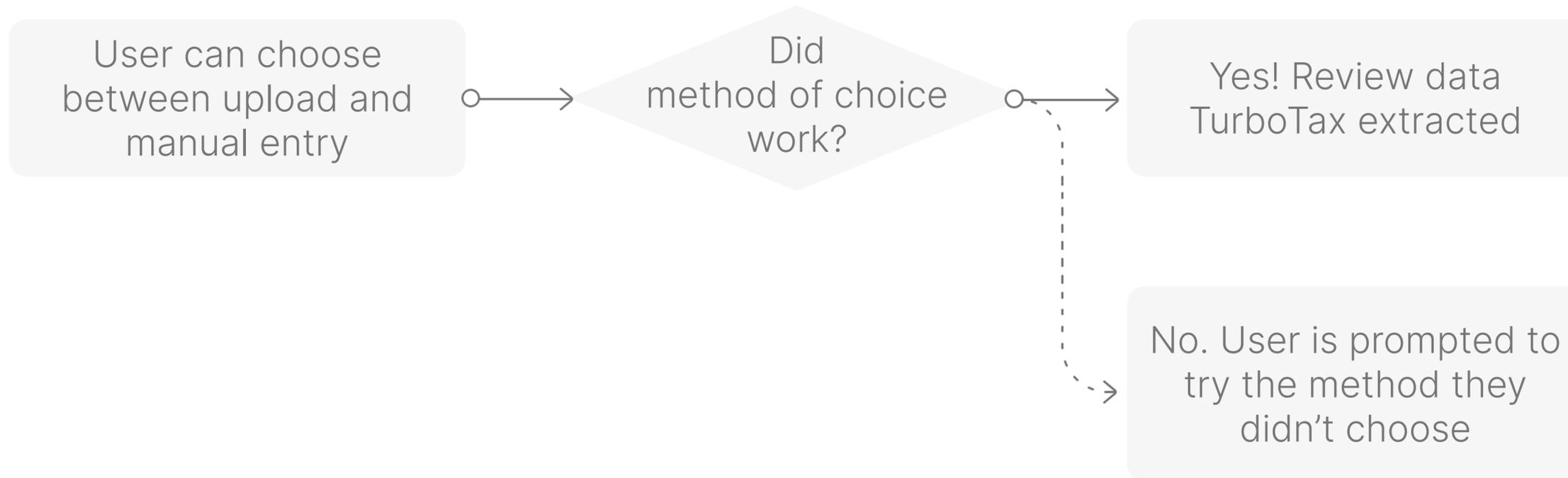| User attempts to upload their tax form	→	Did upload work?	→	Yes! Review data TurboTax extracted

No. User is prompted to try again or manually enter information
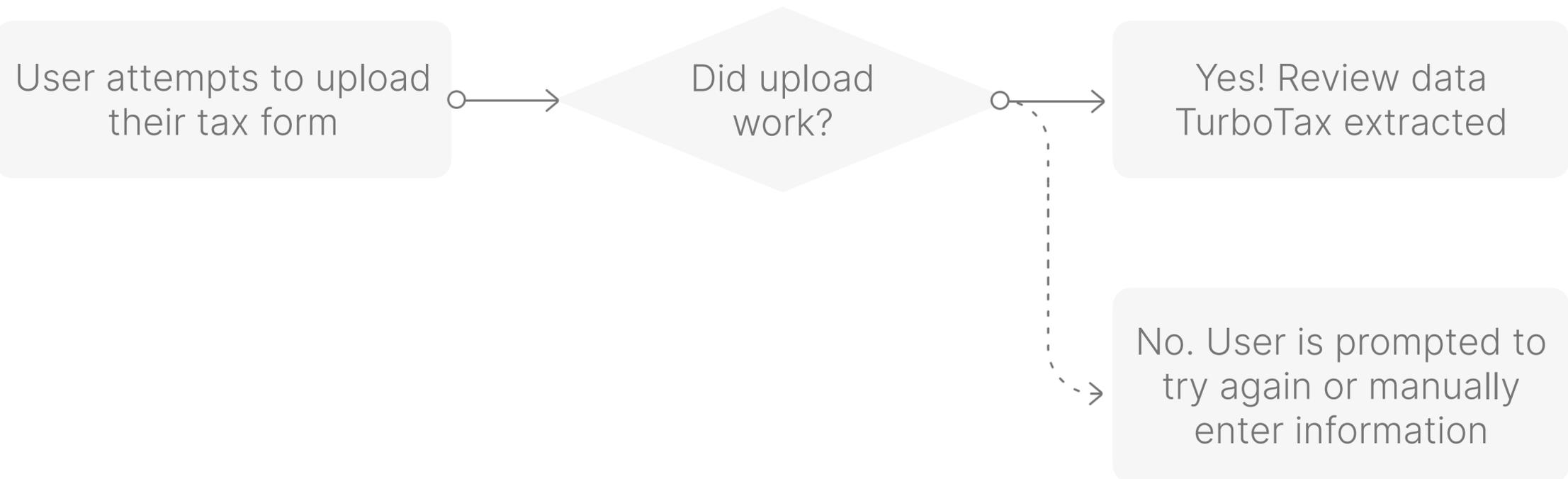
Do we recommend the upload experience over manual entry?

Definitely! It should be faster, easier, and more accurate.

Presenting choice

With the intention of re-using across all 10 tax forms

How do you want to enter your 1098-T?

We can save you time with these automated options.

Import

Upload

Type it in myself

Continue

< Back

How do you want to enter your 1099-R?

We can save you time with these automated options.

○ Import
○ Upload my PDF
○ Type it in myself

Continue

< Back
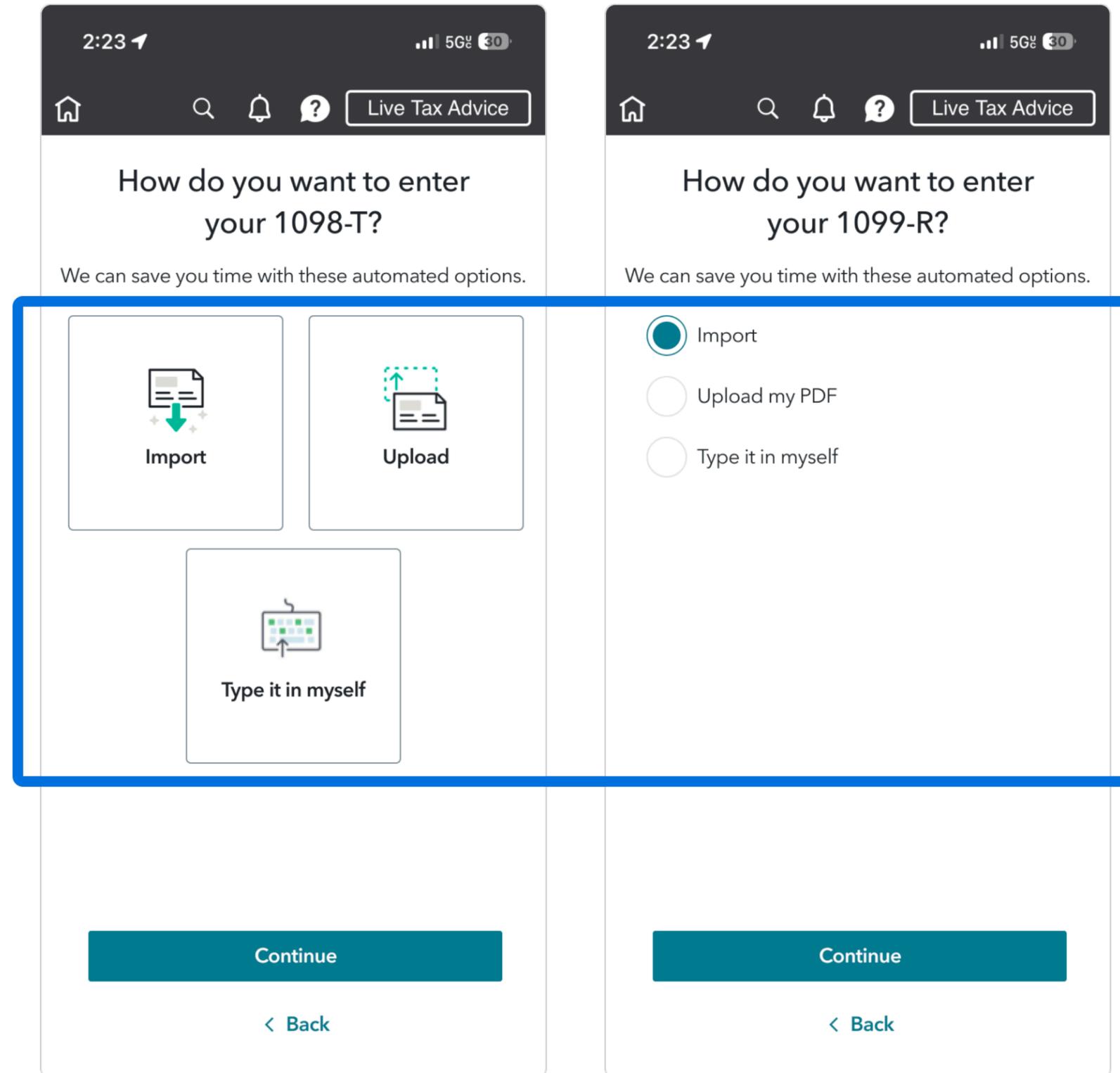
User testing showed that people didn't understand the difference between "Import" and "Upload"

Design explorations
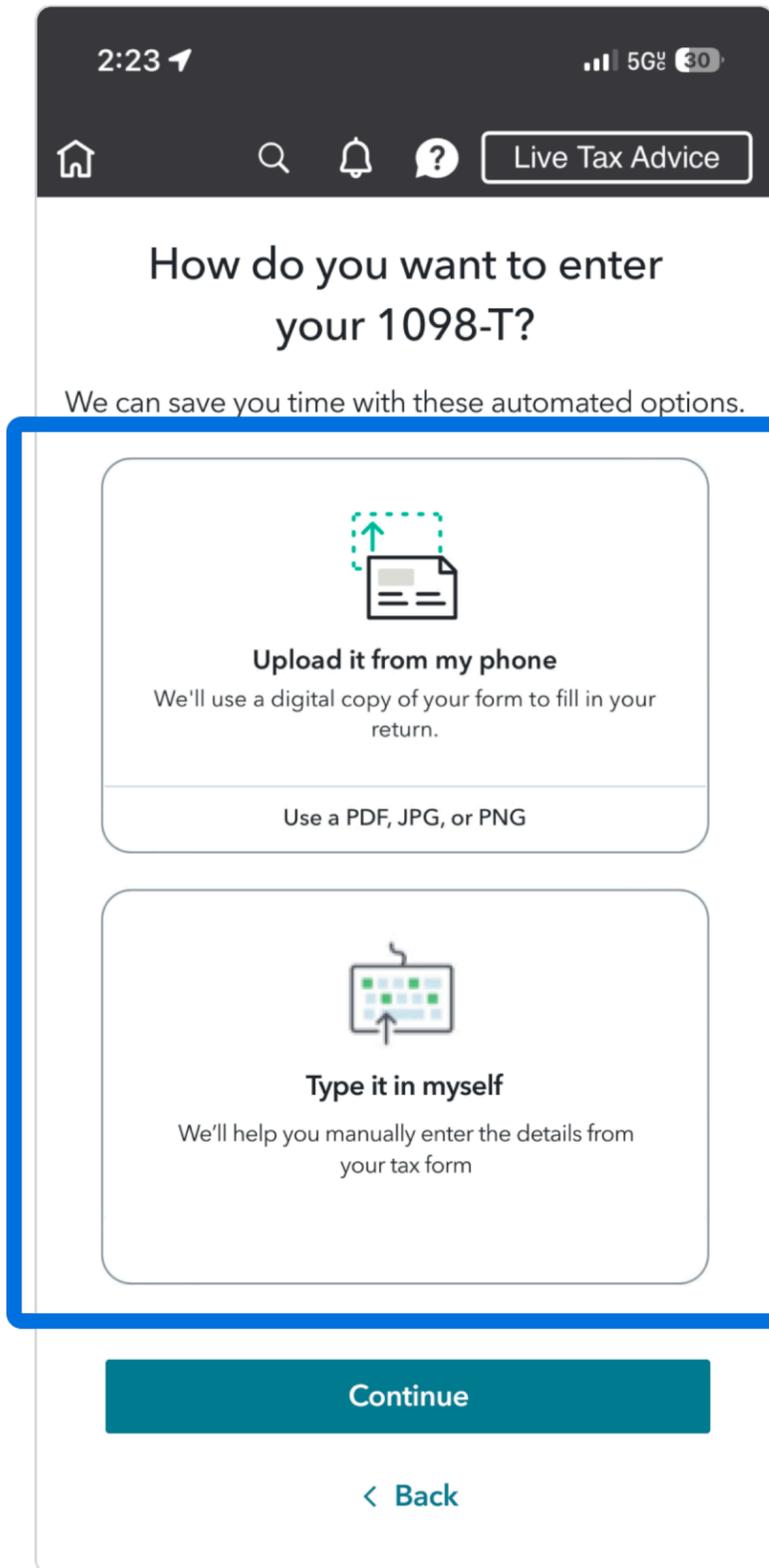
Automated options should have higher visual hierarchy, since they'll lead to a better expereince. Uploading and manual entry are not equally good options.

Visual weight is interpreted as our recommendation.

Design explorations

Screen 1

2:23

Live Tax Advice

Upload your 1099-R

Use a PDF or even a picture of your form
saved as JPG or PNG.

Browse

How can I get a digital copy of my form?

How many forms can I upload at once?

Change how I enter my form

‹ Back

Screen 2

2:23

Live Tax Advice

How do you want to enter
your 1099-R?

We can save you time with these automated options.

Upload it from my phone

We'll use a digital copy of your form to fill in your
return.

Use a PDF, JPG, or PNG

Bring it over from my bank

We'll import your info directly from your bank — all
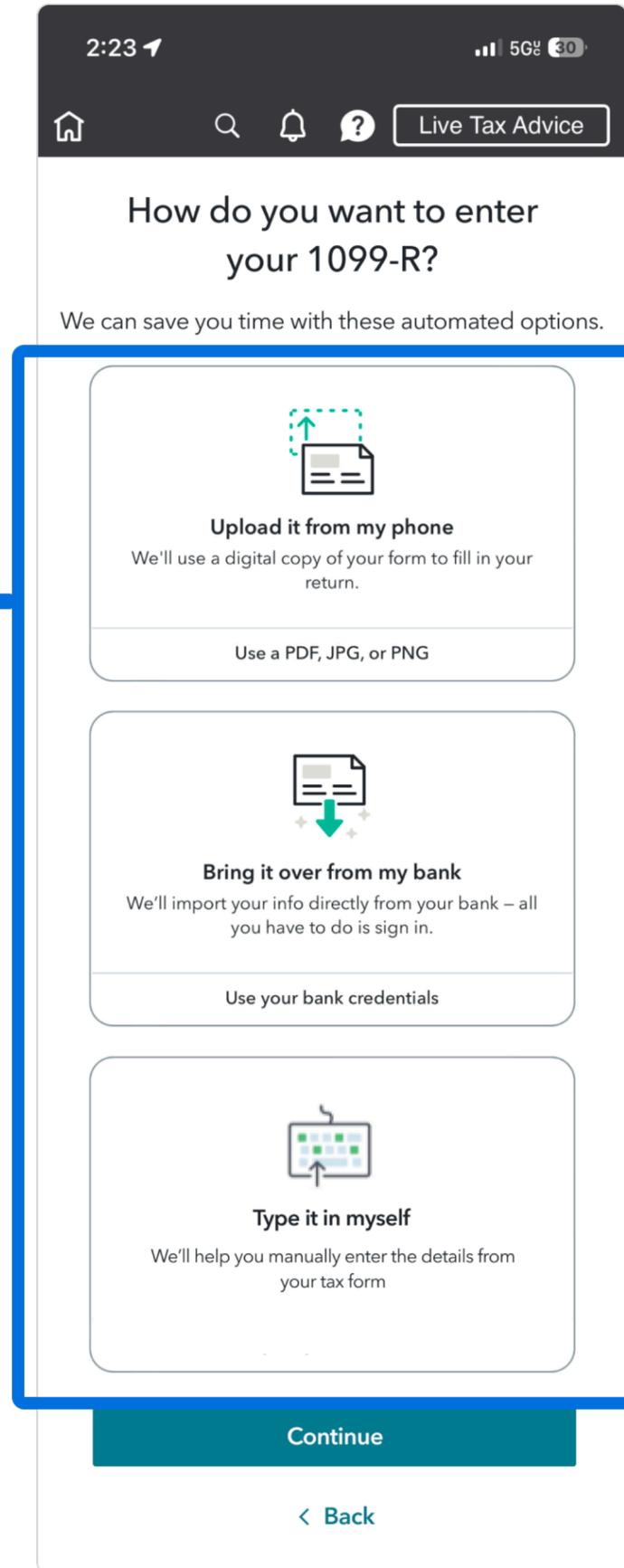you have to do is sign in.

Use your bank credentials

Continue

Type it in myself

‹ Back

Screen 3

2:23

Live Tax Advice

Upload your 1098-T

Use a PDF or even a picture of your form
saved as JPG or PNG.

Browse

How can I get a digital copy of my form?

How many forms can I upload at once?

Type it in myself

‹ Back

Tertiaty button for manual
entry option.
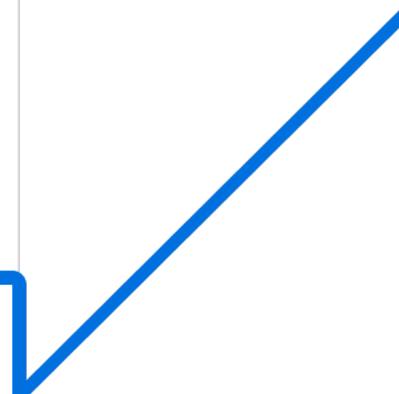
Reviewing extracted form info

With the intention of re-using across all 10 tax forms for import and upload review experiences

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2:23

🏠 🔍 🔔 ❓ [Live Tax Advice]

We got your 1099-R! Review your form and fill in any missing info

Distribution info

Box 1 - Gross distribution

$50,000

Box 2a - Taxable amount
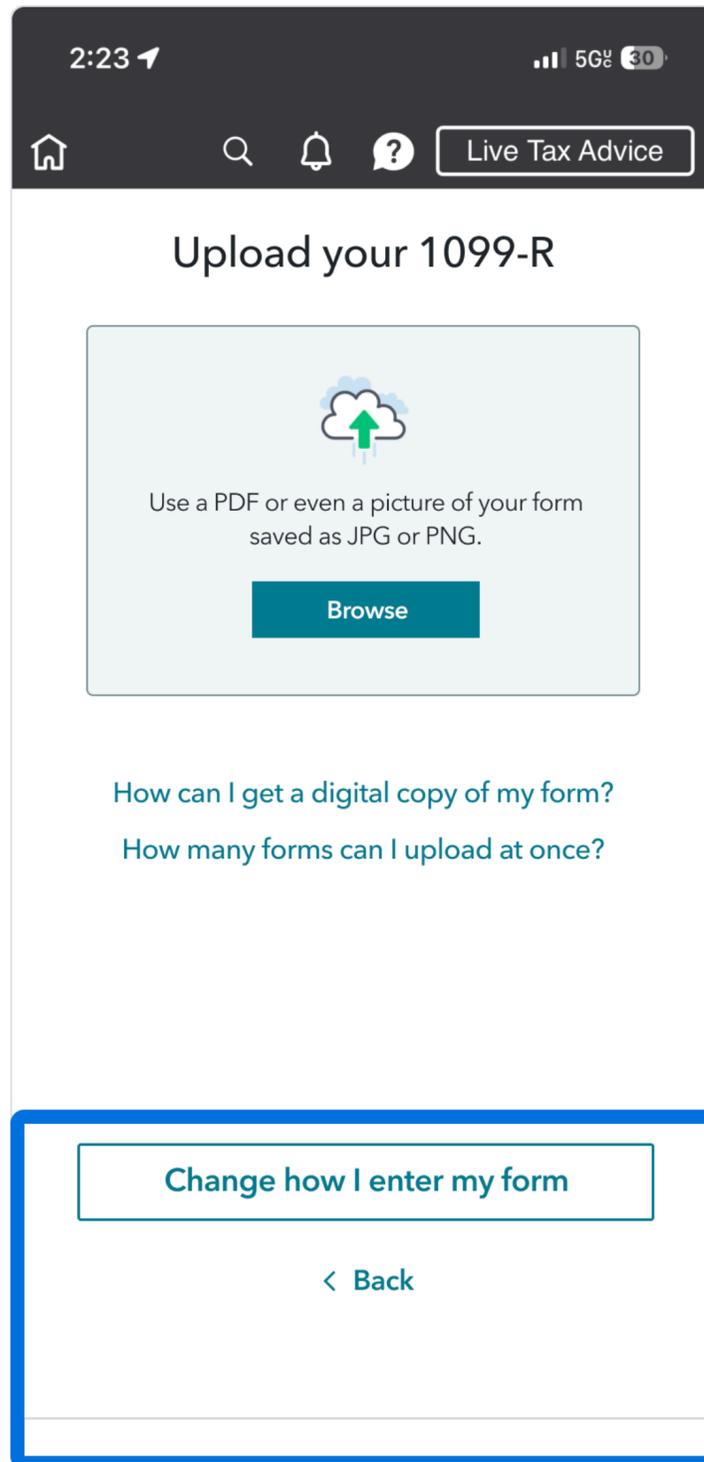
$50,000

Box 2a - Taxable amount

☐ Taxable amount checked

☐ Total distribution

Box 3 - Capital gain

$12,200

Box 4 - Federal income

$1,300

Box 5 - Employee contributions or insurance premiums

$400

Box 6 - Net unrealized

$0

2:23

🏠 🔍 🔔 ❓ [Live Tax Advice]

Got it! Now let's review your 1099-R info

Distribution info

Box 1 - Gross distribution

$50,000

Box 2a - Taxable amount

$50,000

Box 2a - Taxable amount
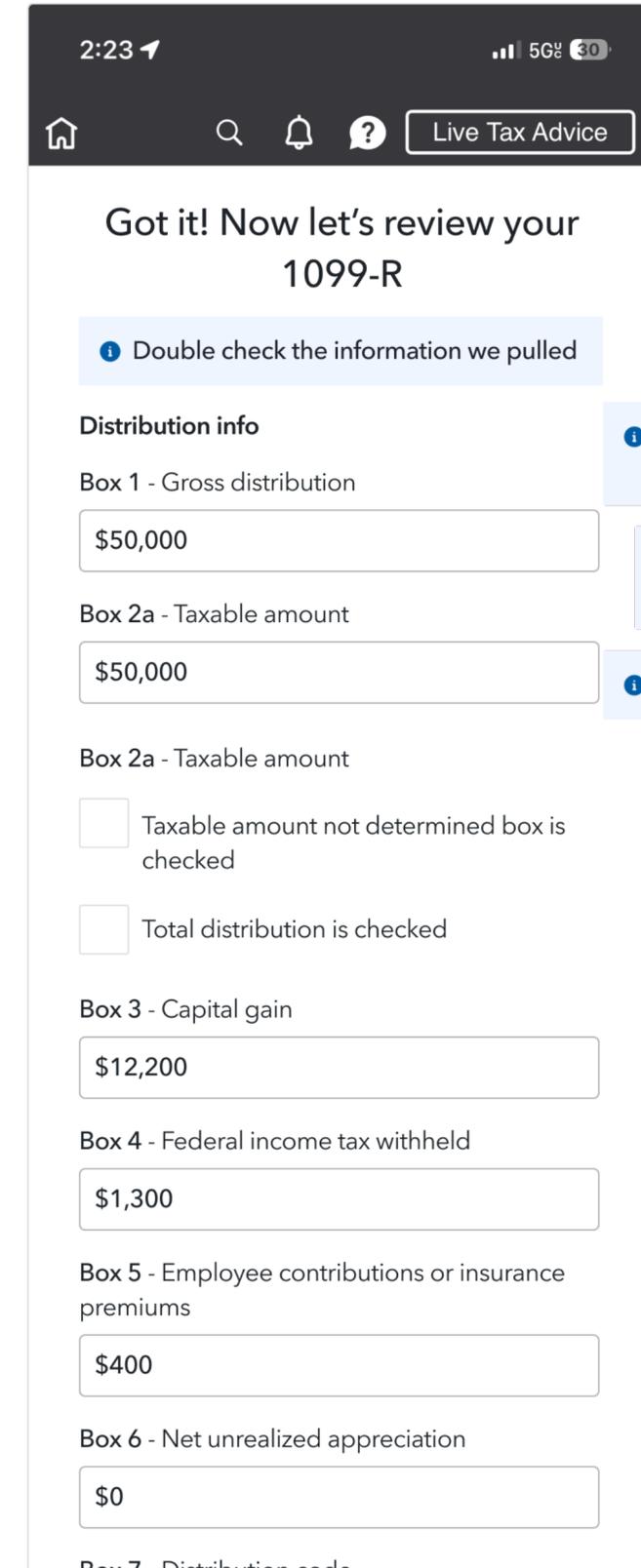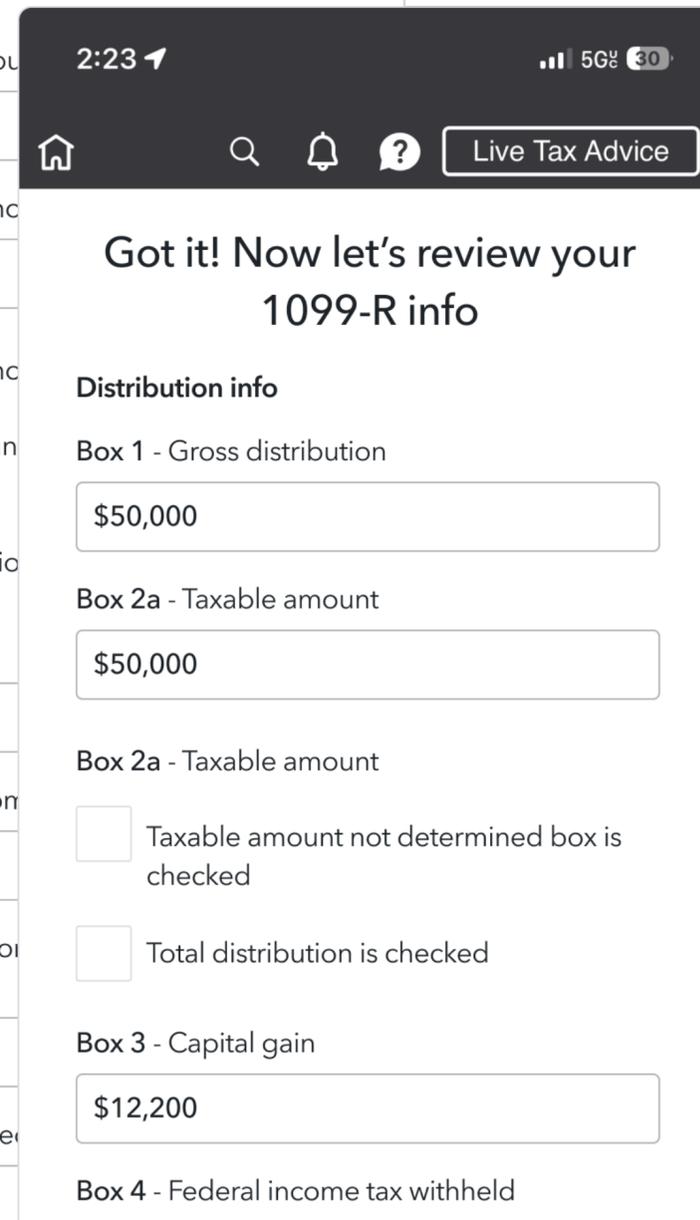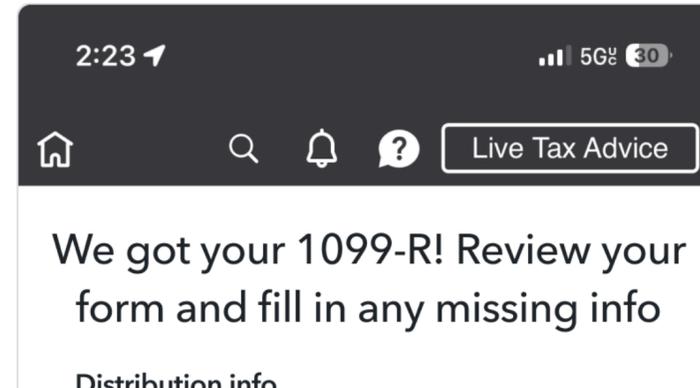
☐ Taxable amount not determined box is checked

☐ Total distribution is checked

Box 3 - Capital gain

$12,200

Box 4 - Federal income tax withheld

2:23

🏠 🔍 🔔 ❓ [Live Tax Advice]

Got it! Now let's review your 1099-R

ⓘ Double check the information we pulled

Distribution info

Box 1 - Gross distribution

$50,000

Box 2a - Taxable amount

$50,000

Box 2a - Taxable amount

☐ Taxable amount not determined box is checked

☐ Total distribution is checked

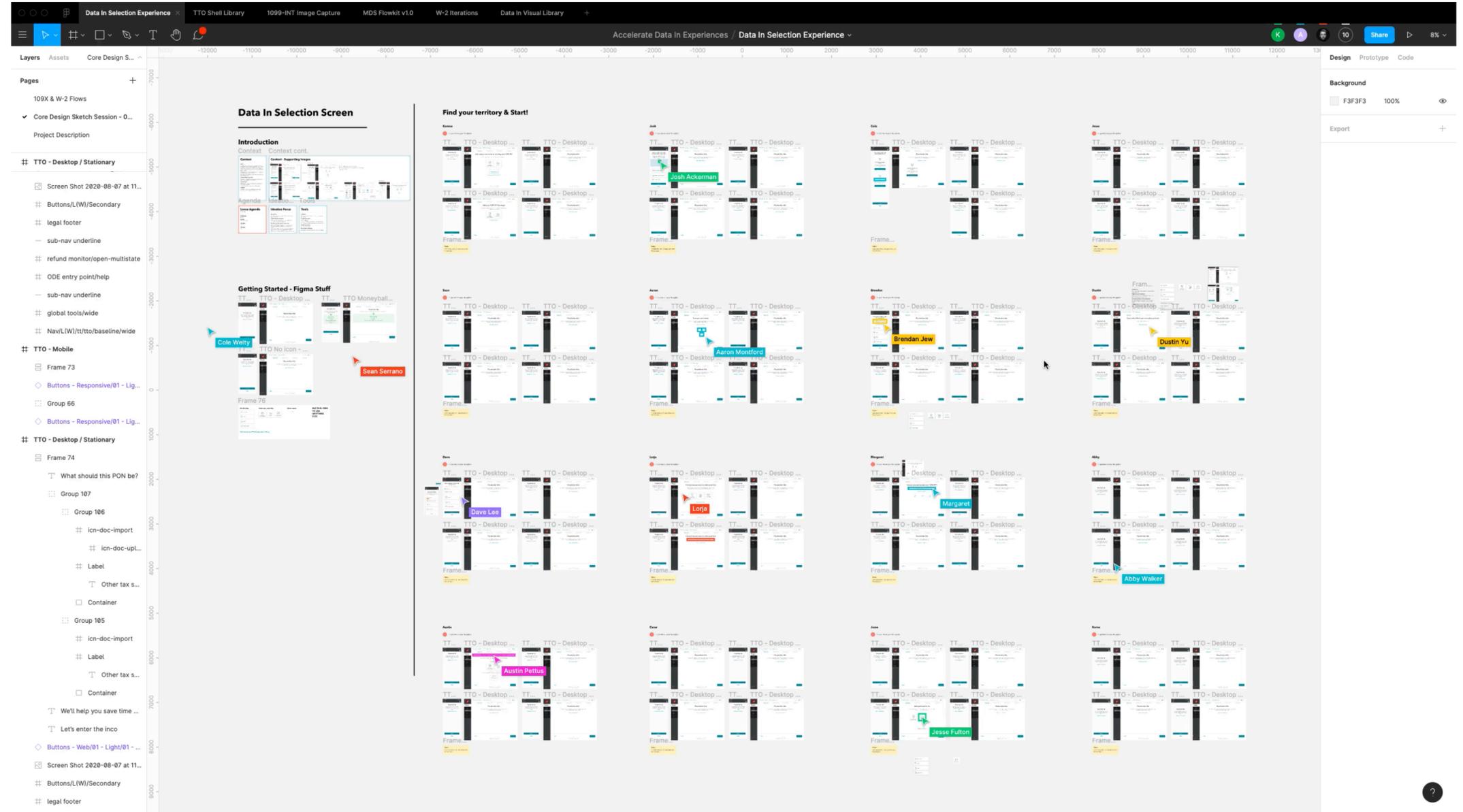**Box 3** - Capital gain

$12,200

Box 4 - Federal income tax withheld

$1,300

Box 5 - Employee contributions or insurance premiums

$400

Box 6 - Net unrealized appreciation

$0

ⓘ We pulled 100% of the info from your form and all you have to do is review

ⓘ We strongly suggest reviewing the information we pulled

ⓘ Make changes if any info is missing

Poor data extraction

With the intention of re-using across all 10 tax forms for import and upload review experiences

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We got your 1099-R! Review your form and fill in any missing info

Distribution info

Box 1 - Gross distribution

[$]

Box 2a - Taxable amount

[$]

Box 2a - Taxable amount

☐ Taxable amount not determined box is checked

☐ Total distribution is checked

Box 3 - Capital gain

[$12,200]

Box 4 - Federal income tax withheld

[$1,300]

Box 5 - Employee contributions or insurance premiums

[$400]

Box 6 - Net unrealized appreciation

[$0]

Box 7 - Distribution code

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We tried, but couldn't get all the info from your form

Please review and fill in any missing info

Distribution info

Box 1 - Gross distribution

[$]

⚠ Missing information

Box 2a - Taxable amount

[$]

⚠ Missing information

Box 2a - Taxable amount

☐ Taxable amount not determined box is checked

☐ Total distribution is checked

Box 3 - Capital gain

[$12,200]

Box 4 - Federal income tax withheld

[$1,300]

Box 5 - Employee contributions or insurance premiums

[$400]

Box 6 - Net unrealized appreciation

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We tried, but couldn't get all the info from your form

⚠ Fill in missing information from your form

Distribution info

Box 1 - Gross distribution

[$]

⚠ Needs info

Box 2a - Taxable amount

[$]

⚠ Needs info

Box 2a - Taxable amount

☐ Taxable amount not determined box is checked

☐ Total distribution is checked

Box 3 - Capital gain

[$12,200]

Box 4 - Federal income tax withheld

[$1,300]

Box 5 - Employee contributions or insurance premiums

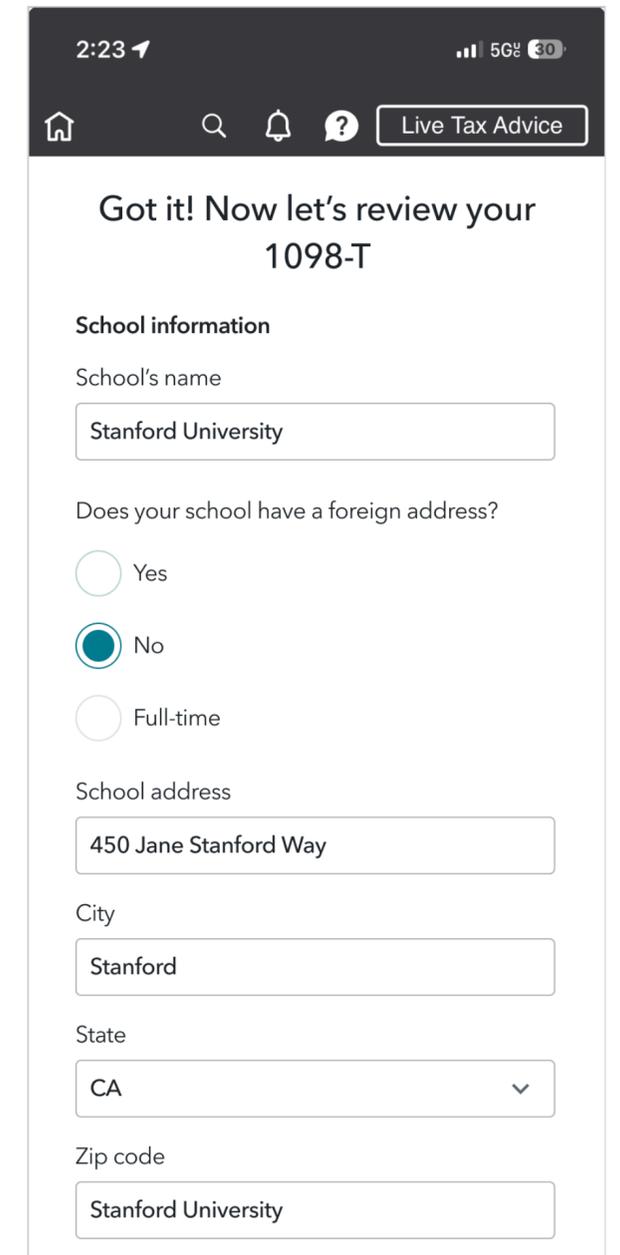[$400]

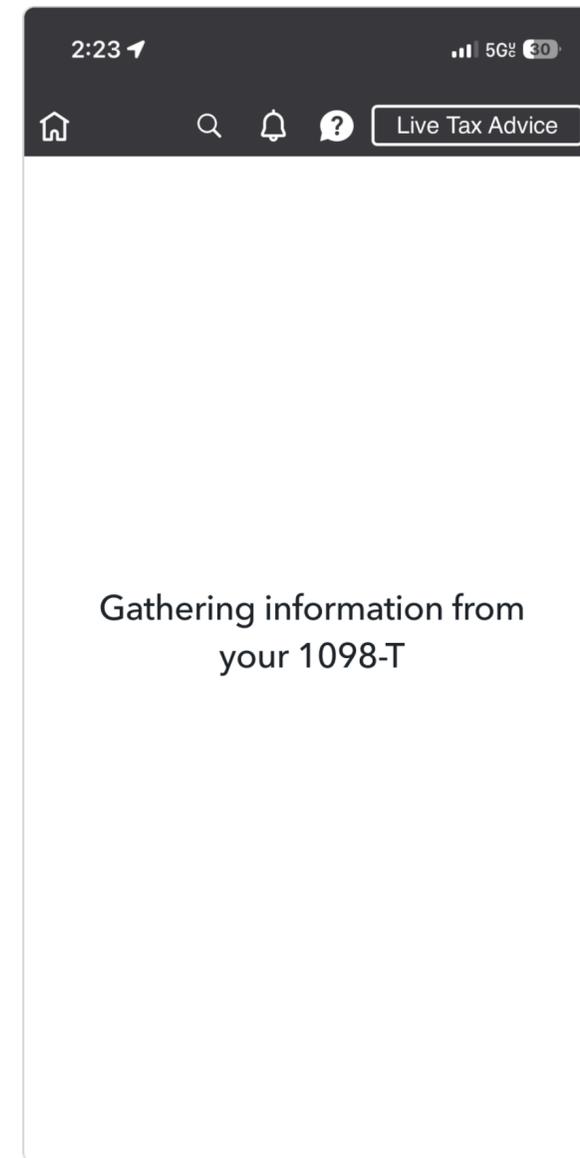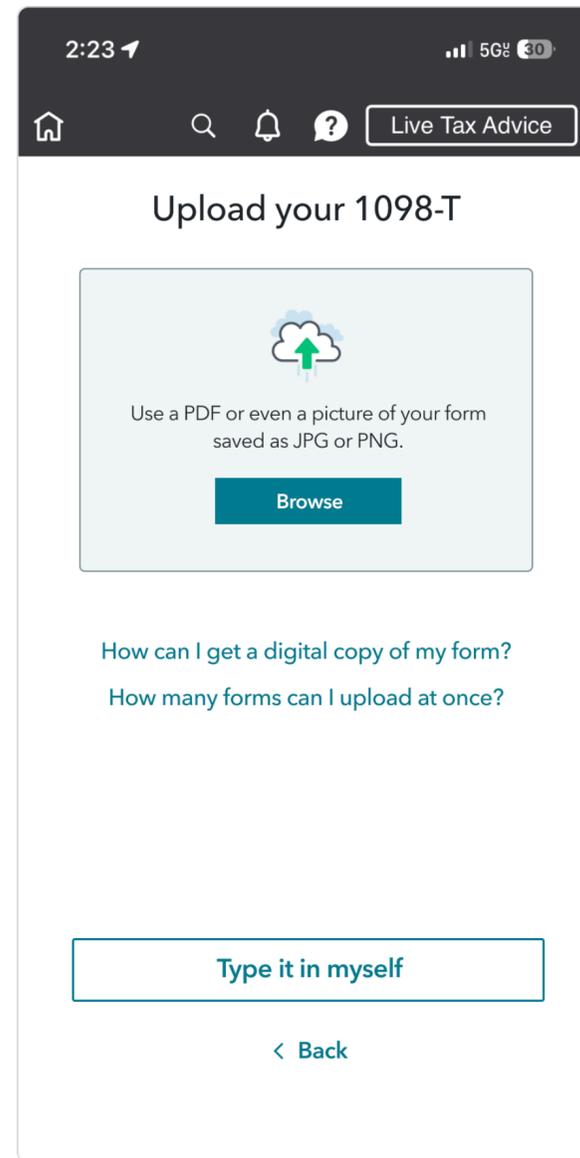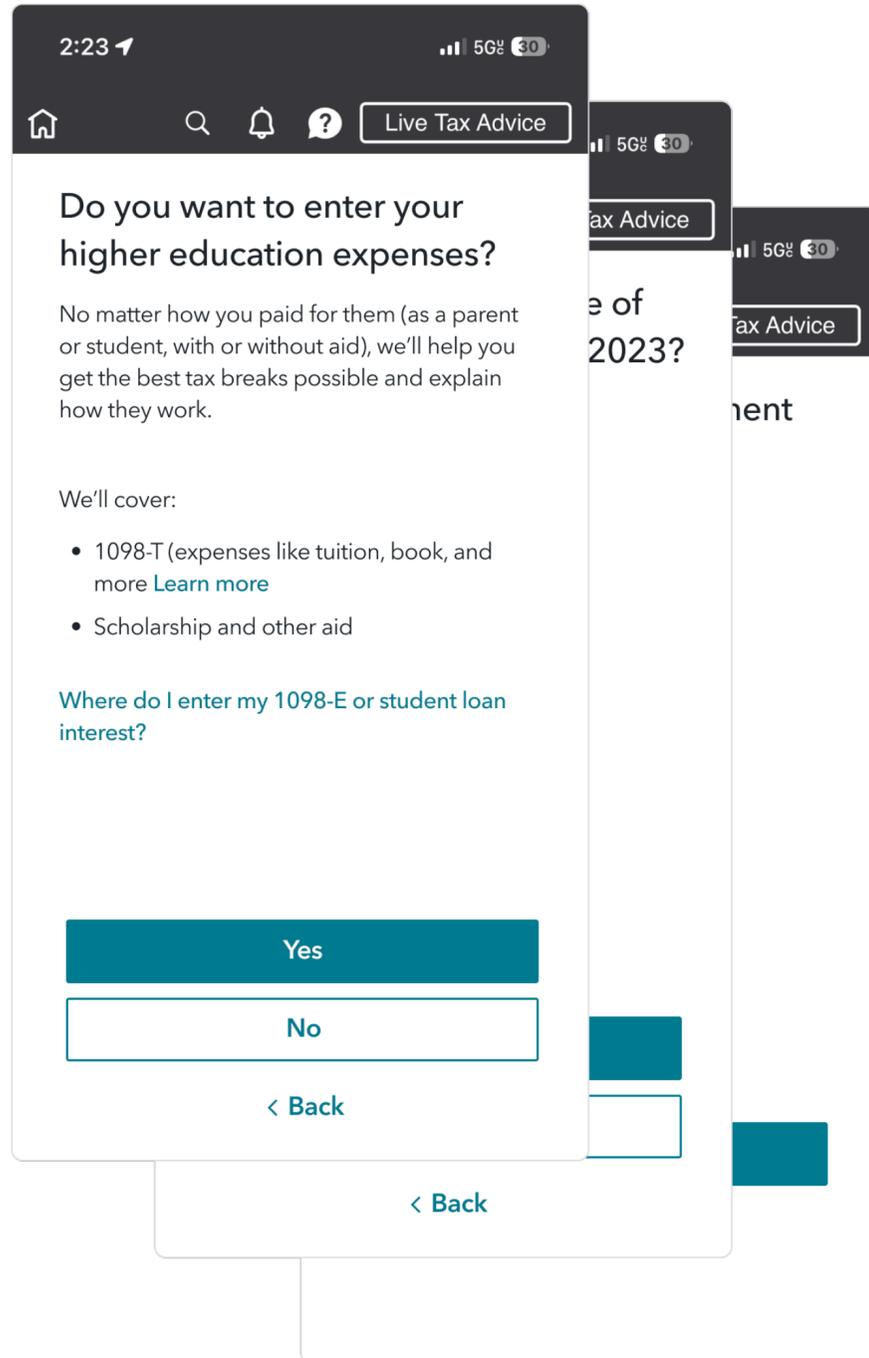**Box 6** - Net unrealized appreciation

[$0]

Get others involved

Generate ideas from different product designers, visual designers, content designers, and product managers.

03
A/B test treatments

1098-T treatment

2:23 📶 5G 30

🏠 🔍 🔔 ❓ Live Tax Advice

Do you want to enter your higher education expenses?

No matter how you paid for them (as a parent or student, with or without aid), we'll help you get the best tax breaks possible and explain how they work.

We'll cover:

- 1098-T (expenses like tuition, book, and more Learn more
- Scholarship and other aid

Where do I enter my 1098-E or student loan interest?

Yes

No

< Back

< Back

< Back

2:23 📶 5G 30

🏠 🔍 🔔 ❓ Live Tax Advice

Upload your 1098-T

Use a PDF or even a picture of your form saved as JPG or PNG.

Browse

How can I get a digital copy of my form?

How many forms can I upload at once?

Type it in myself

< Back

2:23 📶 5G 30

🏠 🔍 🔔 ❓ Live Tax Advice

Gathering information from your 1098-T

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🏠 🔍 🔔 ❓ Live Tax Advice

Got it! Now let's review your 1098-T

School information

School's name

Stanford University

Does your school have a foreign address?

○ Yes

● No

○ Full-time

School address

450 Jane Stanford Way

City

Stanford

State

CA ⌄

Zip code

Stanford University

1099-R treatment

▁▂▃ 5G 30

🏠 🔍 🔔 ❓ | Live Tax Advice |

Upload your 1099-R

☁️⬆️

Use a PDF or even a picture of your form saved as JPG or PNG.

Browse

How can I get a digital copy of my form?

How many forms can I upload at once?

Change how I enter my form

‹ Back

2:23 ✈ ▁▂▃ 5G 30

🏠 🔍 🔔 ❓ | Live Tax Advice |

Gathering information from your 1099-R

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Got it! Now let's review your 1099-R

Provider info

Who paid you? (Payer)

| Vanguard Retirement |

Payer name continued (optional)

| |

Address type

| U.S. address ⌄ |

Payer's address

| 100 Vanguard Boulevard |

City

| Malvern |

State

| PA ⌄ |

Payer's TIN

| 88-909378933 |

Continue

‹ Back

2:23 ✈ ▁▂▃ 5G 30

🏠 🔍 🔔 ❓ | Live Tax Advice |

Got it! Now let's review your 1099-R

Distribution info

Box 1 - Gross distribution

| $50,000 |

Box 2a - Taxable amount

| $50,000 |

Box 2a - Taxable amount

☐ Taxable amount not determined box is checked

☐ Total distribution is checked

Box 3 - Capital gain

| $12,200 |

Box 4 - Federal income tax withheld

| $1,300 |

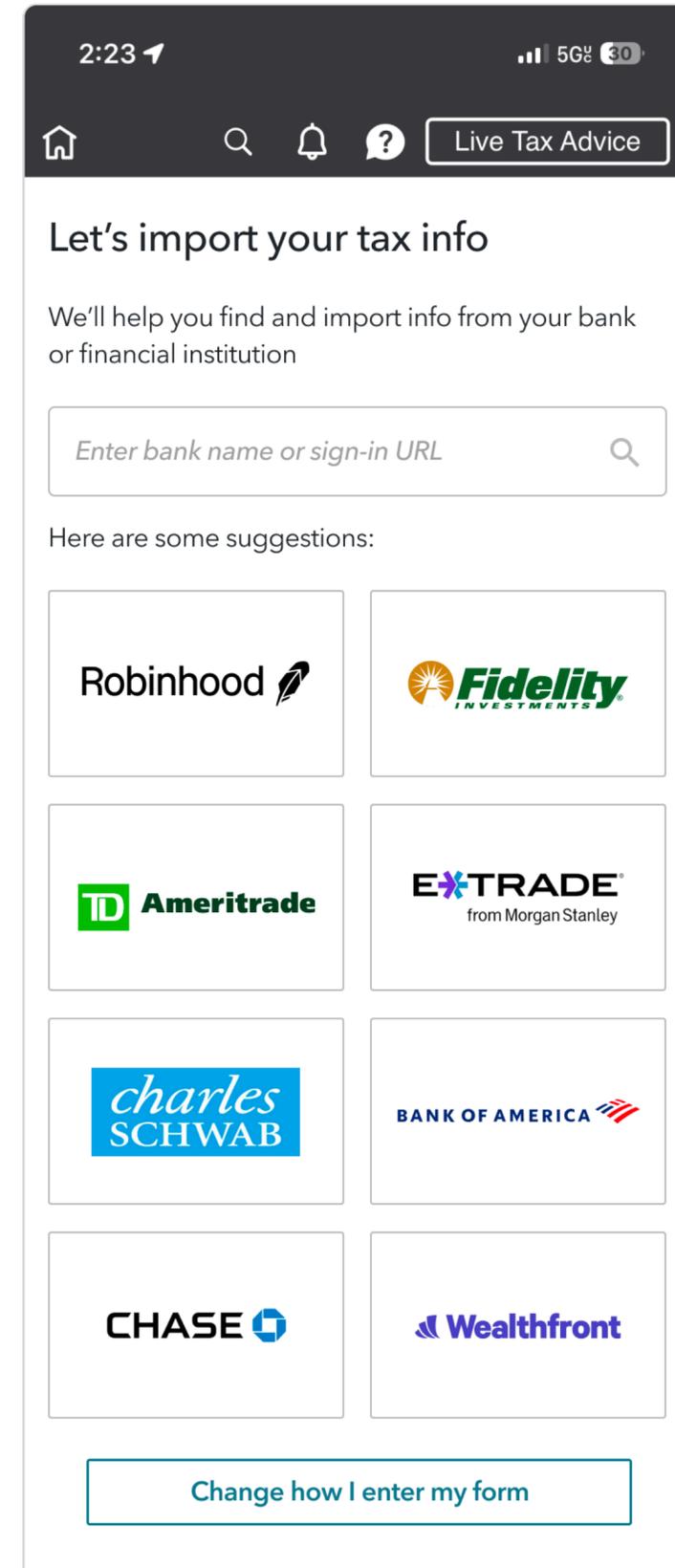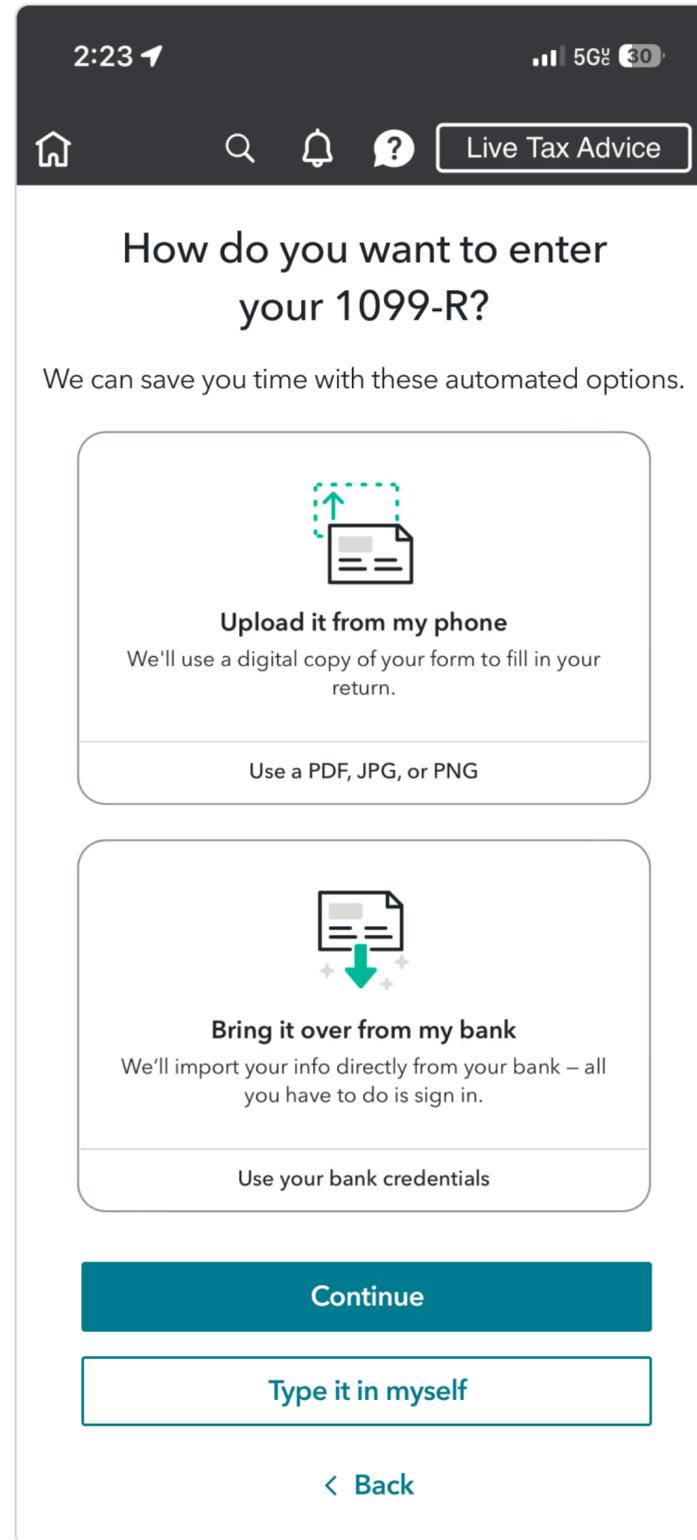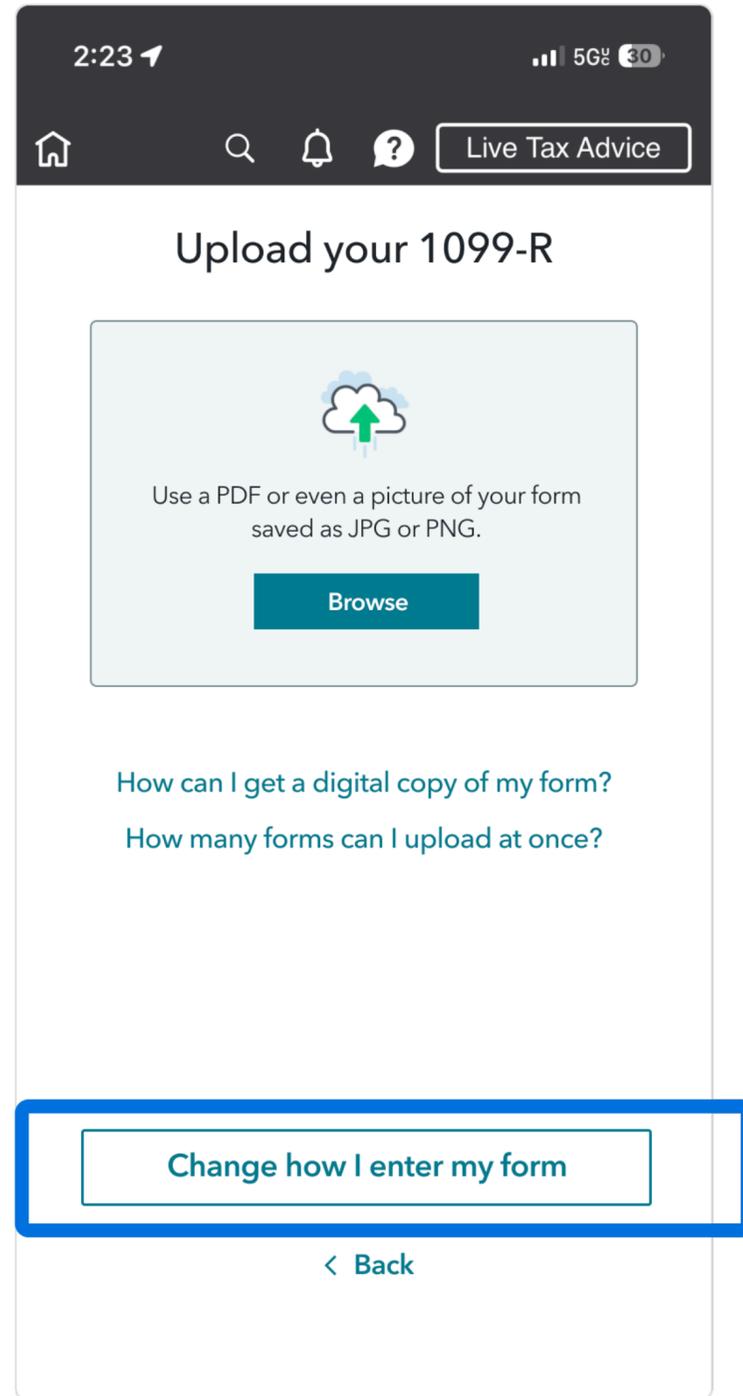**Box 5** - Employee contributions or insurance premiums

| $400 |

Box 6 - Net unrealized appreciation

| $0 |

Box 7 - Distribution code

A/B test treatments

Screen 1

Upload your 1099-R

Use a PDF or even a picture of your form saved as JPG or PNG.

Browse

How can I get a digital copy of my form?

How many forms can I upload at once?

Change how I enter my form

‹ Back

Screen 2

How do you want to enter your 1099-R?

We can save you time with these automated options.

Upload it from my phone
We'll use a digital copy of your form to fill in your return.

Use a PDF, JPG, or PNG

Bring it over from my bank
We'll import your info directly from your bank — all you have to do is sign in.

Use your bank credentials

Continue

Type it in myself

‹ Back

Screen 3

Let's import your tax info

We'll help you find and import info from your bank or financial institution

Enter bank name or sign-in URL

Here are some suggestions:

Robinhood

Fidelity INVESTMENTS

TD Ameritrade

E✺TRADE from Morgan Stanley

charles SCHWAB

BANK OF AMERICA

CHASE

Wealthfront

Change how I enter my form

Live Tax Advice
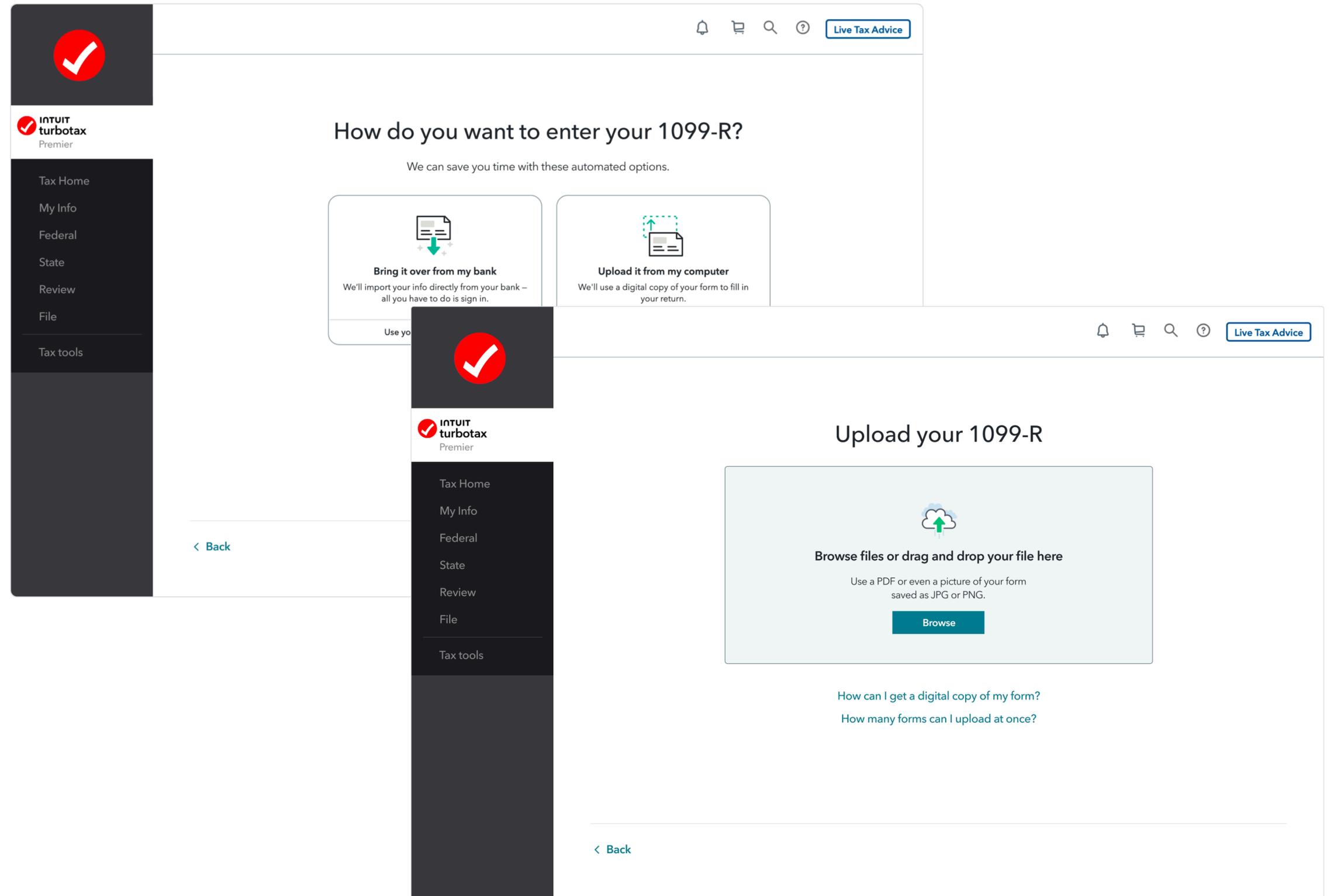
Mobile & Desktop design

Majority of users file from a computer, but app usage was increasing. We wanted taxes to be so simple that you can prepare and file from your phone.

Collaborating with engineering

01 Collocate to the engineering team's courtyard

02 Attend sprint rituals

03 Bug bash and take responsibility for design

04
Results & Reflection

A/B test results

Form	Result	Details
1098-T	Successful, rolled to baseline for tax year 2019	50,000 forms automatically entered, 95% accuracy rate, and did no harm to conversion
1099-R	Not successful, needs improvements	10,000 forms automatically entered, but had poor extraction accuracy (at 50%). Conversion rate dropped from 60% to 50%. We turned off upload until the centralized data platform team could improve accuracy and product could prioritize re-platforming the legacy tax topic.

A/B test results

Form	Result	Details
1098-T	Successful, rolled to baseline for tax year 2019	50,000 forms automatically entered, 95% accuracy rate, and did no harm to conversion
1099-R	Not successful, needs improvements	10,000 forms automatically entered, but had poor extraction accuracy (at 50%). Conversion rate dropped from 60% to 50%. We turned off upload until the centralized data platform team could improve accuracy and product could prioritize re-platforming the legacy tax topic.
W-2	Successful, rolled to baseline for tax year 2019	Import was the dominant method in this tax form, but we were able to automatically enter an additional 80,000 forms without doing any harm to conversion.

Related projects

- Multi-year quarter roadmap to expand upload to top 10 tax forms (Completed additional designs for 1099-INT, 1099-DIV, 1099-K)

- Offer image capture as a data entry option

- Enhanacements to import experience
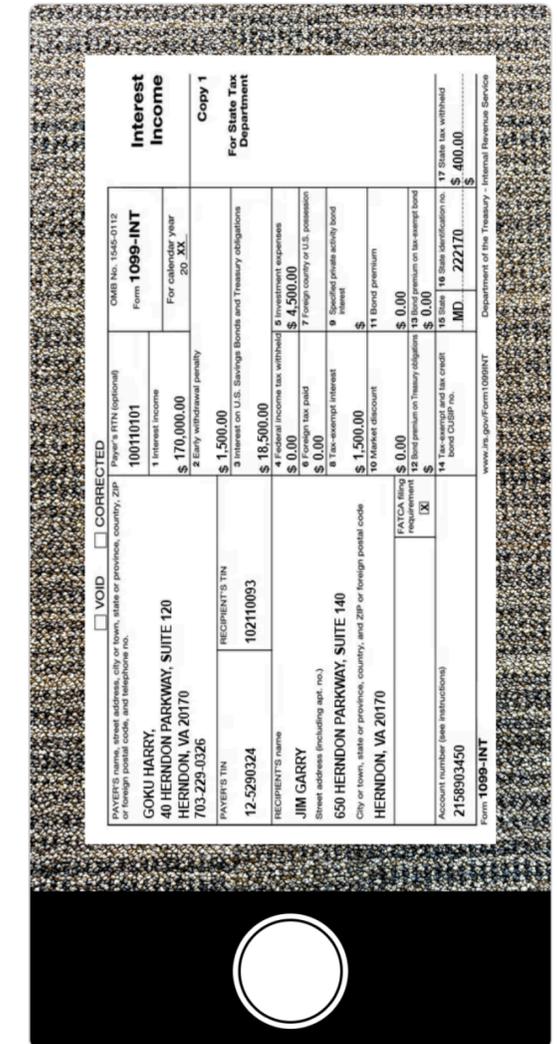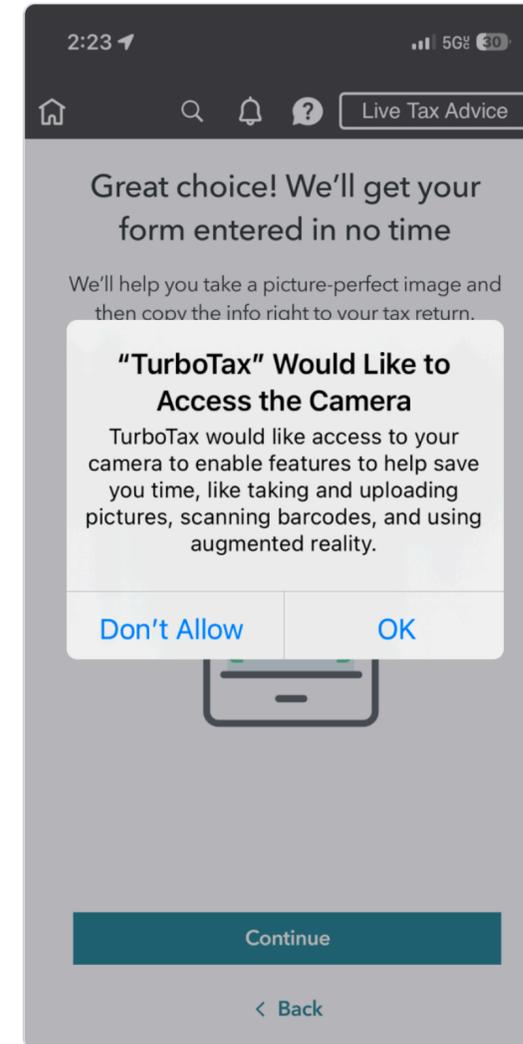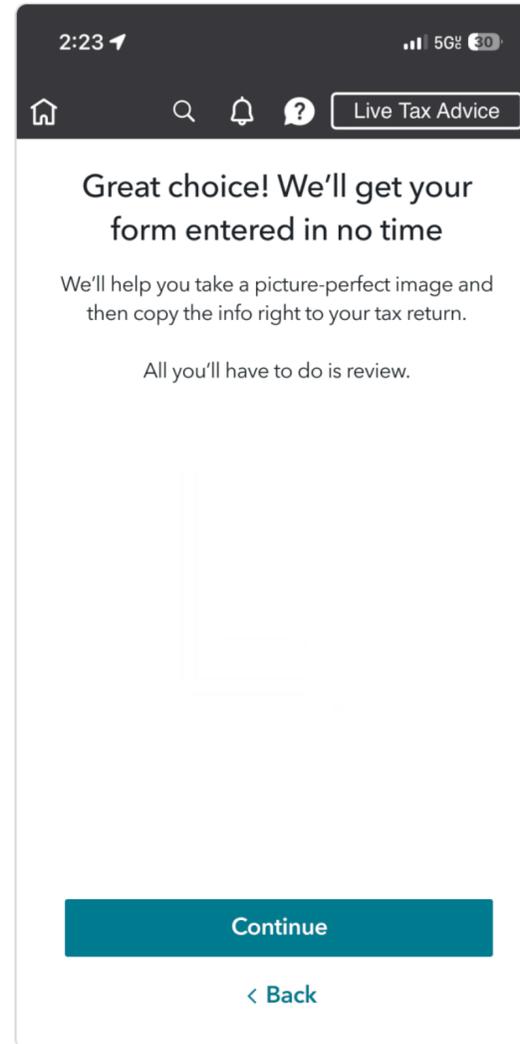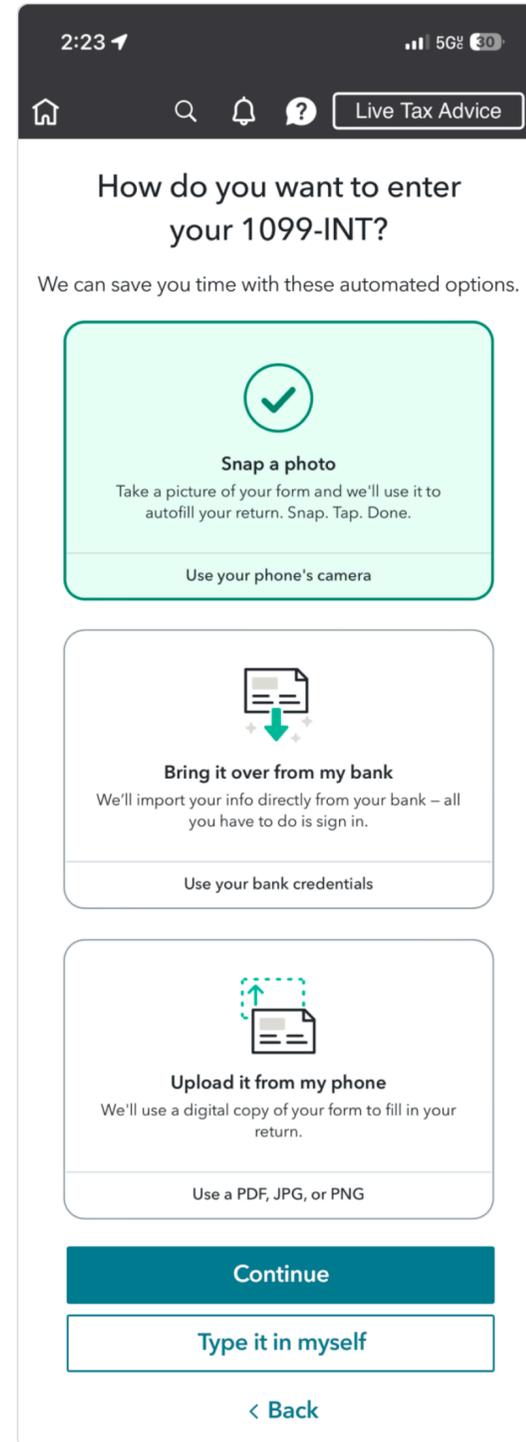
Reflection

During my time on this project and related projects, I worked with 3 different product managers. I learned how to build trust quickly, be a leader, and keep the project moving.

Here's how this project shaped my design process:

01 The best product requirements start with visuals

02 Visualize ideas at the right fidelity

03 Debate different opinions, then commit to the plan

Thank you!
Questions, comments?